Process and Impact Evaluations of the 2005-2006 ETO Home Energy Solutions Program

Draft Report

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This report was prepared by ECONorthwest's Portland office for the Energy Trust of Oregon. Dr. Stephen Grover was the ECONorthwest project manager for this evaluation and is the primary author of this report. Questions regarding the report should be directed to him at grover@portland.econw.com or by phoning the Portland office at (503) 222-6060. Dr. Grover was assisted in this project by Jenny Yaillen, Jessica Smith, Logan Van Ert and John Boroski. Itron and Dr. Phil Willems also assisted with this evaluation and report.

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EXECUTIVE SUMMARY

INTRODUCTION

The Energy Trust Home Energy Solutions (HES) program provides cash incentives to Oregon households to encourage the adoption of energy efficiency measures. The program covers a range of efficient equipment options that provide electricity and gas savings to customers living in single-family, multi-family, and manufactured homes in mobile home parks. This evaluation addresses the single-family and manufactured home sectors, as the multi-family component will be covered by Itron in a separate impact evaluation.

The first part of this report is the process evaluation of the HES program. The process evaluation component was structured to collect information on how the program is being implemented so that recommendations for program improvement can be made. The main components of this section are analyses of participant, non-participant, and trade ally phone survey results. Beginning in 2005, the HES program was managed by a new program implementation contractor that changed many of the program offerings, so the process evaluation focuses on how the program is being delivered since these changes went into effect.

The second part of the report is the impact evaluation of the HES program. The goal of the impact evaluation is to develop reliable measurements of specific gas and electric savings for the years 2005 and 2006. These impact estimates will be used for future savings and budget planning. This information will also be used in Energy Trust's annual true-up of program savings in 2008.

EVALUATION OVERVIEW

This report presents the process and impact evaluation results for Energy Trust's Home Energy Solutions (HES) program, covering the 2005 and 2006 program years.

Major evaluation tasks for this evaluation include the following:

- *Logic model and program theory.* A logic model and program theory established a starting point for all evaluation activities. The structure of the logic model, which links program activities and expected outcomes, is a useful instrument for identifying specific program assumptions that can be tested using a survey or other primary data collection activities.

- *In-depth interviews.* In-depth interviews were conducted with program managers, program implementers, and other key staff members in August 2007 and April 2008. Program staff members helped to gauge program progress, provided valuable insight into daily operations, and proposed research topics to be addressed by the evaluation. These interviews also assisted with the development of a program history, which defines the program changes since Conservation Services Group took over the program management role.

- *Participant surveys.* The primary data collection instruments for the HES program were phone surveys with program participants residing in single-family and manufactured

homes. The surveys explored the participant experience with program services and addressed the research issues identified by the logic model and in-depth interviews. Key topics include the effectiveness of program marketing, participation drivers, spillover and free ridership, and satisfaction with the program. All surveys for this evaluation were fielded over the phone by Itron's call center from November 2007 to January 2008. Participants were asked to consider equipment installations since January 2006.

- *Non-participant surveys.* A non-participant survey was used to explore the attitudes and knowledge of people who have not directly received HES program services. Main areas of research included program awareness, effectiveness of marketing, barriers to participation, and spillover effects. Non-participants were asked to consider equipment installations since January 2006.

- *Trade ally (vendor) surveys.* An additional survey was conducted with vendors to examine how vendors use program services and to measure levels of satisfaction with various aspects of the HES program. The sample was divided into active HES vendors and non-active HES vendors. Non-active vendors completed five or less HES jobs during the 2005–2006 period. A separate non-participant vendor survey was used to determine how non-participating contractors view the program.

- *Additional program-specific data collection.* Other key evaluation activities included a review of all available program documents, marketing materials, and past evaluations.

- *Self-report Analysis.* The self-report analysis uses phone survey data to develop estimates of free ridership and spillover for heat pumps, gas furnaces, insulation, windows, and CFL measures, using data from the participant and non-participant surveys.

- *Billing Model.* The billing regression model uses electric and gas bills combined with survey and weather data to estimate realized kWh and therm impacts.

KEY FINDINGS

The key findings for the 2005–2006 HES program years are summarized below.

Utilities are a critical partner in promoting the HES program in Oregon. Most frequently, participants and non-participants learned of the program through utility bill stuffers. Among non-participants, there is a relatively high level of awareness about Energy Trust and its incentive programs, but there is room for growth. Almost half of all non-participants surveyed are aware of Energy Trust or its programs, but about half of this group did not know what the Energy Trust does. Moreover, more non-participants were familiar with the Oregon tax credit than the HES cash incentives. There may be other ways to utilize utility marketing channels to promote the HES program, such as through more extensive advertisement on individual utility websites.

Some Energy Trust marketing resources are under-utilized. Many vendors consider the HES program to be a valuable component of their marketing to sell energy efficient equipment, but most have not used Energy Trust marketing support. Almost 70 percent of active vendors were on the HES List of Trade Ally Contractors and half of this group said that the list has

increased their sales of energy efficient equipment. However, most participating vendors have not utilized any Energy Trust marketing materials or program literature. In addition, over 80 percent of vendors have not used Energy Trust's co-op marketing service.

The HES program implementers are striving to make the program more market-based by encouraging vendors to promote multiple measures to their client. Besides the primary measure, 23 to 48 percent of participants (depending on measure category) reported that their contractors recommended other energy saving measures for their homes. Vendors report that they promote multiple measures to their customers at higher rates (especially at duct sealing jobs), but a substantial share of vendors still said that they rarely or never engage in this activity.

Furthermore, the surveys examined what motivated customers to participate in the HES program. Results pointed to multiple influences, including a desire to save energy, the HES cash incentive, contractor suggestions, the HER, and the Oregon tax credit.

- The most common reason participants purchased new equipment across all measure categories was to save energy.
- Roughly one-third of respondents said that the HES cash incentive was "very influential" on their purchase decisions.
- 30 to 50 percent said that their contractors were "very influential" on their purchase decisions, depending on measure category.
- 35 percent of respondents who had a Home Energy Review subsequently installed new equipment, and about half of that equipment was rebated through the HES program.
- Most HES participants also received an Oregon tax credit, when available. Ninety-three percent of participants who received a HES cash incentive for a gas furnace also received an Oregon tax credit, and the two incentives appear to exert a roughly equal influence on the purchase decision.

Moreover, the surveys probed vendor satisfaction with the Energy Trust support services, such as the trade ally training and the trade ally web pages. Most participating vendors found the trade ally training useful, but a small portion of vendors have been to a training in the past year. Only 28 percent of active vendors and 14 percent of non-active vendors have participated in Trade Ally Training in the past year. About 70 percent of both vendor groups who had participated in the training rated it as extremely or very useful. Alternatively, vendors had a lukewarm reaction to the trade ally web pages. Only about half of active and non-active vendors found the web pages to be moderately or very helpful.

The surveys also gauged participant satisfaction with the Energy Trust and with their contractors.

- Satisfaction with Energy Trust staff is generally high. Overall, about 60 percent of participants were very satisfied with the Energy Trust staff, and about 80 percent

were at least moderately satisfied. The highest rate of dissatisfaction for active vendors pertained to response time, where 10 percent of respondents are moderately unsatisfied.

- Satisfaction with the HER process is high. Seventy to 90 percent of participants were very satisfied with various aspects of the HER process. The lowest satisfaction scores were assigned to Energy Trust's role as a provider of information about saving energy and Energy Trust programs.

- Satisfaction with HES contractors is high. Over 70 percent of respondents within each measure category were extremely or moderately satisfied with their contractors overall. Over 60 percent of respondents were either extremely or moderately satisfied with the quality and completeness of the information provided by their contractors about energy saving opportunities.

Self-report results show that free ridership rates are highest for heat pumps and lowest for CFLs. Free ridership for heat pumps is estimated to be 64 percent of respondents. Gas furnaces, windows, and insulation rates range from 55 to 60 percent. As expected, free ridership is low for CFLs (nine percent), which are free and directly installed during the Home Energy Reviews.

For participant spillover, the self-report results show that CFLs and windows have the highest spillover rates and gas furnaces have the lowest. The participant spillover rates for CFLs and windows are 13 and 12 percent, respectively, when averaged over the two years of the program. Gas furnaces have an average participant spillover rate of less than one percent.

Non-participant spillover was also calculated using self-report information. The estimates were typically much higher than participant spillover, with windows having an average rate of almost 1,900 percent. Gas furnaces again had the lowest average spillover rate at 7 percent. In the end the decision was made not to include these spillover estimates in the calculation of impacts for the HES program.

The billing analysis provided net savings impacts that were quite sensitive to changes in the model specification. A cross-sectional time series model was used for both electric and gas measures. The electric model yielded kWh realization rates with an average of 71 percent and the gas model gave an average therm realization rate of 124 percent.

Two elements of the administrative process slow program delivery: processing incentives and developing marketing materials.

- The incentive processing system is cumbersome and often leads to delays. Energy Trust staffers reported that the incentive forms are multiple pages, and often separate forms must be filled out for each measure. As a result, both contractors and their customers often omit critical information, which delays incentive payments. While few surveyed participants were extremely dissatisfied with the incentive payment process, they gave the lowest satisfaction scores for the ease of applying for financial incentives and the turnaround time in receiving the incentive.

- In addition, the process of developing program marketing materials is inherently cumbersome. Marketing pieces are vetted by CSG, Energy Trust, and the appropriate utilities. The time lag for this sequential process limits the usefulness of time-sensitive marketing information.

Recommendations

The following recommendations are for the 2005-2006 program cycle. The evaluation team recognizes that many of these issues are currently being addressed.

- **Streamline the incentive processing system.** Efforts should be made to shorten and simplify incentive payment forms that the contractor or client fills out. This will lessen the occurrence of omitted information and speed up the process, as well as minimizing potential participants who are dissuaded by lengthy paperwork. A web-based form should also be considered. Web-based forms can decrease database errors (currently information must be transferred from paper forms to Fast Track), require all fields to be completed, and allow for an instantaneous information transfer.

- **Emphasize Energy Trust marketing support services to trade allies.** Only 32 percent of active vendors have utilized Energy Trust marketing materials or program literature. Even less—17 percent—have used the co-op marketing service. While the majority of active vendors do actively promote the incentive offers as a part of their marketing activities, 28 percent do not. Thus, the program should consider ways to make participation in co-op marketing easier, and emphasize participation requirements in the trade ally orientation. The marketing support service should also be a key component of trade ally recruitment. In addition, the program should consider if the underutilized Energy Trust marketing materials can be better tailored to fit the needs of HES contractors.

- **Ramp up efforts to encourage contractors to deliver other information about saving energy and Energy Trust program offerings while on-site.** Most respondents are very satisfied with the Energy Trust staff and HES contractors, and thus represent a captive audience for further energy efficiency recommendations. Data from both the participant and vendor surveys indicate that only some contractors recommended other energy saving measures to their HES clients. Contractors can increase their collective business and energy savings allocated to the Energy Trust if they more frequently integrate other energy efficiency recommendations into their normal home visits.

- **Add additional content to the trade ally web pages.** The program should look for opportunities to increase the utility of the web page for current trade allies, as most survey respondents had tepid reactions to the helpfulness of the web pages. Topics of interest might include technical advice on installing the HES measures and more details on the marketing support offered. Examples of the collateral produced by firms that have used the co-op marketing support, as well as specific information on the financial incentives offered, may increase the appeal of the co-op marketing service.

- **Further investigate what other information HER participants would like to receive during or after their audits.** Currently, HER participants receive a checklist of energy saving opportunities, which also notes the maximum Energy Trust cash incentives for each measure and whether there is an Oregon tax credit available for each measure. The paperwork also lists the next steps to find a qualified HES contractor to install the measures, the Trade Ally List of Contractors, and brochures explaining the Home Performance with ENERGY STAR. However, respondents indicated that they were the least satisfied with the information provided on how to find more information on saving energy. While they are on-site, contractors could ask if there was additional information that customers would like. In the future, contractors could be trained to provide this information directly or they might distribute redesigned or additional program materials that more clearly identify other information sources.

- **Include a link to the Energy Trust HES program on the Oregon Department of Energy "Residential Energy Tax Credit" website.** There is a high level of awareness of the Oregon tax credit among non-participants, but respondents still most frequently cite the higher costs of energy efficient products/services as a barrier to adoption. Therefore, increasing the visibility of the Energy Trust HES program through modes connected to the Oregon tax credit may increase awareness and participation in the HES program. Currently, the Oregon tax credit website includes links to other energy efficiency programs, including: utility incentives, the ENERGY STAR website, the State Home Oil Weatherization program, and federal incentives. Energy Trust may want to consider working with the Oregon Department of Energy to add an additional link on the tax credit website that launches web-surfers to the HES program website, which would increase the visibility of the HES program. Notably, Energy Trust already advertises Oregon tax credits on its HES website.

- **Work with the electric and gas utilities to increase advertising for Energy Trust cash incentives on their websites.** Only three percent of non-participants learned of the Energy Trust or its incentives from their utility websites. Non-participants in this sample receive electricity from PGE, Pacific Power, and EWEB, and purchase gas from NW Natural, AVISTA, and Cascade Natural Gas. EWEB does not advertise Energy Trust/ HES or link to the Energy Trust website.[1] PGE only advertises HES cash incentives for heat pumps. Increasing the visibility of the HES program on these websites is a low-cost manner of channeling utility customers to the Energy Trust program.

  In addition, there may be untapped opportunities to link on-line and paper energy audit services provided by local utilities to HES cash incentives and HERs.

- **Explore ways to better coordinate the production of marketing materials.** Because the collaborative process of developing marketing materials is inherently cumbersome, every effort should be made to coordinate marketing approaches, including collaborative

[1] Utility websites scanned in March 2008

face-to-face brainstorming and concept development between Energy Trust, the Program Management Contractors (PMCs), and the utilities.

ENERGY TRUST STAFF RESPONSE TO EVALUATION REPORT

From the process point of view, Energy Trust's HES program performed well during the evaluation period, as participant and vendor satisfaction with the program were consistently high, particularly for program staff and contractor interactions.

The survey results also revealed high self-reported free rider rates for many of the measures. The free rider rates were validated by contractor perceptions of what constitutes the typical efficiency of equipment being offered by the contractor and purchased by consumers.[2] These high free rider rates have implications on program design.

The high free rider rates support the conclusion that market transformation is well underway or has taken place for gas furnaces and heat pumps. Changes in the market support changes to the program. Changes to consider would be such things as raising the efficiency level at which incentives are offered, changing incentive amounts or the target market. In the case of heat pumps this could mean only offering incentives to heat pumps with an HSPF of 9.0 or better (if cost effective). In the case of gas furnaces the choice could be to bring to an end the incentive as there are currently no existing cost-effective higher efficiency options or to focus on niche markets such as near low income, rental or specific regional markets. Changes to the HES program are being considered and discussed, as is the development of a market transformation model to measure program impacts.

High spillover rates were also estimated for certain technologies. Participants' spillover was modest except in the case of windows (12%) and CFLs (12%). In the case of nonparticipants, HVAC equipment spillover was also modest (5% gas furnace and 7% heat pump). However the spillover for insulation (49%), CFLs (465%) and windows (~1,900%[3]) was in another realm entirely.

The Board Evaluation Committee directed staff to consider spillover on equal footing with free ridership. This was one reason why the resources were allocated in this evaluation to survey over 2,000 nonparticipants. In the past, self-reported spillover estimates were included in our calculation of market effects and offset self-reported free rider adjustments resulting in relatively small changes to the program's reported savings. Including spillover savings from CFLs and windows installed in electrically heated homes in our program's savings will not have much of an overall effect as they are already being captured by the savings reported by NEEA's market transformation programs. However, the spillover savings of insulation and windows installed in

[2] It should be noted that the free rider methodology used in this evaluation is different from that of previous evaluations and therefore the results are not directly comparable.

[3] The evaluation penetration rate is adjusted to reflect that ~90% of windows are energy Star or better and that Trade Allies surveyed reported on average that ~60% of their EE window sales were U 0.32 or better.

gas heated homes are not being captured anywhere and could have significant impacts on the total reported program savings.

With spillover beginning to result in significant program savings, staff recommends that more reliable savings estimates are needed. This is because the spillover is currently estimated using self-reports and there is little information on:

- Baseline conditions
- Efficiency levels of purchased equipment
- Purchase decision process

Spillover will be researched as either a separate study or as a separate task in the next evaluation.

The billing analysis yielded disappointing results in that the model results were quite sensitive to the model specification. Stable savings estimates at the measure level could not be estimated and at the program level provided a fairly wide range of savings estimates. The model savings resulting in kWh realization rate ranging from 41%-99% and gas savings from 61%-191%. As the models included a nonparticipant comparison group, the savings represent savings net of free ridership but are not adjusted for nonparticipant spillover. Inclusion of the nonparticipant spillover impacts will significantly change the net savings realization. Given the unstable nature of the estimated savings, staff recommends using the working savings. The working savings are within the range of estimated realized savings, and using them as the program savings does not unduly penalize or reward the program.

Staff recommends revisiting the billing analysis and incorporating into the analysis weather normalized annual consumption of each participant. This will allow us to analyze changes in energy consumption at the program or even at the individual account level. We will continue to keep using simple models regression models such as the cross-section time-series used in this evaluation and explore the use of even more complex models when appropriate. We also plan to have national experts review Energy Trust data processing and billing analysis methods and make recommendations for changes in methods or approaches that should be considered.

In the areas of program recommendations:

Streamline the incentive processing system

- Energy Trust is planning to pilot web-based forms. The first will be focused at the clothes washer program and will be slowly expanded to other measures and programs. This will hopefully streamline much of the program paperwork.
- Ongoing efforts by the ITAC have also resulted in the streamlining and reduction of the information needed in the program paperwork.

Improving Energy Trust trade ally services and communications:

- At the beginning of 2008 Energy Trust required its trade allies to reapply. This has allowed Energy Trust to focus on the most committed trade allies.

- Energy Trust is currently in the process of redesigning its website and will increase trade ally content.

Energy Trust and utility coordination

- Utility-based communications are the most common source of information about Energy Trust's programs. To optimize the use of this channel Energy Trust will continue to coordinate marketing and communication activities with the utilities.

1. INTRODUCTION

The Energy Trust Home Energy Solutions (HES) program provides cash incentives to Oregon households to encourage the adoption of energy efficiency measures. The program covers a range of efficient equipment options that provide electricity and gas savings to customers living in single-family, multi-family, and manufactured homes in mobile home parks. This evaluation addresses the single-family and manufactured home sectors, as the multi-family component will be covered in a separate impact evaluation.

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topics include the effectiveness of program marketing, participation drivers, spillover and free ridership, and satisfaction with the program. All surveys for this evaluation were fielded over the phone by Itron's call center from November 2007 to January 2008. Participants were asked to consider equipment installations since January 2006.

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- *Billing Model.* The billing regression model uses electric and gas bills combined with survey and weather data to estimate realized kWh and therm impacts.

1.2 PROGRAM HISTORY

The Energy Trust approved the Home Energy Savings program in October 2002 as its first program targeted for the residential sector, offering retrofit services to customers of PGE and PacifiCorp. NW Natural territory was added in 2003.

Home Energy Savings replaced the previous utility transition programs run by PacifiCorp and PGE, which stopped enrolling new customers in February 2003. HES incorporated aspects of these past programs in order to provide comprehensive retrofit services to a wide variety of customers. In addition to PacifiCorp and PGE, the Energy Trust began operating conservation programs for Cascade Natural Gas and the Avista Corporation[4] in 2006. Under Energy Trust oversight and management, Ecos Consulting, Inc. refined, managed in detail, and delivered the Home Energy Savings program from 2003 to 2005. In mid-2005, Conservation Services Group, Inc. (CSG) took over that role. Thus, led by a new implementation team, the 2005 to 2006 period

[4] However, HES is not offered to Avista customers. Avista is served by the Energy Trust ENERGY STAR new homes and ENERGY STAR products programs.

was a time of transition and growth for the Home Energy Savings program (re-named Home Energy Solutions in 2007). Key focus areas in 2005 and 2006 included:

- Recruiting new trade allies
- Requiring trade allies to strictly adhere to all program requirements and measure specifications and re-training the largest contractors
- Establishing the Home Performance with ENERGY STAR component
- Building a new marketing team
- Developing a new strategy for co-op marketing
- Increasing the amount of data recorded for each home site

HES residential offerings serve single-family homeowners, manufactured home occupants, and multifamily property owners and management companies.[5] In the single-family market, the program focuses on existing older homes (built prior to 1980), and about half of the homes that get a Home Energy Review were built in 1955 or earlier.[6] Single-family homes account for the bulk of gas savings accrued by the HES program, while multi-family buildings primarily generate electric savings. The multifamily market is split into two segments (2-4 units, 5+ units), and buildings with five or more units are encouraged to undertake common area lighting projects and larger equipment upgrades. The manufactured housing element focuses primarily on older mobile home parks (with a focus on duct sealing and CFL installs), and as many parks are being closed by developers, program savings may diminish in future years.

Initially the HES program targeted only electric energy retrofits. However, the program adopted gas efficiency services in July 2003, and HES assumed the NW Natural gas furnace efficiency program in October 2003. Funds for electric incentives were running low in March 2006 and the program had to resort to a reservation system. While all eligible applications had been accepted, some projects were scheduled based on when funds were available. With increased funding under SB838, Energy Trust anticipates that scheduling will be much less of an issue in 2008 and 2009.

A primary offering of the HES program is cash incentives for single-family and manufactured homeowners and multi-family property owners who purchase energy efficient equipment. Main program measures include: heating system efficiency improvements, duct and air sealing, efficient water heaters and boilers, heat pumps, insulation, windows, gas furnaces, and installing compact fluorescent lighting, high performance showerheads, and aerators. Over time, the program has made changes to the measures that are covered, measure requirements (summarized

[5] The multi-family element was managed by a separate program implementer, the City of Portland's Office of Sustainable Development during through 2007. However, CSG assumed the multi-family element in 2008.

[6] More recent homes have fewer efficiency opportunities because many efficiency measures were required under post-1980 building codes.

in Table 1), and measure incentives. For instance, measures that have been added more recently include boiler pipe insulation, tankless water heaters, heat pump tune-ups, ductless heat pumps, and solar water heaters. Measure incentive structures and levels have changed as well. For example, incentives for single-family insulation have changed from a percent-of-total-cost formula, with a cap, to a per-square-foot formula with no cap. While this has resulted in higher incentives being paid for insulation jobs, it has also helped to achieve greater energy savings. The incentive cap for duct sealing has also been increased over time (from $250 to $400), as has the minimum CFM reduction allowed (from 50 CFM to 100 CFM). Incentives for efficient gas furnaces (90% AFUE), however, were reduced from $200 to $150 in March 2006. Alternatively, the incentive for tankless water heaters increased from $25 to $200 in March 2007.[7]

Measure requirements have also changed due to building code changes and improving product technology. For instance, in 2005 the requirements for a new high-efficiency heat pump to replace an electric furnace was HSPF 8.5/SEER 13/EER 11 or HSPF 8.1/EER12. Currently the requirements are HSPF 8.2/SEER 14/EER 11.5 (high efficiency heat pump) or HSPF 8.5/EER 12 (premium efficiency heat pump with higher incentive). Similarly, the required window U-values have decreased over time from 0.32 to 0.30.

Table 1. Select Changes in Program Requirements

Measure Type	Previous Requirement	Change
Insulation	% of total cost with cap ($200-$250)	% of total cost with no cap
Duct Sealing	Max Cap = $250. Min CFM = 50	Max Cap = $400 Min CFM = 100
Heat Pump to Replace Electric Furnace	HSPF 8.5/SEER 13/EER 11 or HSPF 8.1/EER12	HSPF 8.2/SEER 14/EER 11.5 (high efficiency heat pump) or HSPF 8.5/EER 12 (premium efficiency heat pump with higher incentive)
Windows	U-Value = .32	U-Value = .30

Some measures are eligible for incentives from both the HES program and Oregon's Residential Energy Tax Credit (RETC) Program. For example, the 2006 study "Incentives for Gas Furnaces in Oregon: Interaction between Energy Trust and the Residential Energy Tax Credit," determined the extent of overlap in gas furnace incentives provided by these two organizations. The study found that between the two programs, 24,733 incentives were granted between October 2003 and December 31, 2005. However, there were 6,266 instances of consumers receiving both incentives, so the actual number of consumers receiving furnace incentives was 18,467. The study concluded that both incentives are important in encouraging consumers to purchase efficient furnaces, and also indicated that in many cases, the availability of two incentives motivates more customers to purchase efficient furnaces, than if only one incentive was available. Notably, the RETC is only available for gas furnaces with ECM blowers.

[7] Previously, the program focused on tanked water heaters that were only marginally more efficient than code.

An additional HES tool for residential customers is the Nexus Home Energy Analyzer (HEA), which is featured on Energy Trust's and its utility partners' websites (PGE, Pacific Power, and NW Natural). The Home Energy Analyzer models a customer's home energy use through responses to a series of questions about housing characteristics, appliance mix, and energy use. The model's output includes specific recommendations on how the customer can increase the energy efficiency of her home. In 2007, the Energy Trust produced a report that described the characteristics of households that implemented the HEA recommendations. It was found that low and high-income households are less likely to execute energy savings actions, while middle-income households appear to be the most energy-conscious. Of those who chose to take energy savings actions, the most frequently adopted measure was to purchase a clothes washer (54 percent of action takers) from the Portland Energy Conservation, Inc.'s Efficient Home Products program. In addition, 18 percent of action-takers proceeded to have a Home Energy Review (in-home energy consultations described in more detail below). Homeowners, rather than renters, are more likely to implement measures, as are those who use natural gas for space heating and those who use less air conditioning. Also, participants with larger homes tend to be more likely to implement energy savings measures.

As noted above, an additional program offering is the Home Energy Review (HER), during which CSG Energy Advisors visit customers' homes and recommend specific energy efficiency upgrades. The advisors provide their customers with a paper audit listing recommendations and information about the available Energy Trust and RETC incentives.

Customers can also receive a more in-depth diagnostic home assessment (e.g., air infiltration testing, furnace performance) through the Home Performance with ENERGY STAR program. The in-depth assessments are performed by contractors certified through the Building Performance Institute and financial incentives and low-interest financing are available to implement the recommendations. While HERs were in place with Ecos Consulting, Home Performance with ENERGY STAR is a new program service introduced by CSG.

Process evaluations have reviewed the progress of the Energy Trust residential programs in recent years. The 2004 HES process evaluation reported that lighting dominated program savings in 2003. Notably, the Home Energy Review was not performing as expected—only 58 percent of the participation goal was met in program year 2003. This unexpectedly low participation rate was attributed to changes in program management at Energy Trust, delayed development of program components on the part of Ecos, and insufficient marketing. The multifamily and manufactured home programs both exceeded participation goals at 760 percent and 115 percent, respectively. In the program years since 2003, the single-family program implementation issues have been resolved and participation has continued to grow.

Utility bill stuffers are still a key way for customers to learn about the program, however, the program is making efforts to make the program more market-based. For instance, contractors are now trained and encouraged to promote more comprehensive services and multiple measures to customers, as opposed to the single measures they are most familiar with. In addition, data collected from the Home Energy Reviews are used to help target markets and technologies with larger potential.

Table 2 and Table 3 show the number of single-family and manufactured housing units that have implemented various program measures from 2003 through 2006. These data were provided by the Energy Trust.

Table 2: 2003-2006 Home Energy Savings Program History
Number of Sites for Single-Family Households

Measure	2003	2004	2005	2006
Window	40	292	498	396
Water Heater	363	1,571	1,302	388[8]
Heat Pump	11	153	598	955
Boiler	0	1	13	36
Gas Furnace	1,580	5,988	5,965	5,615
Home Energy Review	1,737	2,992	1,868	5,924
Air Sealing	0	0	32	187
Duct Insulation	82	323	488	567
Duct Sealing	37	128	256	372
Floor Insulation	173	615	997	881
Wall Insulation	107	421	215	567
Ceiling Insulation	378	1,191	1,632	1,555
Homes with CFLs installed at time of Home Energy Review	1,659	2,598	1,607	4,862
State Home Oil Weatherization - homes with CFLs installed	0	69	1,048	469
Home Energy Review Aerator	0	0	185	3,209
Home Energy Review Showerhead	0	0	127	2,420
NUMBER OF SITES	4,055	11,747	12,253	13,959

[8] Participation for water heaters diminished in 2006 because a new minimum federal standard achieved most of the savings that were previously achieved through the program.

Table 3: 2003-2006 Home Energy Savings Program History
Number of Sites for Manufactured Homes

Measure	2003	2004	2005	2006
Duct Sealing	1,064	1,637	503	353
CFLs installed	1,059	1,635	482	182
NUMBER OF SITES	1,076	1,639	586[9]	354

[9] The number of manufactured homes served was reduced due to high cost/kWh and budgetary issues.

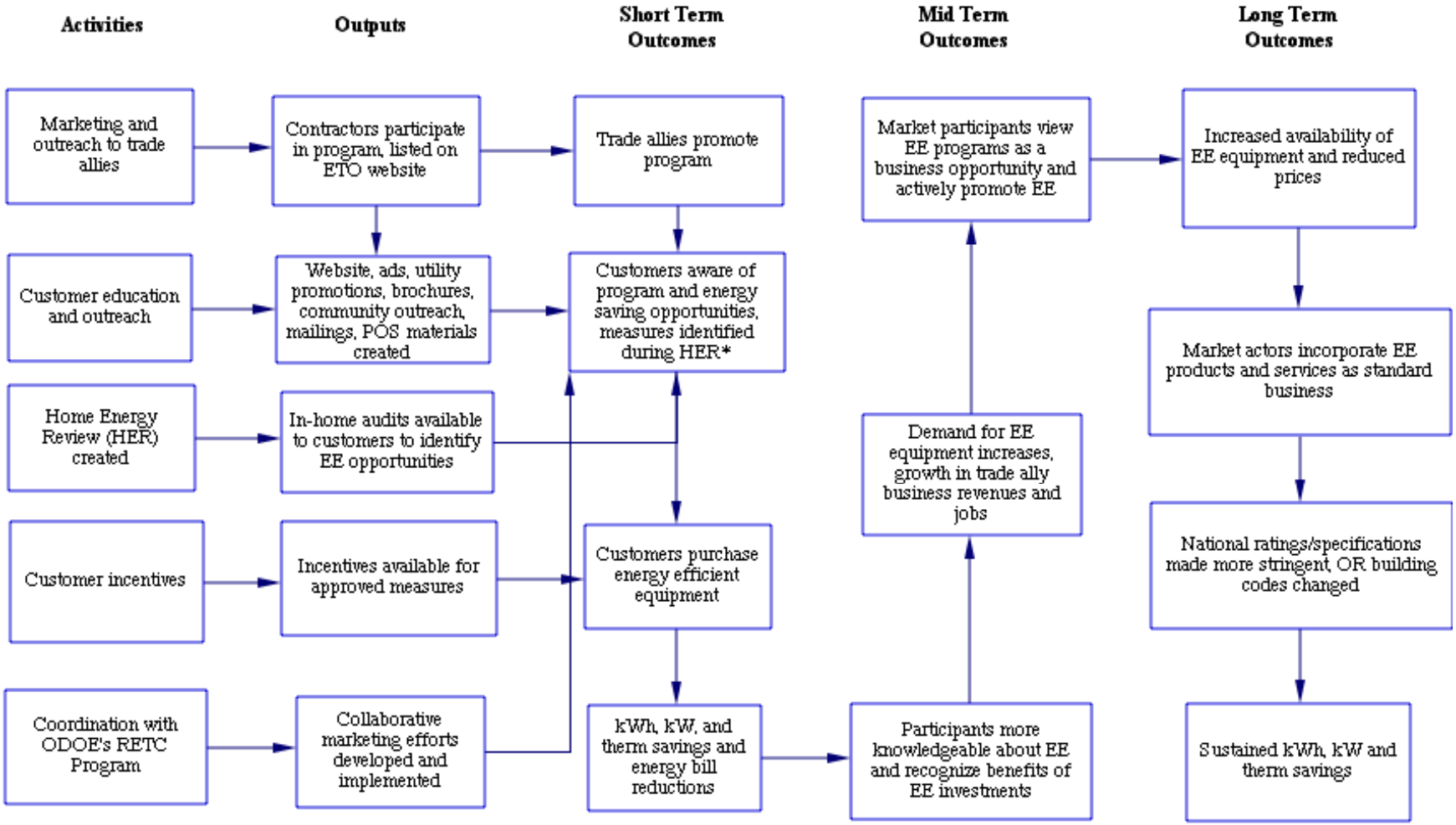
2. LOGIC MODEL AND PROGRAM THEORY

One of the first tasks of this evaluation was to create a logic model and program theory for the HES program. The structure of the logic model that links activities and outcomes is a useful instrument for identifying specific program assumptions that can be tested using survey or other primary data collection activities. Crucial program evaluation issues often question whether program services are adequately designed and equipped to generate their desired outcomes.

Additionally, the construction of a program theory and logic model provides a common knowledge and language between program implementers, evaluators, and stakeholders. It allows for a more precise conversation about what is occurring within a program and why the program actions should produce the expected outcomes.

The following program theory for the HES program builds on the program logic model and provides additional detail on program activities, outputs, and outcomes. The logic model diagram is in Figure 1 below.

Figure 1. Logic Model for the 2005-2006 Home Energy Solutions Program



* Note: Some customers may also complete a more comprehensive Home Performance with ENERGY STAR diagnostic assessment

2.1 PROGRAM THEORY

Activities

Marketing and outreach to trade allies

Contractors have a large role in driving participation in the HES program, and a key activity is to establish a strong base of trade allies and find ways that they can leverage the program to their benefit. Contractors are contacted and recruited into the program via staff presentations, printed materials, phone calls, and advertisements on the Energy Trust website. New recruits are trained in program benefits, requirements, and other processes in an orientation seminar, and may be listed on the List of Trade Ally Contractors. In particular, contractors are encouraged to sell multiple, rather than just single measures. Participating contractors can receive cooperative advertising funds and use the Energy Trust logo in their advertising.

Customer and education outreach

The program educates homeowners about the financial, comfort, safety, and environmental benefits of owning energy efficient homes. The program develops marketing materials that advertise the various HES program offerings, including cash incentives for HES measures, free Home Energy Reviews, and Home Performance with ENERGY STAR.

Home Energy Review (HER) created

One program offering is the Home Energy Review (HER). The HER is a comprehensive and personalized home energy equipment assessment that often leads to further program participation through the installation of recommended efficiency measures (that receive HES rebates). The HER is meant to drive program participation, spur major measure installation, and also includes free installation of CFL bulbs, high performance showerheads, and faucet aerators.

Customer incentives

The higher upfront costs of energy efficient equipment can be a barrier to purchase. Therefore, the HES provides cash rebates to offset the incremental cost of purchasing energy efficiency equipment, rather than standard equipment. These cash incentives are advertised during HERs, when applicable.

Coordination with ODOE's RETC program

The HES program coordinates with ODOE's Residential Energy Tax Credit program to plan and provide collaborative marketing efforts. This partnership informs customers about different incentive opportunities and drives participation in both programs.

Outputs

Contractors participate in program, listed on ETO website

As a result of outreach and marketing activities, contractors partner with the HES program (by signing a formal participation agreement) and offer their services to program participants.

Contractors are trained to communicate the benefits of energy efficient equipment to customers and to understand the design and delivery of the program. Contractors can participate in the program by offering HES cash incentives to their customers and conducting Home Performance with ENERGY STAR assessments.

Website, ads, utility promotions, brochures, community outreach, mailings, POS materials created

The program and its partners (e.g., utilities) develop and distribute a wide range of marketing materials aimed at increasing awareness among homeowners. Marketing efforts include bill inserts, community outreach, website information, and newsletters.

In-home audits available to customers to identify energy efficiency opportunities

HERs are available free of charge and upon request to single-family households in Energy Trust service territory.

Incentives available for approved measures

Incentives are made available for a wide range of energy efficient equipment, including wall/floor/ceiling insulation, duct testing and sealing, heating and cooling equipment, windows, and other measures. Customers can apply for incentives via hard-copy applications available from contractors and the program web site. Some contractors also submit incentive applications on behalf of customers.

Collaborative marketing efforts developed and implemented

The HES and RETC programs collaboratively reference each other's incentives in marketing information to homeowners to increase participation in both programs.

Short Term Outcomes

Trade allies promote program

Contractors seek to increase business for themselves and other program contractors and thus promote the program to new and past customers using Energy Trust issued promotional materials, co-op marketing collateral with the Energy Trust logo, and other traditional advertising channels.

Customers aware of program and energy saving opportunities, measures identified during HER

Due to the customer education and outreach efforts, homeowners have increased awareness of energy efficient equipment in their homes, potential opportunities for energy cost savings, and the improved marketability of energy efficient homes. As a result, they sign up for a Home Energy Review. A program-trained Energy Advisor conducts a home assessment, recommends specific measures, and informs the customer of the appropriate HES cash incentives and Oregon tax credits. The Energy Advisor may also install up to eight compact fluorescent light bulbs, up to two faucet aerators, and one low flow showerhead in each home. Some customers also

complete a more comprehensive Home Performance with ENERGY STAR diagnostic assessment (e.g., air infiltration testing, furnace performance).

Customers purchase energy efficient equipment

Due to new information about energy efficiency, the cash incentive offerings, and/or the energy audit (HER or Home Performance with ENERGY STAR), the customer decides to purchase energy efficient equipment.

kWh, kW, and therm savings and energy bill reductions

Installation of the recommended energy efficient measures will cause participants to realize kWh, kW, and therm savings. Energy savings are achieved as a result of customers' decision to purchase energy efficiency equipment. Additional savings are accrued by households who received free CFLs, aerators, and low-flow showerheads with their HERs.

Midterm Outcomes

Participants more knowledgeable about energy efficiency and recognize benefits of energy efficiency investments

Customers that participate in the HES program gain a better understanding and appreciation of the financial and performance benefits of purchasing energy efficient equipment. Going forward, these customers have reduced search/hassle costs associated with finding an impartial energy assessment, qualified contractors, and payback information for cost-effective home energy improvements.

Demand for energy efficient equipment increases, growth in trade ally business revenues and jobs

Customers who install energy efficient equipment and recognize the financial and performance benefits begin to incorporate energy efficiency as part of their standard purchase decisions, resulting in increased demand for energy efficient equipment and associated company revenues and jobs.

Market participants view energy efficiency programs as a business opportunity and actively promote energy efficiency

Retailers, distributors and manufacturers recognize the growing demand for energy efficient equipment. As a result, they increasingly view energy efficiency programs as a business opportunity and look for more opportunities to leverage programs and promote energy efficiency. Participating contractors perceive that the program benefits all participants and will regularly recommend HES cash incentives and Home Energy Reviews to all of their clients.

Long Term Outcomes

Increased availability of energy efficient equipment and reduced prices

Due to a sustained demand for energy efficient equipment and increased understanding of its benefits, energy efficient products become more widely available at reduced prices as product technology and manufacturing improves.

Market actors incorporate energy efficient products and services as standard business

Due to their first-hand experience with the program and energy efficient equipment, market actors begin to implement energy efficient measures into standard practice. This includes homeowners looking to replace older equipment in their existing and future homes and contractors and retailers who are involved with the sale and installation of these measures.

National ratings/specifications made more stringent, OR building codes changed

As the program-covered equipment and standards become widely adopted, building codes and standards are modified to reflect higher prevailing and desired efficiency levels.

Sustained kWh, kW and therm savings

Due to the increase in supply and demand for energy efficient measures and a permanent change in customer and contractor attitudes, sustained energy savings are achieved in the single-family retrofit market sector.

3. PROCESS EVALUATION RESULTS

3.1 PARTICIPANT SURVEY RESULTS

The participant phone survey was fielded by the Itron call center from November 2007 to January 2008. Random selection from a population of 3,600 generated 958 completes, comprised of both single-family and manufactured homes (N=9). Table 4 lists the breakdown of this sample by measures installed through the HES program. 513 of these respondents received a Home Energy Review (HER), which is a free in-home energy audit and include free installation of CFLs. A distinct battery of questions addressed respondent experiences with this audit program and HER results are presented at the end of this section.

Table 4. Participant Sample, by Measure

Measure Installed	Sample (N=958)
Duct Sealing	79
Duct Insulation	104
Ceiling/Attic Insulation	122
Floor Insulation	103
Wall Insulation	38
Windows	45
Heat Pump	192
Gas Furnace	133
HER Audit/CFLs	513

Some respondents installed multiple measures

Key research topics within the participant survey include:

- Effectiveness of program marketing
- Participation drivers
- Satisfaction with the program

HES Program Marketing

Table 5 shows how all HES respondents first heard about Energy Trust and its programs. The top two ways respondents learned of Energy Trust opportunities was through their electric and gas utilities, 27 and 19 percent, respectively. Notably, only four percent of HER participants heard of Energy Trust programs and incentives from their contractors, while 25 percent of the Rebate-Only HES participants (did not have a HER) learned of the Energy Trust offerings from their contractors.

Table 5: How Participants Heard about ETO Programs and Incentives

Source	Rebate-Only Percent (N=405)	HER Percent (N=421)	Total Percent (N=826)
Electric utility	19%	33%	27%
Gas utility	13%	24%	19%
Contractor	25%	4%	14%
Energy Trust	10%	17%	13%
Retail/salesperson	16%	3%	10%
Word of mouth	3%	3%	3%
Newspaper/magazine	2%	3%	3%
Web	1%	2%	2%
Television/radio	0%	1%	1%
State of Oregon/DOE	1%	0%	1%
Public workshop	0%	1%	<1%
Other	2%	0%	2%
Don't know	14%	20%	17%

Multiple responses accepted

Table 6 shows the different forms of media through which respondents heard about Energy Trust programs or incentives. The most popular form of media was a bill insert, which was mentioned by 23 percent of the respondents, and the second most popular form of media is websites. Contractors and dealers account for 18 percent of the publicity. However, only three percent of HER respondents heard about the Energy Trust from a contractor or dealer, while 35 percent of Rebate-Only HES respondents did.

Table 6: Forms of Marketing Media

Media	Rebate-Only Percent (N=444)	HER Percent (N=510)	Total Percent (N=954)
Bill insert (newsletter)	12%	32%	23%
Website	10%	17%	14%
Newspaper	7%	15%	11%
Contractor/installer	20%	2%	10%
Dealer/retailer/vendor	15%	1%	8%
Letter/mail	6%	4%	5%
Word of mouth	5%	4%	5%
Magazine	7%	3%	4%
Television	2%	6%	4%
Sales call	7%	1%	4%
Brochure	4%	4%	4%
Radio	3%	4%	4%
Utility company	4%	3%	3%
Friend/family	2%	3%	3%
Energy fair/trade show	1%	2%	2%
Email	1%	0%	1%
Mass transit	1%	0%	1%
Sign	1%	1%	1%
Accountant/auditor	0%	1%	1%
Community organization	0%	1%	1%
Other	1%	0%	2%
Don't know	7%	14%	10%
None	0%	4%	3%

Multiple responses accepted

Furthermore, to gauge awareness of program services, respondents were asked which Energy Trust cash incentives they were aware of. As shown in Table 7, the top response was windows (40 percent of respondents), followed by three different types of insulation: ceiling/attic (34 percent), floor (31 percent), and wall (28 percent).

Table 7: Awareness of Energy Trust Cash Incentives

Measure	Percent N=950
Windows	40%
Ceiling/Attic insulation	34%
Floor insulation	31%
Wall insulation	28%
Gas Furnace	25%
Water Heaters	24%
EE appliances	20%
Duct insulation	18%
Heat pump installation	16%
Duct sealing	7%
Solar (panels, appliances, etc.)	6%
Insulation (general)	4%
Air sealing	3%
CFLs	3%
Direct vent gas heater	2%
Weatherization measures	2%
Energy efficient light bulbs	2%
Flow restrictors on shower heads	1%
Insulate doors	1%
Switching to natural gas	1%
Don't know	22%

Multiple responses accepted

Participation Drivers

The core of the participant survey probed respondents' motivations for installing various measures rebated through the HES program. Measure categories included: insulation, duct sealing, heat pumps, gas furnaces,[10] and windows. The following section presents responses across all of these measure types. An analysis of the influence of Oregon tax credits on HES participant purchase decisions is presented in section 3.5–Assessment of Key Program Measures.

Table 8 shows the general reasons respondents cited for their high efficiency purchase decisions. The primary motivating factor for all measure types was to save energy. Replacing old and

[10] 83 out of the 132 respondents who purchased a gas furnace bought one with an Electronically Commutated Motor.

broken equipment was important for HVAC and windows, and many respondents also mentioned the nonenergy benefits of the windows.

Table 8: Motivation For Installing Measures

Response	Insulation (N=193)	Duct Sealing (N=77)	Heat Pump (N=134)	Gas Furnace (N=78)	Windows (N=44)
To save energy	41%	44%	29%	45%	36%
To improve (increase) comfort	27%	13%	10%	6%	7%
Save money	10%	10%	10%	0%	2%
Update home for better efficiency	8%	0%	0%	0%	0%
Previous system (equipment) really old	0%	0%	19%	18%	30%
Previous system (equipment) broke/emergency replacement	0%	0%	11%	6%	7%
Remodeling home	0%	0%	4%	5%	16%
Did not have AC/heater before	0%	0%	10%	6%	0%
Energy efficient (better sealing and less temperature variability)	0%	0%	0%	4%	21%
Reduce noise	0%	0%	0%	0%	7%
Moisture buildup	0%	0%	0%	0%	18%
Better quality	0%	0%	0%	0%	14%
Other	13%	30%	6%	8%	23%
Don't know	0%	1%	0%	0%	0%

Multiple responses accepted

Respondents were also asked about how they located a contractor to install the HES measures. Table 9 shows that respondents found their contractors through a variety of sources. The Energy Trust List of Qualified Contractors was the primary resource for insulation and duct sealing. Almost half of the respondents who installed insulation located their contractors through the List of Qualified Contractors and 52 percent of this subgroup said that the list was "extremely important" in selecting a contractor. 32 percent of respondents who sealed their ducts used the List of Qualified Contractors, but only 17 percent of this group rated the list as extremely important in selecting a contractor.

For heat pumps, gas furnaces, and windows, respondents most frequently found their contractors through the Yellow Pages or from a word-of-mouth recommendation.

Table 9: Contractor Recruitment

Information Source	Insulation Percent (N=172)	Duct Sealing Percent (N=68)	Heat Pump Percent (N=186)	Gas Furnace (N=125)	Windows Percent (N=42)
From list of Energy Trust qualified contractors	45%	32%	9%	10%	21%
Yellow pages	16%	13%	23%	24%	24%
Friend/Family recommended	17%	24%	23%	25%	12%
Contractor contacted me	2%	18%	7%	2%	5%
Previous experience with contractor	5%	0%	18%	4%	5%
Other	12%	10%	19%	29%	29%
Don't know	5%	2%	2%	6%	5%

Table 10 shows that most participants who purchased insulation or duct sealing (60 percent or more) were informed about cash incentives by their contractors.[11]

Table 10: Did Contractors Inform Participants about HES Cash Incentives?

Did contractor make you aware of Home Energy Solutions cash incentive program?	Insulation (N=172)	Duct Sealing (N=68)	Heat Pump (N=10)	Gas Furnace (N=2)	Windows (N=1)
Yes	69%	62%	40%	50%	100%
No	19%	21%	40%	50%	-
Don’t know	12%	18%	20%	-	-

Table 11 shows how influential the contractor was on respondents’ decisions to install high efficiency measures. While the level of influence varies by measure category, about 30 to 50 percent of respondents said that their contractors were “very influential” on their purchase decisions. Contractors are reported to be most influential on decisions to seal ducts and least influential on insulation decisions. Between 55 and 78 percent of respondents, depending on measure category, thought their contractors were at least “somewhat influential” on their decisions to install the high efficiency measure.

[11] Due to an inconsistency in survey design, only respondents who purchased heat pumps, gas furnaces, and windows and who said the “contractor contacted me” in Table 9 are represented in Table 10.

Table 11: Influence of Contractor on High Efficiency Equipment Purchase

Response	Insulation Percent (N=172)	Duct Sealing Percent (N=68)	Heat Pump Percent (N=186)	Gas Furnace (N=125)	Windows Percent (N=42)
Very influential	29%	53%	48%	36%	41%
Somewhat influential	27%	25%	27%	36%	14%
Not at all influential	44%	18%	24%	28%	45%
Don't know	0%	4%	1%	0%	0%

Furthermore, Table 12 shows how influential the HES cash incentive was on respondents' decisions to install the energy efficiency measures. Responses are widely distributed. Overall, the HES cash incentive was reported to be "very influential" on roughly one-third of respondents' high efficiency purchase decisions. Between 68 and 79 percent of respondents, 54 depending on measure category, said that the cash incentive was at least somewhat influential on their purchase decisions.

For insulation, duct sealing, gas furnaces, and windows, about 30 to 40 percent of respondents said that the cash incentive was very influential on their purchase decisions. The exception is heat pumps, for which only 16 percent of respondents rated the cash incentives as very influential. Notably, heat pumps also had the highest free ridership rates of the measures evaluated (see Impact Evaluation in Section 4) and 28 percent of respondents were replacing an electric furnace with a heat pump.[12]

Table 12: Influence of Cash Incentive on Equipment Purchase

Response	Insulation Percent (N=193)	Duct Sealing Percent (N=76)	Heat Pump Percent (N=191)	Gas Furnace Percent (N=132)	Windows Percent (N=44)
Very influential	33%	36%	16%	28%	39%
Somewhat influential	43%	32%	52%	47%	36%
Not at all influential	24%	21%	32%	25%	25%
Don't know	<1%	12%	0%	0%	0%

Table 13 shows that in general, a low percentage of respondents recalled their contractors recommending other energy saving measures for their homes. Only about one-quarter of

[12] 44 percent were replacing an old heat pump, 16 percent were replacing something else, 10 percent were not replacing anything, and 2 percent did not know.

contractors who installed heat pumps, gas furnaces, and windows are reported to have recommended other energy savings measures for client homes. Respondents who had duct sealing work done were most likely to receive further recommendations from their contractor (48 percent).

Table 13: Contractor Recommended Other Energy Saving Measures?

Response	Insulation Percent (N=172)	Duct Sealing Percent (N=66)	Heat Pump Percent (N=186)	Gas Furnace Percent (N=132)	Windows Percent (N=42)
Yes	33%	48%	23%	25%	26%
No	61%	44%	70%	70%	74%
Don't know	6%	8%	7%	6%	0%

Participant Satisfaction

Survey respondents were asked to rate their satisfaction with various types of interactions they had with Energy Trust staff on a scale of 1 to 5, where 5 is “very satisfied.” This question was not program specific; instead, it aimed to gather customer perspectives on the organization as a whole. Table 14 shows that the highest satisfaction rating was for program staff’s courtesy on the phone (4.64), but overall program satisfaction was still high at 4.56.

Table 14: Satisfaction with Energy Trust

Satisfaction with…	5 Very Satisfied	4	3	2	1 Very Unsatisfied	Not Applicable (No Contact/ Paperwork)	Don't Know	Average Satisfaction
The Energy Trust's program staff's courtesy on the phone (N=958)	61%	19%	5%	<1%	<1%	10%	4%	4.64
The Energy Trust's helpfulness on the phone (N=860)	58%	24%	6%	1%	<1%	6%	5%	4.56
The Energy Trust's knowledge of program services (N=956)	58%	21%	5%	1%	<1%	8%	6%	4.58
Any issues that needed resolution (N=958)	40%	12%	6%	1%	1%	36%	3%	4.47
The program overall (N=958)	67%	23%	6%	2%	<1%	<1%	2%	4.56

Respondents were also asked to rate their satisfaction regarding several areas of involvement within the HES program. Table 15 shows how HES participants rated their satisfaction with various aspects of the program. The lowest satisfaction scores were associated with Energy Trust's role as a provider of information about saving energy. However, less than four percent of respondents gave a score of 1 or 2 in any of the categories.

Table 15: Participant Satisfaction with HES Program

Satisfaction with…	5 Very Satisfied	4	3	2	1 Very Unsatisfied	Not Applicable (No Contact/ Paperwork)	Don't Know	Average Satisfaction
Quality and completeness of information provided to you by Energy Trust about energy savings opportunities (N=958)	50%	29%	10%	3%	1%	3%	3%	4.32
Performance of the Measures you Installed under this Program (N=956)	54%	23%	10%	2%	1%	7%	<1%	4.43
Overall program experience (N=958)	56%	30%	9%	3%	<1%	1%	1%	4.40

Respondents were also asked about their overall satisfaction with their contractors. Table 16 shows that at least half of respondents within each measure category were extremely satisfied with their contractors. Satisfaction was highest for duct sealing, for which 75 percent of respondents were extremely satisfied.

Respondents who were not extremely satisfied with their contractors were asked why and Table 17 lists their responses.[13] The lowest overall satisfaction scores were in the insulation and windows categories. The most common complaints about insulation contractors were that the work was poor quality and general installation issues. Eleven respondents (26 percent of the 42 windows respondents) said that their window contractors had poor workmanship.

[13] 30 percent of respondents who purchased heat pumps gave reasons that could not be categorized (other). Some verbatim responses were nonsensical, but the applicable verbatim responses are as follows:

"Well there is always something that could have been done another way."

"We were kind of misquoted and then we were satisfied after we were giving a better price."

"Multiple callbacks."

"He stated that you would have the cleanest house on the block and there is still dust."

"Had some billing problems with them."

"Because they worked really late into the night."

"Hard to go above a 4."

Table 16: Overall Satisfaction with Contractor

Response	Insulation Percent (N=172)	Duct Sealing Percent (N=68)	Heat Pump Percent (N=186)	Gas Furnace Percent (N=125)	Windows Percent (N=42)
5 Extremely satisfied	52%	74%	58%	55%	50%
4	29%	18%	27%	30%	24%
3	14%	7%	10%	7%	10%
2	4%	0%	1%	6%	10%
1 Extremely dissatisfied	1%	0%	4%	2%	7%
Not applicable	0%	2%	0%	0%	0%
Don't know	1%	0%	0%	0%	0%
Average	4.28	4.67	4.34	4.30	4.00

Table 17: Reasons for Not Being "Extremely Satisfied"

Response	Insulation Percent (N=81)	Duct Sealing Percent (N=17)	Heat Pump Percent (N=79)	Gas Furnace Percent (N=56)	Windows Percent (N=21)
Overall good job/service/happy with service	21%	35%	28%	27%	33%
Did a competent/adequate job	37%	0%	0%	0%	0%
Poor workmanship/quality	10%	0%	3%	23%	52%
Work was slow/sloppy	5%	24%	3%	4%	0%
Had to come back out due to errors	0%	0%	20%	13%	0%
Wasn't as expected/Confusion with paperwork	0%	18%	0%	0%	0%
Might be installation errors - unsure	0%	0%	0%	5%	0%
Hard time having issues resolved	0%	0%	11%	0%	0%
Installation issues/errors	10%	6%	1%	0%	0%
They left a mess	4%	0%	0%	2%	0%
More expensive than it should have been	0%	0%	1%	5%	0%
Not knowledgeable enough	0%	0%	3%	4%	0%
Contactor hard to reach/poor follow-up	4%	0%	0%	0%	0%
Unprofessional/dishonest	1%	0%	1%	2%	0%
Other	4%	18%	30%	16%	10%
Don't know	5%	0%	1%	0%	5%

Moreover, respondents who installed gas furnaces and windows were asked if they would recommend their contractors to others. Even with the frequent complaints about windows contractors, over 80 percent of participants in both categories said that they would.

Respondents were asked how satisfied they were with the quality and completeness of the information provided by their contractors about energy saving opportunities. As shown in Table 18, over 60 percent of respondents were either extremely or moderately satisfied with their contractors. These ratings are slightly lower than the overall satisfaction scores. Again, the lowest satisfaction scores were in the windows and insulation measure categories.

Table 18: Satisfaction with Information Provided by Contractor

Response	Insulation Percent (N=172)	Duct Sealing Percent (N=68)	Heat Pump Percent (N=186)	Gas Furnace (with ECM blower) Percent (N=125)	Windows Percent (N=44)
5 Extremely satisfied	52%	66%	60%	50%	45%
4	17%	21%	22%	27%	21%
3	16%	6%	12%	11%	12%
2	4%	2%	1%	3%	5%
1 Extremely dissatisfied	1%	0%	4%	2%	12%
Not applicable	6%	6%	1%	4%	2%
Don't know	4%	0%	0%	2%	2%
Average	4.20	4.39	4.34	4.27	3.88

Home Energy Review Participants

An additional question battery was given to the 513 HES respondents who received a Home Energy Review (HER). These HER participants were asked about how they first heard about Energy Trust programs or incentives. HER respondents most commonly learned of Energy Trust opportunities through an electric utility bill insert (23 percent), a gas utility bill insert (18 percent), and word-of-mouth (17 percent).

As shown in Table 19, HER participants were also asked why they requested a Home Energy Review. The top responses included saving energy (27 percent), saving money on energy bills (27 percent), and improving the comfort of their homes (13 percent).

56 percent of respondents also said that as a result of participating in a HER, the likelihood that they will participate in the HES program is greater, while 33 percent said the likelihood of participating in HES is the same as before they took the HER audit.

Table 19: Primary Reason Participants Requested a HER

Reason	Percent (N=503)
Save energy	27%
Save money on energy bills	27%
Improve comfort of house (temperature)	13%
Curiosity/General Information	8%
Find out about available incentives	7%
Remodeling/upgrading/replacing windows and furnace	5%
Want to improve home efficiency	4%
Reduce environmental impact/carbon footprint	3%
Peace of mind	3%
Get free CFL's	1%
Global warming/climate change	<1%
Condensation in the attic	<1%
Don't know	1%

Furthermore, the participant survey determined if participants took any action to increase the energy efficiency of their homes as a result of their HERs. As shown in Table 20, as a result of their HERs, the majority (71 percent) of HER respondents completed conservation actions, and 35 percent purchased new equipment for their homes. About half (46 percent) of those who purchased equipment received an Energy Trust cash incentive. Energy Trust may want to consider developing an estimate of savings from actions not rebated by the program.

Table 21 shows the different conservation actions respondents adopted as a result of the HER. About half of the respondents said they installed more CFLs.

Moreover, Table 22 shows the equipment purchased by HER participants as a result of their audits. Windows (27 percent), gas furnaces (21 percent), and insulation (21 percent) were the most frequently installed HES measures. These results also show that the HERs successfully facilitate some cross-marketing for appliances (Energy Trust Efficient Products program): 11 percent of respondents installed a clothes washer, seven percent installed a refrigerator, six percent installed a dishwasher, and five percent installed a clothes dryer.

Table 20: Home Energy Review Participants Post-Audit Actions

Response	Conservation actions as a result of HER? Percent (N=513)	Install new equipment as a result of HER? Percent (N=513)	Receive Energy Trust cash incentive for purchase? Percent (N=177)
Yes	71%	35%	46%
No	27%	64%	50%
Don't know	3%	2%	4%

Table 21: Conservation Actions Taken as a Result of the HER

Action Taken	Percent of those reporting that they took action (N=200)
Installed more CFLs	51%
Turned down/up thermostat	28%
Turn off lights more often	21%
Participated in the HES program	15%
Got a duct test	12%
Purchased setback thermostat	11%
Insulation	8%
Duct sealed/insulated	5%
Windows general	2%
Replaced windows	1%
Heat pump	<1%
Replaced doors	<1%
Other	18%
Don't know	5%

Multiple responses accepted

Table 22: Equipment Purchased as a Result of HER

Equipment Purchased	Percent (N=166)
Windows	27%
Gas furnace	21%
Insulation	21%
Heat pump	11%
Clothes washer	11%
CFLs	10%
Water heater	9%
Refrigerator	7%
Duct sealing	6%
Duct insulation	6%
Dishwasher	6%
New doors	5%
Thermostat	5%
Dryer	5%
Duct testing	3%
Solar PV or Hot Water	2%
Other	1%
Don't know	1%

Multiple responses accepted

Table 23 shows that HER participants were "very satisfied" with most aspects of the HER process. Satisfaction was rated on a scale of 1 to 5, where 5 is very satisfied. In particular, respondents were most satisfied with their CSG Energy Advisors' courtesy (4.86 average satisfaction score) and promptness (4.76). Less than four percent of respondents gave a rating of 1 or 2 in any category. The lowest satisfaction scores were assigned to Energy Trust's role as a provider of information about saving energy and Energy Trust programs. 70 percent of HER respondents said they plan on participating in an Energy Trust program again in the future.

Table 23: Participant Satisfaction with HER Program

Satisfaction with…	5 Very Satisfied	4	3	2	1 Very Unsatisfied	Not Applicable (No Contact/ Paperwork)	Don't Know	Average Satisfaction
Scheduling process (N=513)	62%	27%	7%	1%	0%	1%	2%	4.56
Promptness of the Energy Auditor (N=513)	78%	16%	3%	<1%	0%	0%	3%	4.76
Length of time required for HER Audit (N=513)	69%	23%	5%	1%	0%	0%	2%	4.64
Quality and completeness of recommendations provided at the completion of the Audit (N=511)	67%	23%	7%	2%	1%	<1%	0%	4.54
Knowledge of reviewer (N=512)	68%	22%	6%	1%	1%	<1%	1%	4.60
Reviewer's courtesy (N=513)	88%	11%	1%	<1%	<1%	<1%	<1%	4.86
Information provided on how to find more information on saving energy (N=513)	48%	30%	11%	2%	1%	2%	6%	4.29
Quality and completeness of information provided on how to participate in Energy Trust Programs (N=513)	52%	29%	12%	2%	1%	1%	3%	4.32

Demographics

This section presents demographic data about the HES respondents sampled in this participant survey and compares select characteristics to available statewide data. 99 percent of our sample respondents lived in single-family detached homes and one percent lived in manufactured homes. All of them owned their own homes (rather than rented) and had lived in their current residences since 2006.

Table 24 shows that the age of respondents' homes is widely distributed. Less than 10 percent of the homes have been built since 1990. Those who received a HER tend to own slightly older homes than those who did not receive a HER audit (labeled Rebate-Only), although the spread of home age is fairly similar between both groups. The home age of participants who purchased a

gas furnace with an ECM Blower through the HES program tends to be a bit older than the general Rebate-Only population.

Table 25 shows the results of the Oregon Census Survey conducted in 2000 among all owner-occupied housing units in Oregon (single family detached and attached, multi-family, mobile home, and other). 63 percent of the units in the census were single-family detached homes. Overall, HES participants tend to have slightly older homes than Oregonians represented in the 2000 census results. However, these tables are not directly comparable, as the census figures represent a broader definition of housing types.

Table 24: Year Home was Built

Year range	Rebate-Only Percent (N=445)	HER Percent (N=513)	Total Percent (N=958)	Purchased Gas Furnace with ECM Blower Percent (N=83)
Since 2000	1%	0%	<1%	0%
In the 1990s	11%	6%	9%	10%
In the 1980s	17%	10%	13%	18%
In the 1970s	35%	26%	30%	20%
In the 1960s	12%	15%	13%	14%
1940 to 1959	12%	21%	16%	17%
Before 1940	11%	22%	17%	20%
Don't know	0%	<1%	2%	0%

Table 25: Oregon Census (2000) - Year Structure was Built

Year range	Percent (N=1,452,709 Housing Units)
1999 to March 2000	3%
1990 to 1998	19%
1980 to 1989	12%
1970 to 1979	23%
1960 to 1969	12%
1940 to 1959	17%
Before 1940	13%

Table 46 shows the square footage distributions of respondents' households, which is similar among Rebate-Only and HER respondents. The most frequent size (at 31 percent of respondents) was 1,501 to 2,000 square feet. The results of the 2002 American Housing Survey mirror this

trend, as most frequently (27 percent), Oregonians in the Portland Metro Area had homes between 1,500 and 1,999 square feet (see Table 27). The census data do not include information on square footage, and so a statewide comparison cannot be conducted.

Table 26: Square Footage of Homes

Square Footage	Rebate-Only Percent (N=444)	HER Percent (N=513)	Total Percent (N=957)
Less than 500 sq ft	1%	<1%	1%
500 to 1,000 sq ft	5%	7%	6%
1,001 to 1,500 sq ft	22%	27%	24%
1,501 to 2,000 sq ft	32%	33%	31%
2,001 to 2,500 sq ft	20%	17%	18%
2,501 to 3,000 sq ft	13%	9%	11%
More than 3,000 sq ft	7%	6%	6%
Don't know	<1%	<1%	2%

Table 27: American Housing Survey (2002) – Portland Metro Area Square Feet of Single Family and Manufactured/Mobile Homes

Year range	Percent (N=469,200 Owner Occupied Units)
Less than 500 sq ft	1%
500 to 999 sq ft	7%
1,001 to 1,499 sq ft	24%
1,500 to 1,999 sq ft	27%
2,000 to 2,499 sq ft	19%
2,500 to 2,900 sq ft	10%
3,000+ sq ft	11%
Not reported	2%

Table 28 shows the household size of participants surveyed. 51 percent of respondents live in two-person households and 16 percent of respondents live in four-person households.

Table 28: People in Household Year-Round

Response	Rebate-Only Percent (N=443)	HER Percent (N=512)	Total Percent (N=955)
1	11%	18%	15%
2	53%	48%	51%
3	15%	13%	14%
4	16%	16%	16%
5+	4%	5%	5%
Don't know	0%	<1%	<1%

Based on their household size, respondents were asked how they compared with the "low annual income" and the "near low annual income" for that household size (before taxes) in Oregon. For example, the low annual income for a household size of one person is $19,110 and the near low annual income is $25,480. The income figures are from the Eugene Water and Electric Board website, pulled in August 2007. Table 48 shows that 78 percent of non-participants surveyed have an annual income that is near the low annual income level or higher.

Table 29: Annual Income Comparison with Low Income for Household Size

Response	Percent (N=828)
Less than low annual income	6%
Between low annual income to near low annual income	12%
Near low annual income or more	78%
Don't know	4%

Table 30 shows that one-quarter of respondents remodeled their homes or made renovation repairs since January 2006. Of the 43 respondents who increased the size of their homes, they increased their square footage by an average of 582 square feet (Only two respondents decreased the size of their homes and 191 of those who remodeled made no change to the size of their homes).

Table 30: Remodeling/Renovations Since January 2006?

Response	Rebate-Only Percent (N=445)	HER Percent (N=513)	Total Percent (N=958)
Yes	24%	25%	25%
No	76%	75%	75%
Average Increase in Sq. Ft.	587	576	582

Conclusions

The following are key findings from the participant survey.

- **Most respondents heard of Energy Trust and its incentive programs through their electric utilities (27 percent), gas utilities (19 percent), or contractors (14 percent).** The most effective communication channels include bill inserts, websites, and newspapers. Among respondents, windows and envelope insulation are the most well-known cash incentive opportunities.

- **The Energy Trust List of Qualified Contractors is a primary source for finding contractors to install insulation and seal ducts for HES cash incentives**. Almost half of the respondents who installed insulation located their contractors through the List of Qualified Contractors and 32 percent of respondents who sealed their ducts used the list. For heat pumps, gas furnaces, and windows, respondents most frequently found their contractors through the Yellow Pages or from recommendations by friends and family.

- **The HES cash incentives and contractor suggestions are both influential on respondent purchase decisions.**

    - **The cash incentive was "very influential" on roughly one-third of respondent high efficiency purchase decisions.** For insulation, duct sealing, gas furnaces, and windows, about 30 to 40 percent of respondents said that the cash incentive was very influential on their purchase decisions. The exception is heat pumps, for which only 16 percent of respondents rated the cash incentives as very influential. Between 68 and 79 percent of respondents, depending on the measure category, said that the cash incentive was at least somewhat influential on their purchase decisions.

    - **The contractor's suggestions were "very influential" on about 30 to 50 percent of respondents' high efficiency purchase decisions (depending on measure category).** Contractors were most frequently very influential on duct sealing (53 percent). Between 55 and 78 percent of respondents thought that their contractors were at least "somewhat influential" on their decisions to install the high efficiency measure.

- **Satisfaction with Energy Trust staff is very high.** Overall, about 60 percent of respondents were very satisfied with the Energy Trust staff, and about 80 percent were at least moderately satisfied. Less than four percent of respondents were moderately or very unsatisfied across all categories.

- **Satisfaction with HES contractors is high.** Over 70 percent of respondents within each measure category were extremely or moderately satisfied with their contractors overall. Similarly, over 60 percent of respondents were either extremely or moderately satisfied with the quality and completeness of the information provided by their contractors about energy saving opportunities. However, only 23 to 48 percent of respondents (depending on measure category) reported that their contractor recommended other energy saving measures for their homes.

- **35 percent of Home Energy Review participants installed new equipment as a result of their audits.** HER participants most frequently purchased windows (27 percent), gas furnaces (21 percent), and insulation (21 percent) as a result of their audits. Almost half of participants received Energy Trust cash incentives for their purchases.

- **Satisfaction with the HER process is high.** 70 to 90 percent of respondents were very satisfied with various aspects of the HER process. Less than three percent of respondents were moderately or very unsatisfied across all categories. The lowest scores are for the information provided on saving energy.

Recommendations

The following are recommendations based on the findings from the participant data.

- **Ramp up efforts to encourage contractors to deliver other information about saving energy and Energy Trust program offerings while on-site.** Most respondents are very happy with the Energy Trust staff and HES contractors, and thus represent a captive audience for further energy efficiency recommendations. According to the respondents, only some contractors recommended other energy saving measures to their HES clients. Contractors can increase their collective business and energy savings allocated to the Energy Trust if they more frequently integrate other energy efficiency recommendations into their normal home visits.

- **Further investigate what other information HER participants would like to receive during or after their audits.** Currently, HER participants receive a checklist of energy saving opportunities, which also notes the maximum Energy Trust cash incentives for each measure and if there is a state tax credit available for each measure. The paperwork also lists the next steps to find a qualified HES contractor to install the measures, the Trade Ally List of Contractors, and brochures explaining the Home Performance with ENERGY STAR. However, respondents indicated that they were the least satisfied with the information provided on how to find more information on saving energy. While they are on-site, contractors could ask if there is additional specific information that customers want. In the future, contractors could be trained to provide this information directly or

they might distribute redesigned or additional program materials that more clearly identify other information sources.

NON-PARTICIPANT SURVEY RESULTS

The non-participant phone survey was fielded by the Itron call center October 2007 through December 2008, and surveyed 2,003 Oregonians in single-family homes who had not participated in the Home Energy Solutions program.[14] Contact information for the non-participant sample was purchased from InfoUSA (19,618 names). The following analysis addresses non-participant program awareness, barriers to participation, and demographics.

The sample distribution of key HES measures that non-participants had installed since January 2006 is as follows.

- Gas Furnace (N=75)
- Windows (N=285)
- Heat Pump (N=65)
- Insulation (N=208)
- CFLs (N=1,233)

General Knowledge About Energy Efficiency

Table 31 shows a self-report of how respondents rated their knowledge of how to save energy in their homes on a scale from 1 to 5, where 5 is extremely knowledgeable. Only 11 percent of respondents said that they were extremely knowledgeable, while the most frequent response was a middle rating of 3 (42 percent).

Table 31: Knowledge of Ways to Save Energy in Home

Response	Percent (N=2000)
5 Extremely knowledgeable	11%
4	26%
3	42%
2	16%
1 Not at all knowledgeable	4%
Don't know	<1%

[14] The nonparticipant survey sample was chosen from a random sample of zip codes in Oregon. This sampling method resulted in a final nonparticipant survey sample that was almost entirely from Western Oregon, with only a few respondents from Eastern Oregon.

Respondents were also asked where they would go to seek information about energy efficiency. Table 32 shows that, most frequently, non-participants would conduct Internet searches (35 percent), call their utilities (20 percent), or call a retailer (13 percent).

Table 32: Sources for Information About Energy Efficiency

Source	Percent (N=1992)
Other website Internet search	35%
Call Utility	20%
Call a Retailer	13%
Utility website	12%
ETO website	6%
Read Product Labels	3%
Read Consumer Reports	2%
Call a Friend	2%
Call ETO (Energy Trust of Oregon)	2%
Call a Contractor	1%
Wouldn't research/not interested	1%
Contact Manufacturer	1%
Library	1%
Media (television, newspaper, radio, magazine)	1%
Ask a relative	1%
Visit a retail store	<1%
Phone Book	<1%
Other	5%
Don’t know	12%

Multiple responses accepted

Program Awareness

A primary goal of the non-participant survey was to determine the level of awareness and sources of awareness about the Energy Trust and other regional energy efficiency entities. Respondents were asked if they had heard about each of the following: the Energy Trust of Oregon, the Energy Trust Home Energy Savings program, the Energy Trust Home Energy Review program, the Oregon Residential Energy Tax Credits for energy efficient measures, and the ENERGY STAR brand. Table 33 and Table 34 show that 45 percent of respondents were familiar with the Energy Trust of Oregon, and that awareness is higher in Northern Oregon than in Southern Oregon.

Furthermore, 31 percent of respondents were aware of the Home Energy Savings program and 42 percent were aware of the Home Energy Review program (respondents were read a brief description of these two programs).

The majority of respondents (71 percent) were aware of Oregon tax credits, primarily through a retail sales representative (17 percent), a utility (14 percent), or a tax form (13 percent). In addition, 58 percent of respondents were aware of the ENERGY STAR brand. Awareness of the ENERGY STAR brand is stronger in the northern region (61 percent aware) than the southern region (49 percent aware).

Table 33: Awareness – Comparison Across Programs

Aware?	Energy Trust of Oregon (N=2,003)	ETO Home Energy Savings Program (N=1,935)	ETO Home Energy Review Program (N=1,981)	Oregon Tax Credit (N=2,002)	ENERGY STAR Brand (N=2,001)
Yes	45%	31%	42%	71%	58%
No	52%	64%	57%	28%	40%
Don't know	3%	5%	2	2%	2%

Table 34: Awareness – Energy Trust of Oregon by Geographical Region

Aware?	Northern Oregon (N=1,509)	Southern Oregon (N=485)	Eastern Oregon (N=9)	Total (N=2,003)
Yes	49%	31%	22%	45%
No	48%	66%	78%	52%
Don't know	3%	3%	0%	3%

Table 35 shows that of the respondents who had heard of ENERGY STAR, 22 percent of this group was "very familiar" with the ENERGY STAR label.

Table 35: Level of Familiarity with the ENERGY STAR Label

Response	Percent (N=1154)
5 Very familiar	22%
4	29%
3	28%
2	13%
1 Not at all familiar	6%
Don't know	<1%

Furthermore, 86 percent of respondents who were familiar with the brand said that the ENERGY STAR brand is influential in their purchasing decisions. These respondents were asked to rate the level of influence of the brand. As shown in Table 36, 98 percent said that the brand was somewhat or very influential in their buying decisions.

Table 36: Influence of ENERGY STAR Brand in Buying Decision

Response	Percent (N=998)
Very	56%
Somewhat	42%
Not at all influential	1%
Don't know	1%

As shown in Table 37, respondents had heard of the Energy Trust of Oregon or its programs from a variety of sources. However, the most commonly mentioned sources include electric utility bill inserts (19 percent), newspaper articles (16 percent), and television (13 percent).

Respondents were also asked how they would go about find more information on programs offered by the Energy Trust of Oregon. The most frequent responses included an Internet search (34 percent), calling their utility (17 percent), accessing their utility's website (12 percent), or visiting the Energy Trust of Oregon website (12 percent).

Table 37: Where did you learn about Energy Trust programs/incentives?

Source	Percent (N=891)
Electric utility bill insert	19%
Newspaper article	16%
Television	13%
Gas utility bill insert	8%
Work	5%
Newspaper advertisement	4%
Radio	4%
Electric utility website	3%
Retailer/salesperson	3%
Friends/Family	3%
Web Search	3%
An event	2%
Magazine	2%
Contractor	1%
Gas utility website	1%
Brochure/Flier	1%
Other	11%
Don't know	20%

Multiple responses accepted

Only three percent of respondents who were familiar with the Energy Trust of Oregon had ever called the ETO information line to inquire about residential programs. Table 34 shows how these respondents rated their satisfaction with the phone service with regard to the quality and completeness of information provided on how to participate in Energy Trust programs. About half were extremely satisfied, while 20 percent gave low rankings of 1 or 2. The survey instrument did not probe further to ask about the reasons for their dissatisfaction.

Table 38: Satisfaction with Information from ETO Information Line

Response	Percent (N=35)
5 Extremely satisfied	46%
4	17%
3	3%
2	14%
1 Extremely dissatisfied	6%
Don't know	14%

Respondents who had heard of the Energy Trust of Oregon were also asked about what they knew about the organization. Table 39 shows that about half (52 percent) of this group did not know what the ETO does, which indicates that these respondents do not have actionable information. 11 percent of respondents said that the Energy Trust offered energy efficiency programs for residential customers and 10 percent said that it offered cash incentives for installing energy efficient measures.

Table 39: What have you heard about the Energy Trust of Oregon?

Response	Percent (N=874)
Don't know what they do – just heard the name	52%
Offers cash incentives for installing energy efficient measures	11%
Offers energy efficiency programs for residential customers	10%
Offers incentive/promotes other renewable programs (wind/biopower/etc)	8%
Provides (AUDITS) Home Energy analysis/assessment & recommendations	3%
Offers incentive/promotes SOLAR electric (PV)	2%
Provides CFLs	1%
Educates public about energy efficiency	1%
Other	11%
Don't know	7%

Multiple responses accepted

Respondents who had heard of the Home Energy Savings or ETO cash incentive program were also asked what measures they thought the ETO offered cash incentives for. As shown in Table 40, the most commonly mentioned eligible HES measures included windows, gas furnaces, water heaters, and wall insulation. Some respondents named appliances that are not a part of the HES program. 18 percent of this subgroup of respondents said that they knew the eligibility requirements for the cash incentives they named. Most frequently, respondents heard of the

financial incentives from a utility bill insert (24 percent), word of mouth (13 percent), or from a salesperson (11 percent).

The right hand column of the table also lists respondent awareness of the cash incentives by measure for the Oregon Residential Energy Tax Credit.

Table 40: Awareness of Cash Incentive Offerings: ETO Versus Oregon Tax Credit

Response	ETO Cash Incentives (N=664)	Oregon Tax Credit (N=1,415)
Windows	13%	5%
Gas furnace	13%	12%
Water heaters	13%	10%
Energy efficient appliances (washers, dryers, fridges, stoves, dishwashers)	13%	30%
Insulation: Wall	8%	1% - all types of envelope insulation
Insulation: Floor	6%	
Insulation: Ceiling	5%	
Heat pump	7%	7%
Duct insulation	5%	6%
Solar hot water (thermal)	2%	--
Solar electric (PV)	2%	2%
Air sealing	1%	--
Direct vent gas heater	1%	--
Duct sealing	1%	1%
Don't know specific measure names	46%	45%
Other	12%	10%

Multiple responses accepted

As shown in Table 41, 12 percent of respondents said that they plan to participate in an Energy Trust of Oregon program within one year.

Table 41: Will Participate in an Energy Trust of Oregon Program within 1 Year?

Response	Percent (N=1,998)
Yes	12%
No	68%
Don't know	19%

Participation Barriers

A primary goal of the Home Energy Solutions program is to promote the installation of more energy efficient measures. Table 42 shows that half of the respondents cited the higher initial cost of energy efficient equipment as a barrier to purchase and installation. Other frequently mentioned barriers included long payback periods (33 percent), incentives for energy efficiency being too low (22 percent), and uncertainty about the technology's performance (21 percent). Concerns about product availability and finding reliable installers/contractors were more frequently cited among respondents in Southern Oregon than in Northern Oregon.

Table 42: Barriers to Installing Energy Efficient Products

Response	Northern Oregon (N=1,509)	Southern Oregon (N=485)	Eastern Oregon (N=9)	Total Percent (N=2,003)
Higher prices for energy efficient products/services	50%	53%	67%	51%
Too long of a payback	33%	34%	22%	34%
Incentives for energy efficiency are too low	21%	26%	33%	22%
Uncertainty about performance/technology	20%	25%	22%	21%
Difficulty finding reliable installers/contractors	14%	22%	22%	16%
Concern about reliability	14%	19%	11%	15%
Lack of availability at stores	12%	20%	11%	14%
Belief that warranties for energy efficient products/services are inadequate	10%	16%	22%	11%
Current products still work, no need to replace	2%	1%	0%	2%
Other	2%	1%	0%	2%
None of these	22%	18%	22%	21%
Don't know	3%	3%	0%	3%

Multiple responses accepted

Table 43 shows that about 60 percent of the respondents had installed 11,056 total CFLs since January 2006. 17 percent of these CFLs were purchased during the Energy Trust of Oregon's 99-Cent spring or fall promotions (PECI Change a Light program).

Table 43: CFLs Purchased during 99-Cent Promotions

Total CFLs installed since January 2006 (N=1,231)	Bought during 99-Cent promotion	Percent of Total
11,056	1,869	17%

Respondents who had installed CFLs since January 2006 were asked what factors kept them from replacing *all* of their lights with CFLs. As shown in Table 44, frequently mentioned barriers were that CFLs do not fit in the fixtures (34 percent), they are specialty bulbs (26 percent), or that the CFL quality of light was not desirable (23 percent).

Alternatively, respondents who had not installed CFLs since January 2006—37 percent of respondents—were asked "why." 21 percent of this group said they did not need a bulb, 18 percent do not like CFLs, and 12 percent did not know what CFLs are. Over half of the respondents who do not like CFLs referenced the poor light quality and 18 percent said CFLs were expensive.

Table 44: Barriers to Installing CFLs

Response	Percent (N=823)
CFL's don't fit	34%
They are specialty bulbs	26%
Quality of light	23%
Cost	17%
Dimmable switches	13%
Three way light	9%
Other	8%
Don't know	5%

Multiple responses accepted

Demographics

In general, the respondents owned their homes (100 percent), lived in single-family detached homes (93 percent), and had lived at their current residence since January 2006 (100 percent). The remaining seven percent of non-participants lived in manufactured homes (six percent) or townhomes/condos (two percent).

Table 45 compares the age of the homes between non-participants and participants. Participants tend to live in slightly older homes than non-participants in our sample. About 30 percent of non-participants live in newer homes—built since 1990—and only nine percent of participants live in a home built since 1990. Moreover, 33 percent of participants live in homes built before 1960, while 25 percent of non-participants live in a home built before 1960. The non-participant

sample distribution is similar to the Oregon 2000 Census survey results (detailed in Table 25 in participant survey results section).

Table 45: Year Home was Built

	Non-Participants Percent (N=2,002)	Participants Percent (N=958)
Since 2000	12%	<1%
In the 1990s	19%	9%
In the 1980s	13%	13%
In the 1970s	24%	30%
In the 1960s	7%	13%
In the 1940 to 1959	15%	16%
Before 1940	10%	17%
Don't know	1%	2%

Furthermore, as shown in Table 46, about 50 percent of non-participants surveyed live in a home that is between 1,000 and 2,000 square feet, which is comparable to the 55 percent of participants who live in homes between 1,000 and 2,000 sq ft.[15] One difference between the two sample groups is that 11 percent of non-participants live in a home that is larger than 3,000 square feet, which is almost double the six percent of participants who live in homes that are over 3,000 square feet. The non-participant results are similar to those in the 2002 American Housing Survey for the Portland Metro area (See Table 27).

[15] Participant results also presented previously in Table 26.

Table 46: Square footage of Homes

	Non-Participants Percent (N=2001)	Participants Percent (N=957)
Less than 500 sq ft	0%	1%
Between 500 and 1,000 sq ft	4%	6%
Between 1,000 and 1,500 sq ft	21%	24%
Between 1,500 and 2,000 sq ft	29%	31%
Between 2,000 and 2,500 sq ft	21%	18%
Between 2,500 and 3,000 sq ft	11%	11%
More than 3,000 sq ft	11%	6%
Don't know	2%	2%

Table 47 shows that most non-participants live in two-person households.

Table 47: People in Household Year-Round

Response	Percent (N=1999)
1	14%
2	44%
3	15%
4	17%
5+	10%

Based on their household size, non-participants were asked how they compared with the "low annual income" and the "near low annual income" for that household size (before taxes). The same analysis was conducted with participant survey in the previous section and the participant results are presented alongside the non-participant ones for comparison. Table 48 shows that a higher share of non-participants (26 percent) are in the two lower-income categories, than participants (18 percent).

Table 48: Annual Income Comparison with Low Income for Household Size

Response	Non-Participants Percent (N=1797)	Participants Percent (N=828)
Less than low annual income	12%	6%
Between low annual income to near low annual income	14%	12%
Near low annual income or more	70%	78%
Don't know	4%	4%

About 23 percent of non-participants have remodeled their homes or made renovation repairs since January 2006 (see Table 49). On average, the 64 respondents who increased their home size added 510 square feet, and only one respondent decreased the size of his/her home. These results are comparable to the participant survey data.

Table 49: Remodeling/Renovations Since January 2006?

Response	Non-Participants Percent (N=2002)	Participants Percent (N=958)
Yes	23%	25%
No	77%	75%
Average Increase in Sq. Ft.	510	582

Table 50 shows the sample's breakdown by electric and gas utility territory. 63 percent of respondents receive natural gas service at their homes (see Table 51), 81 percent through Northwest Natural Gas and 18 percent through AVISTA. Portland General Electric provides electric service to 66 percent of respondents and PacifiCorp serves the remaining 34 percent. 75 percent of the respondents are located in northern Oregon, 24 percent live in southern Oregon, and less than one percent reside in eastern Oregon.

Table 50: Energy Utility by Region

	Northern Oregon	Southern Oregon	Eastern Oregon	Total
Gas Utility	**N=1,017**	**N=236**	**N=0**	**N=1,253**
Northwest Natural Gas	98%	4%	--	81%
AVISTA	0%	93%	--	18%
Cascade Natural Gas	1%	0%	--	1%
Electric Utility	**N=1,509**	**N=485**	**N=9**	**N=2,003**
Portland General Electric	85%	6%	22%[16]	66%
PacifiCorp	14%	93%	67%	34%
EWEB	0%	0%	11%[17]	0%

Table 51: Natural Gas Service?

Response	Total (N=2003)
Yes	63%
No	37%
Don't know	<1%

Table 52 shows that about half of non-participants surveyed have heating systems that are less than 10 years old and 24 percent have heating systems that are less than five years old.

[16] These two respondents are from Sisters, Oregon, zip code 97759. PG&E does not serve Eastern Oregon, so these two respondents may have incorrectly reported their electric utilities.

[17] This respondent is from Sisters, Oregon, zip code 97759. EWEB does not serve Eastern Oregon, so this respondent may have incorrectly reported his/her electric utility.

Table 52: How Old is Your Heating System?

Response	Total Percent (N=2002)
Less than 5 years old	24%
5 to 9 years old	23%
10 to 14 years old	21%
15 to 19 years old	10%
20+ years	21%
Don't Know	1%

Respondents who received gas service at their homes and who had not purchased heating equipment for their homes since January 2006 were asked what type of heating fuel they used (gas or electric). As shown in Table 52, 91 percent of respondents use gas heating.

Table 53: Gas or Electric Heating?

Response	Total Percent (N=1168)
Gas	91%
Electric	5%
Other	1%
Don't know	<1%

Furthermore, respondents who did not receive gas service at their homes or did not use gas heating were asked what they use for their primary heating system. Table 54 shows that most commonly these respondents have heat pumps (28 percent), fireplace/wood heater/wood stoves (17 percent), or electric furnaces (16 percent).

Table 54: Primary Heating System

Response	Total Percent (N=813)
Heat pump	28%
Fireplace/Wood heater/Wood stove	17%
Electric furnace	16%
Oil furnace	11%
Space heating - electric	7%
Gas	4%
Electric strip heat	4%
Baseboard heater	4%
Forced air heater	2%
Other	2%
Don't know	2%
None	3%

Respondents who had not installed an air conditioner or evaporative cooler since January 2006 and who did not have a heat pump were asked if they had an air conditioner. Table 55 and Table 56 show that 46 percent of this subgroup of respondents had an air conditioner, and of this group, 55 percent had air conditioners that were less than 10 years old.

Table 55: Have an Air Conditioner?

Response	Total Percent (N=1670)
Yes	46%
No	38%
Don't know	<1%

Table 56: How Old is Your Air Conditioner?

Response	Total Percent (N=1263)
Less than 5 years old	30%
5 to 9 years old	25%
10 to 14 years old	21%
15 to 19 years old	8%
20+ years	7%
Don't Know	8%

Table 57 shows that most respondents have ceiling (86 percent) and wall (78 percent) insulation. About half have duct and/or floor insulation. Almost none of the non-participants in this sample have pipe, roof, or water heater insulation.

Table 57: Types of Insulation in Your Home

Response	Total Percent (N=2002)
Ceiling Insulation	86%
Wall Insulation	78%
Duct Insulation	54%
Floor Insulation	54%
Pipe Insulation	1%
Roof Insulation	<1%
Water Heater Insulation	<1%
Other	1%
Don't know	6%
None	2%

Multiple responses accepted

Table 58 shows that 80 percent of respondents have dual pane windows and only 16 percent have single pane windows. Table 59 shows that the age of windows is evenly distributed throughout the response categories, with roughly 25 percent in each category.

Table 58: Windows Single Pane or Double Pane

Response	Total Percent (N=2002)
Dual pane	80%
Single pane	16%
Both	1%
Triple Pane	1%
Storm	1%
Other	<1%
Don't know	1%

Table 59: Age of Windows

Response	Total Percent (N=1989)
Less than 5 years old	28%
Between 5 and 10 years old	25%
Between 10 and 20 years old	24%
More than 20 years old	23%
Don't know	1%

Conclusions

The following conclusions are drawn from the non-participant survey.

- **There is a relatively high level of awareness about Energy Trust and its incentive programs, but there is room for growth.** Almost half of all non-participants surveyed are aware of Energy Trust or its programs, but about half of this group did not know what the Energy Trust does. More respondents were familiar with the Oregon tax credit for energy efficient measures (71 percent) and the ENERGY STAR brand name (51 percent), than they were with Energy Trust.

- **Non-participants became aware of Energy Trust programs or incentives from a variety of sources.** Most frequently, respondents learned of Energy Trust through electric utility bill inserts (19 percent). Notably, only eight percent of respondents learned of the Energy Trust through their gas utility bill inserts. Sixteen percent found out about the organization through newspaper articles.

- **Non-participants are most aware of Energy Trust cash incentives for windows, gas furnaces, water heaters, and wall insulation.** 31 percent of non-participants surveyed have heard of Energy Trust's cash incentive program. However, only 18 percent of this group said that they were aware of the eligibility requirements for the cash incentives.

- **The primary barriers for installing energy efficiency measures for non-participants are cost-related.** About half of non-participants cited higher prices for energy efficient products/services as primary barriers. The second most common response was that the payback periods are too long (34 percent).

Recommendations

The following recommendations are drawn from the non-participant data.

- **Include a link to the Energy Trust HES program on the Oregon Department of Energy "Residential Energy Tax Credit" website.** There is a high level of awareness of the Oregon tax credit among non-participants, but respondents still most frequently cite the higher costs of energy efficient products/services as a barrier to adoption. Therefore, increasing the visibility of the Energy Trust HES program through modes connected to the Oregon tax credit may increase awareness and participation in the HES program. Currently, the Oregon tax credit website includes links to other energy efficiency programs, including: utility incentives, the ENERGY STAR website, the State Home Oil Weatherization program, and federal incentives. Energy Trust may want to consider working with the Oregon Department of Energy to add an additional link on the tax credit website that launches web-surfers to the HES program website, which would increase the visibility of the HES program. Notably, Energy Trust already advertises for Oregon tax credits on its HES website.

- **Work with the electric and gas utilities to increase advertising for Energy Trust cash incentives on their websites.** Only three percent of non-participants learned of the Energy Trust or its incentives from their utility websites. Non-participants in this sample receive electricity from PGE, Pacific Power, and EWEB, and purchase gas from NW Natural, AVISTA, and Cascade Natural Gas. While four of these six utilities link directly to the Energy Trust website, neither AVISTA nor EWEB advertises for Energy Trust/HES or links to the Energy Trust website.[18] PGE advertises only HES cash incentives for heat pumps. Increasing the visibility of the HES program on these websites is a low-cost manner of channeling utility customers to the Energy Trust program.

[18] Utility websites scanned in March 2008

3.2 Environmental Awareness and Decision-Making, A Comparison of Participant and Non-Participant Results

A similar battery of questions was used in the participant and non-participant survey to identify any key differences in lifestyle influences, major sources of information, and primary issues of concern between these two groups. These results show that while participants place a greater value on energy/environmental issues, both groups depend on the same types of influences on their lifestyle and on their purchasing decisions.

Table 60 lists what customers listed as the major influences on their decisions about their lifestyles. Both groups named environmental changes, family, friends, current events, and faith as top influences.

Table 60: Major Influences on Your Decisions About Lifestyle

	Participants (N=955)	Non-Participants (N=1991)
Environmental changes	56%	41%
Children/Family	46%	47%
Friends/Neighbors	38%	29%
Current Events	34%	23%
Political views	25%	17%
Faith	23%	27%
Media	22%	20%
Money/Finances	12%	5%
Self/ Personal Beliefs & Standards	11%	4%
Economy	8%	0%
Public figures	7%	6%
Age/Health	0%	1%
Other	1%	2%
None of these are barriers	5%	10%
Don't know	2%	3%

Multiple responses accepted

Table 61 shows what respondents said are their primary sources of information. Again, both participant and non-participant groups point to the same key channels, including newspaper, television, websites, radio, and friends.

Table 61: Primary Sources of Information

	Participants (N=956)	Non-Participants (N=1999)
Newspaper	56%	60%
Television	53%	67%
Websites	48%	47%
Radio	35%	33%
Friends	34%	38%
Magazines	26%	18%
Personal research	3%	0%
Blogs	2%	1%
Word of mouth	2%	0%
Technical/Research literature	2%	0%
Friends/family	2%	1%
Personal observation	1%	0%
Newsletters	1%	0%
Retailers	1%	<1%
Advertising	1%	<1%
Energy conferences/Trade shows	1%	<1%
Email	0%	0%
Direct mailing	0%	1%
Books	0%	1%
Media	0%	<1%
Don't know	1%	<1%

Multiple responses accepted (up to 3)

Table 73 shows what or whom respondents consult before they make a major purchase. Both participants and non-participants most frequently seek advice from friends and family, perform web searches, check consumer reports, and talk with retailers.

Table 62: What/Whom Do You Consult Before Major Purchase?

	Participants (N=950)	Non-Participants (N=1990)
Friends/family	57%	57%
Web research	50%	41%
Consumer reports	44%	34%
Retailer/Salesperson	23%	24%
Magazines	16%	13%
Personal research	6%	0%
Blogs	5%	3%
Myself	5%	4%
Contractor	3%	0%
Newspaper Advertisements	0%	1%
Bank account	0%	1%
Other	<1%	0%
Don't know	2%	2%
None	2%	2%

Table 63 and Table 64 show how respondents rated energy and other environmental issues on importance on a scale of 1-5, where 5 is very important. As expected, participants generally found all of these issues more important than non-participants. However, both groups gave greatest weight to health effects. Participants and non-participants gave the lowest rankings to global warming.

Table 63: Importance of Issues to You - Participants

(N=957)	5 (Very important)	4	3	2	1 (Not at all important)	Don't know
Health effects	64%	24%	8%	2%	1%	1%
Controlling your energy costs	58%	32%	9%	2%	1%	<1%
Pollution	60%	26%	9%	3%	1%	<1%
Wise use of land	56%	25%	12%	4%	2%	1%
Reducing dependence on fossil fuels	55%	27%	12%	5%	2%	1%
Global warming	52%	21%	13%	5%	8%	1%

Table 64: Importance of Issues to You – Non-Participants

(N=2003)	5 (Very important)	4	3	2	1 (Not at all important)	Don't know
Health effects	55%	25%	13%	3%	2%	1%
Controlling your energy costs	52%	29%	15%	3%	1%	0%
Pollution	49%	27%	16%	5%	3%	0%
Wise use of land	47%	24%	17%	5%	4%	2%
Reducing dependence on fossil fuels	41%	25%	21%	6%	5%	2%
Global warming	36%	17%	19%	10%	16%	1%

Similarly, as shown in Table 65, non-participants considered cost to be slightly more important in their decisions when choosing or not choosing environmentally friendly products or services than participants. Between 20 and 30 percent of respondents from each group said that cost is a primary factor.

Table 65: Importance of Cost in Purchase Decision

	Participants (N=958)	Non-Participants (N=1996)
5 Cost is a primary factor	23%	29%
4	26%	23%
3	34%	28%
2	11%	9%
1 Cost is not a factor at all	6%	8%
Don't know	1%	2%

Similarly, Table 66 shows that a higher share of non-participants (51 percent) view the cost of energy efficient products and services as a primary barrier to purchase than participants (38 percent).

Table 66: Barriers to Installing or Using Energy Efficient Products or Services

Response	Participants Percent (N=953)	Non-Participants Percent (N=2,003)
Higher prices for EE products/services	38%	51%
Too long of a payback	33%	34%
Uncertainty about performance/technology	20%	21%
Incentives for EE are too low	19%	22%
Difficulty finding reliable installers/contractors	19%	16%
Concern about reliability	17%	15%
Lack of availability at stores	16%	14%
Cost	12%	0%
Belief that warranties for EE products/services are inadequate	11%	11%
Current products still work, no need to replace	0%	2%
Other	<1%	2%
Don't know	3%	3%
None are barriers	22%	21%

Furthermore, both groups were asked which term they would be most likely to use when referring to energy from the wind or sun. A shown in Table 67, participants and non-participants most commonly use the phrasing "renewable energy." Non-participants also frequently associated this power with "natural energy."

Table 67: Terms Used to Refer to Energy from Wind/Sun

	Participants (N=946)	Non-Participants (N=1986)
Renewable energy	35%	30%
Natural energy	17%	30%
Green energy	16%	10%
Clean energy	15%	14%
Alternative energy	9%	9%
Don't know	8%	7%

Table 68 shows that a higher share of participants (31 percent) purchases Green Power (wind power, fish friendly, etc.) than non-participants (11 percent).

Table 68: Purchase Green Power Through Utility

	Participants (N=958)	Non-Participants (N=2003)
Yes	31%	11%
No	64%	84%
Don't know	5%	5%

3.3 VENDOR SURVEY RESULTS

The vendor phone surveys were fielded by the Itron call center from November 2007 to January 2008. Three separate groups of vendors were identified and interviewed: active HES program participants, non-active HES program participants (had completed five or less HES jobs in 2005 and 2006), and non-participants. Due to their nearly identical structure and content, the active and non-active vendor survey results are presented jointly.

The survey sample of active vendors represents 18 percent of vendors active in the HES program and covers six percent of the measures installed and 20 percent of the total HES incentives paid during the 2005-2006 period.

The non-participant survey questions are a subset of the active and non-active vendor survey instrument, and therefore are displayed when relevant. This section also includes data from the Energy Trust's 2007 Trade Ally Survey, which was a survey fielded to HES residential contractors (N=60) by the Energy Trust from March to April 2007.

Vendor Profile

98 active vendors, 50 non-active vendors, and 30 non-participant vendors were interviewed. These contractors had experience installing such energy efficient equipment as insulation (duct and envelope), windows, furnaces, heat pumps, and windows.

Respondents from the active survey described themselves predominantly as being either the proprietor/CEO (54 percent) or a manager (22 percent) of their companies. In the non-active sample, these numbers are 76 percent and 12 percent, respectively. Non-participant vendors were also most frequently proprietors/CEOs (30 percent) or managers (53 percent).

Furthermore, most interviewed vendors said they were familiar with Oregon Department of Energy's tax credit for installing energy efficient measures—82 percent of active vendors, 68 percent of non-active vendors, and 67 percent of non-participant vendors. Table 69 shows that 63 percent of active vendors *always* provide their customers with information about the Oregon tax credit, when applicable.

Table 69: Inform Customers About Oregon Tax Credit When Applicable?

Response	Active (N=80)	Non-Active (N=34)	Non-Participants (N=20)
Always	63%	53%	30%
Often	15%	18%	25%
Sometimes	14%	24%	30%
Never	9%	6%	15%

In addition to the HES rebate and the Oregon tax credit, high efficiency gas furnaces are eligible for a Northwest Natural Gas utility incentive. Table 70 shows that about half of respondents who sell gas furnaces participate in the Northwest Natural Gas furnace incentive program.

Table 70: Participate in Northwest Natural Gas Furnace Incentive Program?

Response	Active (N=59)	Non-Active (N=16)	Non-Participants (N=13)
Yes	53%	50%	46%
No	46%	50%	54%
Don't know	2%	0%	0%

The following two tables display some of the firmographic characteristics of each group of vendors. Table 71 shows what vendors identified as the primary equipment or service that they provided that generated HES incentives. Nearly half of the active vendors identified gas furnaces as their primary source of HES incentives, while almost half of non-active vendors identified windows as their main incentive earners. Non-participants were also asked what primary equipment or service their business provided, and over half mainly installed windows.

A similar question from the Energy Trust Trade Ally Survey asked what primary measure vendors installed through Energy Trust residential programs (and thus not specific to the HES program). Half of respondents said they most frequently install gas furnaces and the second most frequently mentioned measure was windows (12 percent).

Table 71: Primary Service or Equipment Provided that Receive HES Incentives

Equipment/Service	Active (N=98)	Non-Active (N=50)	Non-Participant (N=30)
Gas furnaces	49%	26%	20%
Heat pumps	13%	10%	20%
Insulation (envelope)	11%	10%	3%
Duct sealing and duct insulation	1%	2%	0%
Windows	24%	48%	53%
Other	2%	2%	0%
Don't know	0%	2%	3%

Table 72 shows the percentage of revenues each respondent company earned from jobs in Oregon in which he/she were participating in Energy Trust programs. Active vendors have a more dispersed distribution of revenues than non-active vendors, but in both surveys, respondents most frequently earned one to 24 percent of their company revenues from Energy Trust jobs.

In the Energy Trust Trade Ally Survey, the data tell the same story, as almost half (47 percent) of these vendors were in the one to 24 percent category, 28 percent were in 25 to 49 percent category, and 12 percent of respondents were in each of the two remaining quartiles.

Table 72: Percentage of Company Revenues from Energy Trust Jobs

Response	Active (N=98)	Non-Active (N=50)
0 percent	5%	12%
1 to 24 percent	55%	76%
25 to 49 percent	16%	6%
50 to 74 percent	14%	4%
75 to 100 percent	7%	2%
Don't know	2%	0%

When respondents were asked how long they had been working with Energy Trust, the distribution of responses was similar between both groups of vendors (as shown in Table 73). Few contractors had been working for less than a year. According to one Energy Trust staffer, the previous program implementer (Ecos Consulting) did not emphasize contractor recruitment, and thus the low share of newer contractors is expected. 74 percent of active vendors have worked with the Energy Trust for more than two years, compared to 60 percent of non-active vendors. Moreover, 38 percent of active vendors have worked with Energy Trust for more than five years, compared to 22 percent of non-active vendors.

Respondents from the Energy Trust Trade Ally Survey were also asked about their tenure with Energy Trust. 63 percent said that they had been an ally for more than two years, 31 percent had been with the organization for one to two years, and only six percent had been with the Energy Trust for less than one year.

Table 73: Time Working with Energy Trust of Oregon

Response	Active (N=98)	Non-Active (N=50)
Less than 6 months	0%	4%
6 to 12 months	3%	6%
1 to 2 years	17%	24%
3 to 5 years	36%	38%
More than 5 years	38%	22%
Don't know	6%	6%

Table 74 shows that most (63 percent) active vendors expect that the proportion of Energy Trust projects they will do in the next year will stay the same, 35 percent anticipate an increase, and only two percent think it will decrease. About half of the non-active vendors who responded said that they expect to increase the proportion of Energy Trust projects over the next year.

Table 74: Anticipated Energy Trust Projects Over the Next Year

Response	Active N=65	Non-Active N=19
Expect to increase proportion of projects	35%	47%
Expect to decrease proportion of projects	2%	5%
Don't expect a change in proportion	63%	42%
Don't Know	0%	5%

Table 75 shows that a low percentage of vendors (or their staff) had participated in the Trade Ally Training offered by Energy Trust in the last year. Active vendors were twice as likely to have participated in training (28 percent) as non-active vendors (14 percent).

Notably, structured contractor training classes were not a primary focus in the 2005-2006 HES era. Instead, HES staffers worked individually with the largest contractors to ensure adherence to standardized specifications for each measure.

Table 75: Participation in Energy Trust Trade Ally Training in Past Year

Response	Active (N=98)	Non-Active (N=50)
Yes	28%	14%
No	66%	84%
Don't Know	6%	2%

Table 76 through Table 81 list the percent of total jobs active and non-active vendors report that received HES rebates over the past year, by measure.[19] Sample sizes for non-active vendors are small, so it is difficult to make any strong conclusions. However, as expected, active vendors generally sell more jobs with HES rebates than non-active vendors.

Table 76: Percent of Envelope Insulation Jobs with HES Rebates (In Past Year)

% of Total Sales	Active (N=10)	Non-Active (N=7)
None	0%	0%
1-25 Percent	10%	43%
26-50 Percent	0%	0%
51-75 Percent	40%	28%
76-100 Percent	50%	29%

[19] Percentages were calculated by dividing the number of reported jobs that received HES rebates over the past year by the total number of reported jobs in the past year, by measure. A few vendor responses were inconsistent, as some vendors reported a higher number of HES rebate jobs than total number of jobs for the year. These inconsistent results were removed from the sample.

Table 77: Percent of Duct Insulation Jobs with HES Rebates (In Past Year)

% of Total Sales	Active (N=9)	Non-Active (N=7)
None	22%	40%
1-25 Percent	0%	20%
26-50 Percent	0%	0%
51-75 Percent	11%	0%
76-100 Percent	67%	40%

Table 78: Percent of Duct Sealing Jobs with HES Rebates (In Past Year)

% of Total Sales	Active (N=7)	Non-Active (N=4)
None	0%	0%
1-25 Percent	0%	25%
26-50 Percent	14%	25%
51-75 Percent	29%	25%
76-100 Percent	52%	25%

Table 79: Percent of Windows Jobs with HES Rebates (In Past Year)

% of Total Sales	Active (N=18)	Non-Active (N=19)
None	0%	17%
1-25 Percent	44%	61%
26-50 Percent	18%	11%
51-75 Percent	18%	0%
76-100 Percent	23%	6%

Table 80: Percent of Gas Furnace Jobs with HES Rebates (In Past Year)

% of Total Sales	Active (N=41)	Non-Active (N=13)
None	2%	8%
1-25 Percent	27%	40%
26-50 Percent	17%	0%
51-75 Percent	20%	16%
76-100 Percent	34%	38%

Table 81: Percent of Heat Pump Jobs with HES Rebates (In Past Year)

% of Total Sales	Active (N=22)	Non-Active (N=6)
None	14%	33%
1-25 Percent	23%	17%
26-50 Percent	32%	0%
51-75 Percent	14%	33%
76-100 Percent	18%	17%

Vendor Marketing

Vendors report that the most common ways that their HES customers find them is through word-of-mouth (44 percent of active and 56 percent of non-active vendors) and advertisements (15 percent of active and 20 percent of non-active vendors). Only four percent of both groups named the Energy Trust List of Allied Contractors.

Table 82: Most Common Way HES Customers Find You

Response	Active (N=98)	Non-Active (N=50)
Word of mouth	44%	56%
Advertising (media/yellow pages/etc)	15%	20%
ETO Website	9%	0%
Internet	5%	0%
ETO list of Trade Ally Contractors	4%	4%
Other contractors	4%	2%
Northwest Natural Gas	3%	0%
In House sales staff	2%	0%
ETO	2%	2%
Utility, unspecified	2%	0%
Community assoc/trade assoc/homeowners	2%	2%
Service calls	2%	0%
Brochures/fliers	1%	4%
Equipment manufacturer	0%	4%
Contractor's website	0%	2%
Architects	0%	2%
Don't know	2%	2%

Respondents were asked how many of their customers were already aware of the HES rebate when they first began discussing their project with them. As shown in Table 83, 36 percent of active vendors and 38 percent of non-active vendors said that most of their customers were already aware of the rebate.

Table 83: Customers Already Aware of HES Rebate

Response	Active (N=98)	Non-Active (N=50)
Most of your HES customers	36%	38%
Some of your HES customers	37%	22%
Only a few of your HES customers	27%	38%
Don't know	1%	2%

As shown in Table 84, 66 percent of active vendors are on the HES List of Trade Ally Contractors and 40 percent of this group said that the list has increased their sales of energy efficient equipment. An additional nine percent said that the list has *significantly* increased their

sales. However, about half have noticed no change. Thus, the List of Trade Ally Contractors has been effective in increasing the sales of energy efficient equipment for about half of respondents.

Table 84: On HES List of Trade Ally Contractors?

Response	Active (N=98)	Non-Active (N=50)
Yes	66%	38%
No	24%	46%
Don't Know	9%	16%
Impact of List on sales of energy efficient equipment		
Significant increase in sales	9%	0%
Increase in sales	40%	42%
No change	48%	58%
Don't know	3%	0%

Table 87 shows that about half of active vendors said that only a few of their HES customers found them through the List of Trade Ally Contractors. 20 percent said that most of their HES customers find them through the List.

Table 85: Effectiveness of List of Trade Ally Contractors

Response	Active (N=65)	Non-Active (N=19)
Most of your HES customers found you through the List	20%	16%
Some of your HES customers found you through the List	23%	16%
Only a few of your HES customers found you through the List	49%	68%
Don't know	8%	16%

As shown in Table 86, most respondents have not used any promotional literature or marketing materials given to them by Energy Trust. 67 percent of active vendors had not utilized any of the materials, compared to 80 percent of non-active vendors who indicated that they had not used any of the materials.

Table 86: Used Energy Trust Marketing Materials or Program Literature

Response	Active N=98	Non-Active N=50
Yes	32%	20%
No	67%	80%
Don't know	1%	0%

Table 87 shows that a low percentage of participating vendors have used the co-op marketing service, which offers funds to help pay for marketing that promotes the HES program. Only 17 percent of active vendors have used the co-op marketing and four percent of non-active vendors have used this service.

According to one Energy Trust staff member, co-op marketing was not widely promoted by the previous implementation contractor, and CSG spent much of 2005 and 2006 structuring a more accessible and robust co-op marketing effort. The staffer said that the 2005–2006 co-op marketing requirements were a hassle and entailed too much paperwork. Therefore, co-op marketing participation remained low while CSG was developing this new marketing program.

Table 87: Use Energy Trust Co-Op Marketing

Response	Active (N=98)	Non-Active (N=50)
Yes	17%	4%
No	80%	96%
Don't know	3%	0%

Furthermore, respondents were asked a series of questions regarding what effects Energy Trust Incentive Offers may have had on their company marketing activities. As shown in Table 88, 57 percent of active vendors and 52 percent of non-active vendors, promoted energy saving measures more often since the Incentive Offers became available. In addition, 71 percent of active vendors indicated that they did actively promote the Incentive Offers, compared to 50 percent of non-active vendors. Notably, a substantial proportion—about 30 percent—of active vendors reported that they are not actively promoting the HES Incentive offers.

Table 88: Company Promotions Since the Start of Energy Trust Incentive Offers

Response	Promote energy savings measures more often now?		Actively promote incentive offers as regular marketing activity?	
	Active (N=98)	Non-Active (N=50)	Active (N=97)	Non-Active (N=50)
Yes	57%	52%	71%	50%
No	41%	46%	28%	50%
Don't know	2%	2%	1%	0%

Respondents were also questioned about how effective or influential they thought the HES program (including equipment rebates, the List of Trade Ally Contractors, and program literature) was on increasing their sales of high efficiency insulation, duct sealing, and windows in single family homes. For gas furnaces and heat pumps, the survey question wording was slightly different. In addition to the influence of the HES program, respondents were asked to consider how influential the Oregon tax credit and the Northwest Natural rebate (gas furnaces only) have been on increasing their sales of high efficiency gas furnaces (AFUE of .9 or greater) and heat pumps.[20] Thus, in Table 89 and Table 90, gas furnaces and heat pumps are not directly comparable with the other measures.

As shown in Table 89, the responses from active vendors are widely distributed among measure types. At least half of respondents found the HES program somewhat or very effective on increasing business for each measure type. Interestingly, the same number of respondents who found the HES program very effective on their duct insulation sales (42 percent) also found it not at all effective. The program seems to be most effective for duct sealing sales, for which 64 percent of active vendors found it very effective, yet 27 percent still found it not at all effective for this measure. These dichotomies indicate that the program's influence differs substantially from vendor to vendor.

Table 90 shows the responses of non-active vendors. As expected, non-active vendors generally found the HES program to be less effective at increasing sales of high efficiency equipment than active vendors. One exception is gas furnaces, for which 50 percent of non-active vendors said the Incentive Offers (HES program, Oregon tax credit, and Northwest Natural rebate) have been very effective in increasing sales.

[20] For gas furnaces and heat pumps, the response categories were "very influential," "somewhat influential," or "very influential."

Table 89: Effectiveness of HES in Increasing Business – Active Vendors

Measure Type	Very Effective	Somewhat Effective	Not At All Effective	Don't Know
Envelope insulation (N=18)	33%	50%	11%	6%
Duct insulation (N=12)	42%	8%	42%	8%
Duct sealing (N=11)	64%	9%	27%	0%
Windows (N=27) [21]	26%	44%	26%	4%
Gas Furnace (N=59)	47%	44%	5%	3%
Heat Pump (N=29)	31%	52%	14%	4%

Table 90: Effectiveness of HES in Increasing Business – Non-Active Vendors

Measure Type	Very Effective	Somewhat Effective	Not At All Effective
Envelope insulation (N=8)	13%	63%	25%
Duct insulation (N=5)	0%	80%	20%
Duct sealing (N=5)	0%	60%	40%
Windows (N=27)	11%	44%	44%
Gas Furnace (N=16)	50%	44%	6%
Heat Pump (N=8)	13%	50%	38%

In addition, gas furnace vendors were asked how influential the Incentive Offers (HES program, Oregon tax credit, and Northwest Natural incentive) had been on the efficiency level of gas furnaces they offer. Table 91 shows that over 80 of active and non-active gas furnace vendors said that the Incentive Offers have been at least somewhat influential. 51 percent of active vendors said that they had been very influential.

[21] Response categories for windows, gas furnaces, and heat pumps were "very influential," "somewhat influential," and "not at all influential."

Table 91: Influence of Incentive Offers on Efficiency Level of Gas Furnaces

Response	Active (N=59)	Non-Active (N=16)
Very influential	51%	31%
Somewhat	36%	50%
Not at all influential	12%	19%
Don't know	2%	0%

Similarly, vendors who sell heat pumps were asked how the Incentive Offers (including the HES program and the Oregon tax credit) have influenced their marketing approaches. 76 percent of active vendors said that the Incentive Offers had been at least somewhat influential. However, none of the non-active vendors said that the Incentive Offers had been very influential and 63 percent said that they had been not at all influential.

Table 92: Influence of Incentive Offers on Marketing High Efficiency Heat Pumps

Response	Active (N=29)	Non-Active (N=8)
Very influential	31%	0%
Somewhat	45%	38%
Not at all influential	21%	63%
Don't know	3%	0%

In addition, Table 93 shows that 66 percent of active heat pump vendors *often* use the Incentive Offers (HES Program and Oregon tax credit) as a sales tool to encourage their customers to convert from a forced air furnace to a heat pump, compared to only 13 percent of non-active vendors who *often* use this tactic. Analogously, Table 94 shows that 38 percent of active vendors said that the Incentive Offers are "very influential" in encouraging customers to convert from a forced air furnace to a heat pump, while none of the non-active vendors thought the Incentive Offers were very influential.

Table 93: Use Incentive Offers to Encourage Conversion from Forced Air Furnace

Response	Active (N=29)	Non-Active (N=8)
Often	66%	13%
Sometimes	17%	38%
Rarely	10%	13%
Never	3%	38%
Don't know	3%	0%

Table 94: Influence of Incentive Offers on Conversion from Forced Air Furnace

Response	Active (N=29)	Non-Active (N=8)
Very	38%	0%
Somewhat	41%	63%
Not at all influential	17%	38%
Don't know	3%	0%

Marketing Challenges

Table 95 shows what the three groups of vendors (active, non-active, and non-participants) consider as the main challenges of selling insulation and duct sealing. Among all respondents, cost and physical difficulty are the most frequently mentioned challenges. Cost tends to be most problematic for selling duct sealing.

Table 95: Challenges to Selling Insulation/Duct Sealing – Active Vendors

Response	Floor Insulation (N=17)	Wall Insulation (N=18)	Ceiling Insulation (N=18)	Duct Insulation (N=12)	Duct Seal (N=11)
Physically difficult	44%	22%	6%	8%	0%
Cost	11%	6%	6%	25%	46%
Customers don't want/need it	22%	0%	6%	0%	0%
Customers feel savings are unreliable	6%	0%	0%	0%	0%
Appearance	0%	17%	0%	0%	0%
Most homes already have it	0%	0%	6%	8%	0%
Competition	0%	6%	6%	0%	0%
Savings hard to quantify	0%	0%	0%	8%	0%
Other	0%	11%	6%	17%	18%
Don’t know	11%	22%	17%	8%	0%
No challenges	17%	22%	56%	25%	46%

Multiple responses accepted

Table 96: Challenges to Selling Insulation/Duct Sealing – Non-Active Vendors

Response	Floor Insulation (N=8)	Wall Insulation (N=8)	Ceiling Insulation (N=8)	Duct Insulation (N=5)	Duct Seal (N=5)
Physically difficult	25%	38%	0%	20%	0%
Cost	38%	38%	13%	20%	40%
Customers feel savings are unreliable	13%	0%	0%	0%	20%
Appearance	0%	0%	0%	0%	0%
Savings hard to quantify	0%	13%	0%	20%	0%
Other	13%	0%	0%	0%	0%
No challenges	25%	25%	88%	40%	40%

Multiple responses accepted

Table 97: Challenges to Selling Insulation/Duct Sealing – Non-Participants

Response	Floor Insulation (N=3)	Wall Insulation (N=3)	Ceiling Insulation (N=3)	Duct Insulation (N=4)	Duct Seal (N=11)
Physically difficult	33%	0%	0%	25%	0%
Cost	0%	33%	0%	0%	36%
Don't know	0%	0%	0%	0%	9%
Other	0%	0%	0%	25%	18%
No challenges	67%	67%	100%	50%	36%

Multiple responses accepted

Marketing Multiple Measures

The HES program encourages its vendors to promote multiple HES measures to their customers. Thus, vendors were asked how often they recommend installing other products, such as windows, in conjunction with envelope insulation, duct insulation, and duct sealing.

Table 98 shows that about half of active and non-active vendors said that they *always* promote other measures along with envelope insulation. 28 percent of active vendors *often* promote other measures. However, an additional 28 percent either only *sometimes* or *never* promote other measures, which implies room for growth.

Table 98: Promoting Other Measures with Envelope Insulation?

Measure Type	Active (N=18)	Non-Active (N=8)
Always	44%	50%
Often	28%	13%
Sometimes	17%	25%
Rarely	0%	0%
Never	11%	13%

As shown in Table 99, vendors who install duct insulation and perform duct sealing were first asked if they promoted other measures at these jobs. Those who said "yes," were then asked how often they made this recommendation to their duct insulation and duct sealing customers.

About 60 percent of active and non-active vendors who install duct insulation said that they promote multiple measures and about half of this subgroup *always* makes this recommendation. Furthermore, 73 percent of active vendors who perform duct sealing through the HES program promote multiple measures at these jobs and 75 percent of this subgroup said that they *always* do.

Table 99: Promoting Other Measures with Duct Insulation & Duct Sealing?

	Duct Insulation		Duct Sealing	
Recommend other Measures?	**Active (N=12)**	**Non-Active (N=5)**	**Active (N=11)**	**Non-Active (N=5)**
Yes	58%	60%	73%	60%
No	25%	40%	18%	40%
Don't know	17%	0%	9%	0%
How often do you make this recommendation?				
Always	44%	50%	75%	33%
Often	28%	13%	13%	0%
Sometimes	17%	25%	13%	67%
Rarely	0%	0%	0%	0%
Never	11%	13%	0%	0%

Notably, window rebates are only available in conjunction with other HES measures. Table 70 shows what other products vendors typically recommend to their customers so that the client can qualify for a HES windows rebate. Most commonly, 66 percent of active vendors and 56 percent of non-active vendors recommend insulation measures.

Table 100: Products Typically Recommended to Receive Windows Rebate

Response	**Active (N=23)**	**Non-Active (N=24)**
Insulation	83%	75%
Water heater	9%	4%
Gas Furnace	9%	17%
Heat Pump	4%	13%
Other	17%	13%
Don't know	4%	13%

Multiple responses accepted

Vendors were asked how often they recommended to their window customers that they consider installing other energy saving products so that they could receive the HES rebate and potentially other Incentive Offers. Table 101 shows that 59 percent of active vendors and 41 percent of non-active vendors often make this recommendation.

Table 101: Recommend Other Incentive Offers to Windows Customers?

Response	Active (N=27)	Non-Active (N=27)
Often	59%	41%
Sometimes	19%	26%
Rarely	7%	22%
Never	15%	11%

Of those vendors who made this recommendation, vendors were also asked what percent of their windows customers they thought chose to install additional products primarily to take advantage of the Energy Trust Incentive Offers. As shown in Table 102, the responses for active and non-active vendors are spread widely throughout the response categories.

Table 102: Windows Customers who Installed Additional Products Due to Incentive Offers

% of Total Sales	Active (N=23)	Non-Active (N=24)
None	0%	17%
1-25 Percent	22%	25%
26-50 Percent	26%	17%
51-75 Percent	9%	13%
76-100 Percent	30%	13%
Don't know	13%	17%

Moreover, gas furnace vendors were asked if they recommended to any of their gas furnace customers that they install other products qualifying for Incentive Offers (including the HES rebates and Oregon tax credits) in order to take advantage of additional rebates and save energy. Table 103 shows that most active vendors (81 percent) and non-active vendors (75 percent) do this. As shown in Table 104, vendors were asked how often their customers went ahead and installed additional products to take advantage of greater Incentive Offers. Approximately 40 percent of both groups of vendors said that their customers *often* install additional products for this reason.

Table 103: Recommended Other Incentive Offers to Gas Furnace Customers

Response	Active (N=59)	Non-Active (N=16)
Yes	81%	75%
No	19%	25%

Table 104: How Often Do Customers Take This Advice?

Response	Active (N=48)	Non-Active (N=12)
Often	40%	42%
Sometimes	40%	50%
Rarely	21%	0%
Don't know	0%	8%

A similar question was asked of vendors who sold heat pumps. Table 105 shows that about half of active vendors said that they *often* recommend other products eligible for Incentive Offers to their heat pump customers, compared to 25 percent of non-active vendors. Table 106 shows that 42 percent of active vendors said that their customers often take this advice and install additional products for this reason, compared to 13 percent of non-active vendors.

Table 105: Recommend Other Incentive Offers to Heat Pump Customers?

Response	Active (N=29)	Non-Active (N=8)
Often	45%	25%
Sometimes	24%	25%
Rarely	14%	13%
Never	10%	38%
Don't know	7%	0%

Table 106: How Often Do Customers Take This Advice?

Response	Active (N=24)	Non-Active (N=5)
Often	42%	13%
Sometimes	33%	38%
Rarely	21%	13%
Never	0%	38%
Don't know	4%	0%

Market Analysis

The market analysis section of the survey probed market trends among high efficiency windows, gas furnaces, and heat pumps. Important indicators include changes in the cost and availability of high efficiency equipment and the level of demand for various high efficiency options.

Windows

Table 107 through Table 109 show the distribution of the efficiency levels of windows sold (as a percentage of total sales) in the past year by surveyed vendors. About 40 percent of active and non-active vendors sold windows with a U Value of 0.36 or greater, which is less than the 65 percent of non-participants who sold windows of that type. For one-third of active vendors, over 75 percent of windows sold in the past year had a U Value of 0.30 or less.

Table 107: U Values of Windows Sold in Past Year: 0.36 or Greater

% of Total Sales	Active (N=29)	Non-Active (N=8)	Non-Participant (N=17)
None	60%	63%	35%
1-25 Percent	7%	7%	24%
26-50 Percent	0%	7%	6%
51-75 Percent	0%	0%	0%
76-100 Percent	11%	11%	18%
Don't know	22%	11%	18%

Table 108: U Values of Windows Sold in Past Year: 0.31-0.35

% of Total Sales	Active (N=29)	Non-Active (N=8)	Non-Participant (N=17)
None	33%	15%	24%
1-25 Percent	15%	11%	6%
26-50 Percent	7%	11%	6%
51-75 Percent	11%	7%	12%
76-100 Percent	15%	37%	35%
Don't know	19%	19%	18%

Table 109: U Values of Windows Sold in Past Year: 0.30 or Less

% of Total Sales	Active (N=29)	Non-Active (N=8)	Non-Participant (N=17)
None	22%	37%	48%
1-25 Percent	7%	22%	12%
26-50 Percent	11%	7%	12%
51-75 Percent	11%	0%	6%
76-100 Percent	33%	15%	6%
Don't know	15%	19%	18%

About half of active vendors said that windows with U Values of 0.30 or less are easily available, 22 percent said that some models are available, and 19 percent said that they are difficult to find (see Table 110). 33 percent of non-active and 24 percent of non-participant vendors said that the windows were easily available.

Table 110: Availability of Windows U Value of 0.30 or Less

% of Total Sales	Active (N=27)	Non-Active (N=27)	Non-Participant (N=17)
Not available	0%	4%	0%
Difficult to get	19%	15%	24%
Some models available	22%	30%	24%
Easily available	48%	33%	24%
Don't know	11%	19%	29%

Table 111 shows that about half of vendors typically market windows with a U Value between 0.31 and 0.35 to their customers. 41 percent of active vendors and 27 percent of non-active vendors typically market U Values of 0.30 or less. Only 12 percent of non-participants normally promote that level of efficiency.

Table 111: Efficiency Level You Typically Market to Customers

Response	Active (N=27)	Non-Active (N=26)	Non-Participant (N=17)
0.36 U value or more	11%	12%	18%
0.31-0.35 U value	41%	50%	53%
0.30 U value or less	41%	27%	12%
Whatever meets code-replace to code	0%	8%	0%
Don't know	7%	4%	18%

Gas Furnaces

For gas furnaces, vendors were asked about the incremental costs of high efficiency gas furnaces, compared to standard efficiency models. As shown in Table 112, most vendors said that the cost differential was over $750. In addition, Table 113 shows that the majority of active and non-active vendors thought that the prices for gas furnaces (AFUE .90 or higher) had increased by more than 10 percent over the last year. None of the respondents said the prices went down.

Vendor responses for the extra cost of an ECM Blower were more distributed (see Table 114). Most commonly, active and non-active vendors thought the option required an additional $200 to $500.

Table 112: Cost Differential Between Standard and Efficient Furnaces

Response	Active (N=58)	Non-Active (N=16)	Non-Participants (N=13)
Less than $200	0%	0%	8%
$200-$500	12%	0%	15%
$501 - $750	10%	13%	8%
$751-$1,000	26%	31%	23%
Over $1,000	38%	50%	31%
Other	5%	0%	8%
Don't know	9%	6%	8%

Table 113: Change in Prices for Gas Furnaces Over Past Year (AFUE .90 or Higher)

Response	Active (N=59)	Non-Active (N=16)	Non-Participants (N=13)
They have gone up by more than 10 percent	61%	63%	54%
They have not changed by 10 percent over the past year	37%	31%	46%
Don't know	2%	6%	0%

Table 114: Extra Cost of Adding an ECM Blower

Response	Active (N=58)	Non-Active (N=16)	Non-Participants (N=13)
Less than $200	2%	6%	23%
$200-$500	38%	56%	30%
$501 - $750	14%	19%	0%
$751-$1,000	14%	6%	31%
Over $1,000	9%	0%	8%
Other	5%	6%	8%
Don't know	0%	6%	0%

In addition, respondents were asked about the availability of gas furnaces with AFUE .95. As shown in Table 115, over half of all vendor groups said that this efficiency grade was easily available. Less than 10 percent of each of the vendor groups said that the efficiency grade was not available or difficult to find.

Table 115: Availability of Gas Furnaces with AFUE Rating of .95

Response	Active (N=58)	Non-Active (N=16)	Non-Participants (N=13)
Not available	2%	0%	0%
Difficult to find	3%	0%	8%
Available in some models	36%	38%	23%
Easily available	56%	62%	69%
Don't know	3%	0%	0%

Table 116 through Table 118 show the distribution of gas furnaces sold in the last year by each vendor group, in terms of the level of efficiency. From lowest to highest efficiency, efficiency levels are 80-89%, 90-94%, and 95+%. For 44 percent of active vendors, between 1 and 25 percent of gas furnaces sold were 80 to 89 percent efficient. For 41 percent of active vendors, over 75 percent of gas furnaces sold were 90 to 94 percent efficient. For 56 percent of active vendors, between 1 and 25 percent of gas furnaces sold were 95 percent or more efficient. Non-participants sold primarily the middle range of efficiency: For 62 percent of non-participants, over 75 percent of furnaces sold were 90 to 94 percent efficient.

Table 116: Percent of Gas Furnaces Sales in Last Year: 80-89% Efficient

% of Total Sales	Active (N=59)	Non-Active (N=16)	Non-Participants (N=13)
None	12%	25%	38%
1-25 Percent	44%	31%	46%
26-50 Percent	22%	25%	0%
51-75 Percent	14%	13%	15%
76-100 Percent	5%	6%	0%
Don't Know	3%	0%	0%

Table 117: Percent of Gas Furnaces Sales in Last Year: 90-94% Efficient

% of Total Sales	Active (N=59)	Non-Active (N=16)	Non-Participants (N=13)
None	8%	13%	0%
1-25 Percent	14%	13%	8%
26-50 Percent	12%	19%	23%
51-75 Percent	24%	19%	8%
76-100 Percent	41%	38%	62%
Don't Know	2%	0%	0%

Table 118: Percent of Gas Furnaces Sales in Last Year: 95% of More Efficient

% of Total Sales	Active (N=59)	Non-Active (N=16)	Non-Participants (N=13)
None	32%	25%	39%
1-25 Percent	56%	56%	46%
26-50 Percent	2%	6%	15%
51-75 Percent	3%	6%	0%
76-100 Percent	3%	6%	0%
Don't Know	3%	0%	0%

Respondents were also asked about sales of other efficiency features available for gas furnaces, including ECM blowers, air cleaners, installs with central air conditioning, and programmable thermostats. Almost all vendors sold gas furnaces with ECM Blowers. As shown in Table 119, over 75 percent of gas furnaces sold in the past year had ECM blowers for about 38 percent of each vendor group. Installations of gas furnaces with air cleaners were less common. Most frequently, between 1 and 25 percent of gas furnaces sold had air cleaners for all vendor groups (see Table 120). Moreover, Table 121 shows that between 26 and 50 percent of gas furnace installs in the past year had central air conditioning for over 40 percent of active and non-active vendors. As shown in Table 122, gas furnaces with programmable thermostats were the most common of all of these features. Over 75 percent of gas furnaces installed had programmable thermostats for about 70 percent of all three vendor groups.

Table 119: Percent of Gas Furnaces Sales in Last Year with ECM Blower

% of Total Sales	Active (N=59)	Non-Active (N=16)	Non-Participants (N=13)
None	5%	6%	0%
1-25 Percent	24%	13%	8%
26-50 Percent	15%	31%	31%
51-75 Percent	17%	6%	23%
76-100 Percent	37%	38%	38%
Don't Know	2%	6%	0%

Table 120: Percent of Gas Furnace Installations in Last Year with Air Cleaner

% of Total Sales	Active (N=59)	Non-Active (N=16)	Non-Participants (N=13)
None	5%	6%	0%
1-25 Percent	36%	50%	62%
26-50 Percent	24%	6%	15%
51-75 Percent	14%	6%	8%
76-100 Percent	22%	31%	15%

Table 121: Percent of Gas Furnace Installations in Last Year with Central AC

% of Total Sales	Active (N=59)	Non-Active (N=16)	Non-Participants (N=13)
None	3%	6%	8%
1-25 Percent	19%	0%	0%
26-50 Percent	42%	44%	31%
51-75 Percent	17%	19%	8%
76-100 Percent	19%	31%	54%

Table 122: Percent of Gas Furnace Installations with Programmable Thermostats

% of Total Sales	Active (N=59)	Non-Active (N=16)	Non-Participants (N=13)
None	2%	6%	0%
1-25 Percent	2%	6%	0%
26-50 Percent	7%	13%	15%
51-75 Percent	12%	0%	15%
76-100 Percent	78%	75%	69%

Table 123 shows that 32 percent of active vendors said that air cleaners are always bundled with ECMs, and 24 percent said that they are bundled most of the time.

Table 123: How Often are Systems with Air Cleaners Bundled with ECMs?

Response	Active (N=59)	Non-Active (N=16)	Non-Participants (N=13)
Always	32%	25%	23%
Most of the time	24%	25%	31%
Some of the time	17%	31%	23%
A few times	8%	0%	8%
Depends	8%	6%	15%
Never	2%	13%	0%
Don't know	8%	0%	0%

As shown in Table 124, most vendors typically market gas furnaces to customers that are 90 percent efficient or higher.

Table 124: Efficiency of Standard Gas Furnace Marketed to Customers

Response	Active (N=58)	Non-Active (N=16)	Non-Participants (N=13)
80 to 89 percent efficiency	12%	19%	15%
90 percent or higher	78%	63%	69%
Varies	10%	19%	15%

Heat Pumps

As with gas furnaces, vendors were asked about the extra cost of energy efficient heat pumps (HSPF 8.5), versus a standard model (HSPF 7.8). Table 125 shows that active vendors gave a variety of responses. The most common response (28 percent of respondents) said that energy efficient heat pumps were over $600 more than standard models. 69 percent of non-participants also thought that the cost differential was over $600. Most frequently (50 percent), non-active vendors estimated that the cost differential was a bit lower, between $401 and $500.

Over 60 percent of vendors in all three groups said that the price for high efficiency heat pumps had increased by more than 10 percent over the past year (see Table 126).

Table 125: Cost Differential for Energy Efficient Heat Pumps HSPF 7.8 vs. 8.5

Response	Active (N=29)	Non-Active (N=8)	Non-Participants (N=17)
$100-200	3%	0%	0%
$201-$300	0%	13%	0%
$301-$400	17%	0%	0%
$401-$500	24%	50%	0%
$501-$600	14%	13%	0%
Over $600	28%	25%	69%
Don't know	14%	0%	31%

Table 126: Change in Prices for Heat Pumps (HSPF 8.5 or Higher) Over Past Year

Response	Active (N=29)	Non-Active (N=8)	Non-Participants (N=13)
They have gone up by more than 10 percent	72%	63%	62%
They have not changed by 10 percent over the past year	21%	38%	31%
Don't know	7%	0%	8%

Table 127 through Table 131 show the energy efficiency levels of heat pumps sold by surveyed vendors over the past year, in terms of percentage of total heat pump sales. The wide spread of the data indicate that most vendors sell a variety of heat pump options. About half of active vendors did not sell any heat pumps of an efficiency grade of 9.5 or better.

Table 127: Energy Efficiency Level of Heat Pump Sales: HSPF 8.1

% of Total Sales	Active (N=29)	Non-Active (N=8)	Non-Participants (N=13)
None	31%	50%	38%
1-25 Percent	31%	25%	23%
26-50 Percent	17%	13%	31%
51-75 Percent	0%	13%	0%
76-100 Percent	3%	0%	0%
Don't know	17%	0%	8%

Table 128: Energy Efficiency Level of Heat Pump Sales: HSPF 8.2-8.4

% of Total Sales	Active (N=29)	Non-Active (N=8)	Non-Participants (N=13)
None	21%	38%	15%
1-25 Percent	52%	38%	39%
26-50 Percent	10%	13%	23%
51-75 Percent	3%	0%	15%
76-100 Percent	0%	13%	0%
Don't know	14%	0%	8%

Table 129: Energy Efficiency Level of Heat Pump Sales: HSPF 8.5-8.9

% of Total Sales	Active (N=29)	Non-Active (N=8)	Non-Participants (N=13)
None	7%	13%	8%
1-25 Percent	24%	50%	31%
26-50 Percent	28%	13%	38%
51-75 Percent	10%	0%	8%
76-100 Percent	17%	25%	8%
Don't know	14%	0%	8%

Table 130: Energy Efficiency Level of Heat Pump Sales: HSPF 9.0-9.4

% of Total Sales	Active (N=29)	Non-Active (N=8)	Non-Participants (N=13)
None	28%	38%	8%
1-25 Percent	38%	38%	69%
26-50 Percent	17%	13%	8%
51-75 Percent	3%	0%	0%
76-100 Percent	0%	13%	8%
Don't know	14%	0%	8%

Table 131: Energy Efficiency Level of Heat Pump Sales: HSPF 9.5 or Better

% of Total Sales	Active (N=29)	Non-Active (N=8)	Non-Participants (N=13)
None	48%	88%	77%
1-25 Percent	34%	13%	15%
26-50 Percent	3%	0%	0%
51-75 Percent	0%	0%	0%
76-100 Percent	0%	0%	0%
Don't know	14%	0%	8%

As shown in Table 132, while responses are fairly dispersed, vendors most frequently market the middle grade heat pump efficiencies to customers.

Table 132: HSPF Typically Marketed to Customers

Response	Active (N=29)	Non-Active (N=8)	Non-Participants (N=12)
HSPF code to 8.1	7%	38%	0%
HSPF 8.2-8.4	21%	13%	33%
HSPF 8.5-8.9	38%	38%	42%
HSPF 9.0-9.4	24%	13%	8%
HSPF 9.5 or better	3%	0%	0%
Don't know	7%	0%	17%

The following three tables list the sales patterns for other characteristics of heat pumps. Table 133 shows the distribution of heat pump installations over the past year that were conversions

from forced air furnaces, which is fairly evenly spread among the categories. Table 134, which shows the percent of heat pump installs with commissioning, shows a similar pattern. Alternatively, Table 135 shows that heat pump installs with programmable thermostats are a market standard, as this type of installs accounts for over 75 percent of sales for over 80 percent of all vendor groups.

Table 133: Percent of Heat Pump Installs - Conversions from Forced Air Furnaces

% of Total Sales	Active (N=29)	Non-Active (N=8)	Non-Participants (N=13)
None	7%	13%	23%
1-25 Percent	21%	50%	31%
26-50 Percent	34%	13%	23%
51-75 Percent	7%	13%	0%
76-100 Percent	21%	13%	15%
Don't know	10%	0%	8%

Table 134: Percent of Heat Pump Installs with Commissioning

% of Total Sales	Active (N=29)	Non-Active (N=8)	Non-Participants (N=13)
None	17%	50%	31%
1-25 Percent	17%	25%	39%
26-50 Percent	14%	0%	8%
51-75 Percent	10%	25%	0%
76-100 Percent	24%	0%	23%
Don't know	17%	0%	0%

Table 135: Percent of Heat Pump Installs with Programmable Thermostats

% of Total Sales	Active (N=29)	Non-Active (N=8)	Non-Participants (N=13)
None	0%	0%	0%
1-25 Percent	0%	0%	0%
26-50 Percent	10%	13%	0%
51-75 Percent	7%	0%	15%
76-100 Percent	83%	88%	85%

Table 136 lists the reasons vendors gave for not using commissioning. Most frequently, respondents said that it was too expensive or that it too took much time. Respondents gave the following "other" reasons for not using commissioning:

- "I imagine they are talking about the CheckMe program. I don't trust it. Companies should be certified and qualified to do their own diagnostics."
- "We do testing according manufacturer recommendations, i.e., Carrier and Coleman. Too expensive to do it— CheckMe is not done in our county—equipment too costly and program is joke—you spend more money than you get back. NW Natural gas program is easy but Check Me isn't worth it."
- "Weather. If its below a certain temperature then you can't do it accurately. Above 66 degrees for CheckMe."
- "Training of our staff."
- "No rebates."
- "Only at certain times that they can't get the airflow in mfg homes."
- "The brand that they carry has its own program."
- "Doesn't qualify for any rebate or program."
- "If it's just an outdoor unit that doesn't change air flow then we don't do it."

Table 136: Reasons for Not Using Commissioning

Response	Active (N=29)	Non-Active (N=8)	Non-Participants (N=13)
Too expensive	21%	25%	39%
Takes too much time	17%	13%	15%
No customer demand	17%	0%	8%
Do not need commissioning, standard diagnostics adequate	14%	0%	15%
Commissioning performed 100 percent of the time	10%	0%	8%
Do not trust results	3%	13%	0%
Necessary equipment is too expensive	3%	0%	8%
Other	7%	50%	23%
Don't know	38%	13%	15%

Multiple responses accepted

Influence of HES on Customer Purchases

Envelope Insulation, Duct Insulation, and Duct Sealing

Vendors were also asked a series of questions to determine their perceptions of the HES program and other incentives on their customers' efficiency choices. For customers that received HES rebates for envelope insulation, duct insulation, or duct sealing, Table 137 shows vendors' perceptions of how influential the rebates were on customer decisions to adopt the energy efficient measures. Most responses, for both active and non-active vendors, indicated at least some level of program influence on installation decisions for insulation and duct sealing. Only eight out of 56 total vendors (14 percent) said that they thought that most of their customers were "not at all influenced" by the HES program. However, it is difficult to identify trends in responses between active and inactive vendors and equipment types, because of the small sample sizes of both groups.

Notably, these numbers are comparable to the self-report of surveyed participants in Table 12. 33 percent of customers self-reported that the cash influence was very influential on their decisions to install insulation and a higher share—53 percent—of participants said that the cash incentive was very influential on their decision to seal their ducts.

Table 137: Influence of HES program on Installation Decisions

Response	Envelope Insulation		Duct Insulation		Duct Seal	
	Active (N=18)	Non-Active (N=8)	Active (N=12)	Non-Active (N=5)	Active (N=10)	Non-Active (N=5)
Most customers were VERY INFLUENCED by the program	39%	38%	33%	0%	80%	20%
Most were SOMEWHAT INFLUENCED	56%	63%	33%	80%	0%	40%
Most were NOT AT ALL INFLUENCED by the program	6%	0%	25%	20%	10%	40%
Don't Know	0%	0%	8%	0%	10%	0%

Furthermore, vendors were asked if most of their customers who received a HES rebate would have still installed insulation and duct sealing measures had the rebate not been available. Table 138 shows that in general, active vendors had a wide range of responses. Between 20 and 44 percent (depending on measure type) of active vendors thought that most of their customers would have installed the same measures anyway. These numbers are 40 to 60 percent for non-active vendors. Again, it is hard to identify trends in responses between active and inactive vendors because of the small sample sizes.

Table 138: Customer Installation If Rebate Had Not Been Available

Response	Envelope Insulation		Duct Insulation		Duct Seal	
	Active (N=18)	Non-Active (N=8)	Active (N=12)	Non-Active (N=5)	Active (N=10)	Non-Active (N=5)
Most would have INSTALLED THE EXACT SAME insulation/duct sealing anyway	44%	50%	33%	40%	20%	60%
Most would have INSTALLED LESS insulation/duct sealing, or installed the same amount but in fewer areas	33%	50%	25%	40%	10%	20%
Most would have elected NOT TO INSTALL insulation/duct sealing	17%	0%	25%	20%	60%	0%
Don't know	6%	0%	17%	0%	10%	20%

Windows, Gas Furnaces, and Heat Pumps

A similar battery of questions addressed the importance of the HES cash incentives for the installation of high efficiency windows, gas furnaces, and heat pumps. However, for gas furnaces and heat pumps, these questions did not refer only to HES rebates, but were expanded to include the Oregon tax credit and other utility cash incentives. For clarity, we call this broad category Incentive Offers. The definition of these Incentive Offers varies by equipment type.

- Window Incentive Offers include: Energy Trust Equipment Rebates, the Contractor Trade Ally List, and Energy Trust program literature.
- Gas furnace Incentive Offers include: HES Rebates, the Oregon tax credit, and the Northwest Natural rebate.
- Heat pump Incentive Offers include: HES Rebates and the Oregon tax credit.

Table 139 shows that for all three types of equipment, no less than 80 percent of active vendors, and at least 70 percent of non-active vendors, believed the Incentive Offers at least somewhat influenced their customers' decisions to purchase high efficiency brands. Active and non-active vendors display a similar breakdown among various levels of influence. About one-third of vendors thought their customers were very influenced by Incentive Offers and about half thought the customers were somewhat influenced. For windows, non-active vendor responses were skewed towards little or no influence, when compared to the active vendor responses.

The perceived level of influence by the contractor is a bit lower than the self-report by surveyed customers (see Table 12). 48 percent of surveyed participants said the incentive was very influential in their decisions to buy a high efficiency heat pump, 36 percent said the incentive was very influential on their gas furnace purchases, and 41 percent said the incentive was very influential on their windows purchases. However, these results are not directly comparable, as the participant survey asked specifically about the HES incentive, while the vendor survey asked about HES rebates, the Oregon tax credit, and the Northwest Natural rebate.

Table 139: Influence of Incentive Offers on Install/Purchase Decisions

Response	High Efficiency Windows		Gas Furnace with AFUE of .90 or greater		High Efficiency Heat Pump	
	Active (N=27)	Non-active (N=27)	Active (N=59)	Non-active (N=16)	Active (N=29)	Non-active (N=8)
Most customers were VERY INFLUENCED by the Incentive Offers	33%	22%	37%	31%	28%	25%
Most were SOMEWHAT INFLUENCED by the Incentive Offers	56%	48%	54%	63%	52%	50%
Most were NOT AT ALL INFLUENCED by the Incentive Offers	11%	30%	5%	6%	17%	25%
Don't Know	0%	0%	3%	0%	3%	0%

Furthermore, HES vendors were asked what equipment (windows, gas furnace, or heat pump) their customers would have installed if the Incentive Offers were not available. Table 140 shows that between 35 and 52 percent of active vendors thought that most of their customers would install the equipment anyway. Between 48 and 100 percent of inactive vendors thought that their customers would have installed the equipment anyway.

Table 140: Customer Installation If Incentive Offers Had Not Been Available

Response	Windows		Gas Furnace		Heat Pump	
	Active (N=26)	Non-Active (N=27)	Active (N=59)	Non-Active (N=15)	Active (N=29)	Non-Active (N=8)
Most would have installed the EXACT SAME equipment anyway	35%	48%	51%	60%	52%	100%
Most would have INSTALLED OTHER high efficiency equipment with MARGINALLY LOWER EFFICIENCY ratings	27%	15%	34%	33%	38%	0%
Most would have installed LESS EFFICIENT, STANDARD EFFICIENCY, OR CODE EQUIPMENT	19%	22%	10%	7%	7%	0%
Most would have NOT INSTALLED the equipment	12%	7%	3%	0%	0%	0%
Don't know	8%	7%	2%	0%%	3%	0%

In addition, Table 141 and Table 142 show how vendors ranked the various incentive offers for gas furnaces (AFUE .90 or greater) and heat pumps on their customers' decisions to purchase the high efficiency models. Most frequently, the vendors said that all the Incentive Offers are equally important.

Table 141: Importance of Various Incentive Offers for Gas Furnaces

Response	Active (N=53)	Non-Active (N=12)
The Home Energy Solutions program	19%	8%
The Oregon Tax Credit	17%	8%
The Northwest Natural cash incentive	4%	17%
All three have been equally influential	52%	67%
None are influential	6%	0%
Don't know	2%	0%

Table 142: Importance of Various Incentive Offers for Heat Pumps (AFUE .90+)

Response	Active (N=29)	Non-Active (N=8)
The Home Energy Solutions program	21%	14%
The Oregon Tax Credit	14%	0%
Both programs have been equally influential	48%	71%
Neither program is important	10%	14%
Don't know	7%	0%

Vendor Satisfaction & Suggestions for Improvement

A key goal of the vendor surveys was to determine how helpful and useful the program's staff and services are for its vendors. Vendors were asked about the usefulness of Energy Trust's co-op marketing component (see Table 143). Of those who have used it, over half of active participants found the co-op marketing very useful, and over 80 percent of respondents said the service was at least somewhat useful. Only two non-active vendors have used the service.

82 percent of this subgroup of active vendors plans to use the co-op marketing again in the future. The 18 percent (three respondents) who did not plan to use the service in the future said that "It was not worth the time," "It took too long to get an insignificant rebate," and "We used to have someone who would call and do ads and rebates. It was streamlined and easy. Now it's more trouble than it's worth."

Respondents who have never used the co-op marketing were asked why. Common responses include not wanting more paperwork/hassle (4), not needing marketing support (4), and that the marketing is not applicable to the business (3).

Table 143: Usefulness of Co-op Marketing

Rating	Active (N=17)	Non-Active (N=2)
Very Useful	53%	0%
Somewhat Useful	29%	100%
Marginally Useful	23%	0%
Not At All Useful	6%	0%
Don't know	0%	0%

As shown in Table 144, vendors were also asked about the usefulness of the trade ally training offered by Energy Trust. On a scale of 1 to 5, where 1 is "not at all useful" and 5 is "extremely useful," about 30 percent of vendors who have used the training rated it as a 5, and roughly 70 percent gave it a score of at least 4. About one third of active vendors gave the training a rating of 3 or below. The average scores are fairly tepid, at about 3.8.

Table 144: Usefulness of Trade Ally Training

Rating	Active (N=27)	Non-Active (N=7)
5 Extremely useful	30%	29%
4	37%	43%
3	22%	0%
2	7%	29%
1 Not at all useful	4%	0%
Average Score	3.8	3.7

Furthermore, surveyed vendors were asked what top two types of training they would be interested in. Table 145 shows that active vendors primarily wanted technical training on program equipment and compliance (44 percent) and general training on Energy Trust programs (35 percent). Furthermore, non-active vendors were interested in general training on Energy Trust programs (50 percent) and sales and marketing training (40 percent of respondents).

Table 145: Top Two Preferences for Energy Trust Training

Response	Active (N=98)	Non-active (N=50)
Technical training on program equipment and compliance	44%	24%
General training on Energy Trust programs	35%	50%
Technical training on energy efficiency	29%	18%
Sales and marketing training	25%	40%
Training in other Energy Trust programs	16%	18%
Small business management training	16%	14%
None - not interested in training	3%	6%
Other	1%	0%
Don't know	5%	4%

Multiple responses accepted

Table 146 shows that of the active vendors who had visited the Energy Trust website (71 percent), only 20 percent of this subgroup found the Trade Ally web pages to be very helpful. Similarly, of the non-active vendors who had visited the Energy Trust website (74 percent), 14 percent found the web pages to be very helpful. Almost half of both the active and non-active groups gave the web pages a rating of at least a 4. 45 percent of active vendors gave the website a rating of 3 or below.

Five active vendors offered suggestions to increase the value of the website. Comments made include "Keep in communication with the contractors," "more training," "remove contractors

who do not actively participate," "There's nothing there for existing trade allies, it's a recruiting site," and "They need a contractor page."

Table 146: Helpfulness of Trade Ally Web Pages

Rating	Active (N=70)	Non-Active (N=37)
5 Very helpful	20%	14%
4	26%	32%
3	29%	30%
2	7%	14%
1 Not at all helpful	9%	3%
Don't know	9%	8%
Average Score	3.5	3.4

Next, respondents were asked if there had been a change in their relationships with Energy Trust during the past year. The majority of vendors surveyed (active and non-active) said that there had been no change in their relationships. 29 percent of active respondents said that the relationship had improved, compared to only seven percent who indicated that it had become worse. Similarly, 22 percent of non-active respondents said that the relationship had improved and only two percent said that it had become worse.

When probed further, four active vendors explained how their relationships had changed, most commenting on staff turnover. Responses included: "marketing staff has changed and also the requirements," "personnel changes and turnover that makes it hard to maintain a relationship with people," "too much turnover and nobody knows the program," and "giving to the big companies and none to the little companies."

Table 147: Relationship with Energy Trust

Rating	Active (N=98)	Non-Active (N=49)
5 It has improved a lot	11%	10%
4	18%	12%
3 No change	61%	72%
2	5%	0%
1 It has gotten worse	2%	2%
Don't know	2%	2%
Average Score	3.3	3.3

The surveyed vendors were also asked a battery of satisfaction questions about Energy Trust program staff, including satisfaction with interactions with the staff, response times, requests for

assistance, and overall satisfaction. Table 148 lists responses from active vendors and Table 149 displays the responses of non-active vendors. About 60 percent of active vendors and 50 percent of non-active vendors offered a score of 4 or 5 in all satisfaction categories. The highest rate of dissatisfaction for active vendors pertained to response time, where 10 percent of respondents are moderately unsatisfied. However, when probed further, none of the respondents offered an explanation.

Respondents who gave a rating of 1, 2, or 3 were asked what led to their dissatisfaction. Only four respondents who were dissatisfied with their interactions with program staff made comments, including: "they change the forms once a month," "[the staff] seem confused," "they aren't knowledgeable about products," and "they cannot seem to get [all the paperwork and information we give them] together correctly over there."

Eight respondents who were dissatisfied with the program staff overall explained their discontents. Answers include: "give some referrals to the little guys," "the process is overly complicated," "they don't always respond to the forms I fill out," "I can't get information on how to get on the preferred list of contractors," "the representatives need to know their own programs," "[staff] not understanding what's going on," "they need more education on product specifications," and "it's not important enough to their staff."

Table 148: Satisfaction with Program Staff – Active Vendors

Satisfaction with… (N=98)	5 Very Satisfied	4	3	2	1 Very Unsatisfied	Don't Know	Average
Interaction with staff	34%	29%	18%	5%	1%	13%	4.0
Response times	32%	26%	16%	10%	2%	14%	3.9
Requests for assistance	27%	31%	17%	4%	1%	20%	4.0
Overall satisfaction	28%	31%	27%	3%	3%	9%	3.8

Table 149: Satisfaction with Program Staff – Non-Active Vendors

Satisfaction with… (N=50)	5 Very Satisfied	4	3	2	1 Very Unsatisfied	Don't Know	Average
Interaction with staff	24%	28%	20%	2%	4%	22%	3.8
Response times	22%	30%	30%	2%	2%	14%	3.8
Requests for assistance	22%	22%	20%	4%	2%	30%	3.8
Overall satisfaction	24%	32%	28%	2%	2%	12%	3.8

Home Performance with ENERGY STAR

Furthermore, the survey instrument also probed for satisfaction with the Home Performance Review component of the HES program. However, only four active vendors in the sample and

zero non-active vendors had completed a Home Performance Review. The responses of the four active vendors are listed in Table 150.

Table 150: Satisfaction with Home Performance with ENERGY STAR

Satisfaction with… (N=4)	5 Very Satisfied	4	3	2	1 Very Unsatisfied	Don't Know	Average
Accreditation Process	50%	50%	0%	0%	0%	0%	4.5
Overall satisfaction	25%	25%	25%	0%	0%	25%	4.0

The vendors were also asked which benefits of the Home Performance with ENERGY STAR that they stress. Two of the vendors responded. One said that he emphasized "home performance testing and duct sealing insulation" and the other said he highlighted "that any energy upgrades will work toward a more green environment and a more comfortable home.

Marketing materials used include: customer referrals (1), Energy Trust website—Trade Ally contractor list (1), Energy Trust brochures (1), and in-house materials and website (1). Two respondents offered suggestions for improving the marketing materials:

- Some of the materials need updating
- There should be a video to educate customers. Maybe we could put it on our website.

Vendors were asked what challenges they are encountering selling the Home Performance with ENERGY STAR. The two comments are:

- [Customers] still want rebates and free services.
- To get the energy assessment reports, we send field data to conservation services people. That's a long, time consuming process and the payback period that's on the reports is too long and it hurts our sales. They should leave that part out.

Each of the active vendors also offered a general suggestion for improving the Home Performance with ENERGY STAR component and their responses are listed below.

- Better educating the general public—They need to produce a video that tells people how this differs from the free programs that the utility companies offer. Also, there are so many agencies involved with this, [such as] state agencies and Energy Trust. There needs to be one point of contact.
- Get the reports back sooner. It's getting better now
- Probably be nice to have contractor input on the incentives

- Simplify the paperwork

Conclusions

The following conclusions are made based on the vendor survey data:

- **While most vendors are promoting the Incentive Offers, most have not utilized Energy Trust marketing support.** 57 percent of participating vendors promote energy savings measures more often since the incentive offers became available and 71 percent actively promote the Incentive Offers as a regular marketing activity, and so approximately 30 percent of active vendors said they were not regularly promoting the Incentive Offers. For non-active vendors, these numbers are 52 and 50 percent, respectively.

  However, most participating vendors (67 percent of active vendors and 80 percent of non-active vendors) have not utilized any Energy Trust marketing materials or program literature. In addition, 83 percent of active vendors, and 96 percent of non-active vendors, have not used Energy Trust co-op marketing service. Almost all of the active vendors who have used the co-op marketing plan to use it again in the future.

- **Many vendors consider the HES program to be a valuable component of their marketing to sell energy efficient equipment.** Almost 70 percent of active vendors were on the HES List of Trade Ally Contractors and half of this group said that the list has increased (40 percent) or significantly increased (nine percent) their sales of energy efficient equipment. Moreover, 55 percent of active vendors earn between one and 24 percent of their revenues from Energy Trust jobs, and 38 percent of active vendors earn more than that.

- **The HES program's influence on increasing sales of specific HES measures differs substantially from vendor to vendor**. At least half of active vendors found the HES program somewhat or very effective on increasing business for each measure type. Interestingly, the same number of active vendors who found the HES program very effective on their duct insulation sales (42 percent) also found it not at all effective. The program seems to be most effective for duct sealing sales, for which 64 percent of active vendors found it very effective, yet 27 percent still found it not at all effective for this measure.

- **Of all the vendor types, vendors who perform duct sealing most frequently promote additional HES measures to their customers.** 73 percent of active vendors who perform duct sealing through the HES program promote multiple measures at these jobs and 75 percent of this subgroup said that they *always* do. The figures are lower among the other measure types, which implies untapped marketing opportunities.

- **All three vendor groups (active, non-active, and non-participant) cited cost and physically difficulty as the main challenges of selling insulation and duct sealing.** Cost tends to be most problematic for selling duct sealing.

- **Most participating vendors find the trade ally training useful, but only a small portion of vendors have been to a training in the past year.** Only 28 percent of active vendors and 14 percent of non-active vendors have participated in Trade Ally Training in the past year. About 70 percent of both vendor groups who had participated in the training rated it as extremely or very useful.

- **Almost all participants are interested in further HES training.** Active vendors said that they would be interested in more technical training on program equipment and compliance (44 percent), as well as general training on Energy Trust programs (35 percent). Non-active vendors also most frequently mentioned general training on Energy Trust programs (50 percent), as well as sales and marketing training (40 percent). Only six respondents were not interested in further training.

- **Vendors had a lukewarm reaction to the trade ally web pages.** Only about half of active and non-active vendors found the web pages to be moderately or very helpful.

- **Most respondents who noticed a change in their relationship with Energy Trust said that their relationship had improved.** The majority of respondents noticed no change in their relationship with Energy Trust over the past year. Twenty-nine percent of active vendors said that the relationship had improved, compared to seven percent who said that it had gotten worse. Similarly, 22 percent of non-active vendors said that the relationship had improved, compared to only two percent who said it had gotten worse.

  Few respondents are dissatisfied with the program staff. Approximately 60 percent of active vendors were moderately or very satisfied with the HES program staff, and less than 12 percent were unsatisfied. About 50 percent of non-active participants were moderately or very satisfied with the program staff, and less than six percent were unsatisfied.

- **Most vendors thought that Energy Trust or utility rebates were at least somewhat influential on customer equipment purchase decisions.** About one-third of participating vendors thought that most of their customers were *very* influenced by the Incentive Offers for windows, gas furnaces, and heat pumps. Almost all vendors thought most customers were at least *somewhat influenced.*

- **The majority of vendors who sell heat pumps or gas furnaces said that all the available Incentive Offers (through Energy Trust, Oregon tax credit, and Northwest Natural rebate) are equally important**. 52 percent of active vendors and 67 percent of non-active vendors said that all the Incentive Offers were equally important on their customers' decisions to purchase gas furnaces. These numbers were 48 percent and 71 percent, respectively, for high efficiency heat pumps. For further analysis, see Section 4.5: Assessment of Key Program Measures.

- **The prices of high efficiency gas furnaces (AFUE .90 or higher) and heat pumps (HSPF 8.5 or higher) are reported to have increased more than 10 percent over the past year.** Most commonly, active and non-active vendors thought an EMC Blower for a gas furnace required an additional $200 to $500. In addition, most commonly, vendors

said that energy efficient heat pumps were over $600 more than standard models.

Recommendations

The following conclusions are made based on the vendor survey data:

- **Emphasize Energy Trust marketing support services to trade allies.** Only 32 percent of active vendors have utilized Energy Trust marketing materials or program literature. Even less—17 percent—have used the co-op marketing service. While the majority of active vendors do actively promote the incentive offers as a part of their marketing activities, 28 percent do not. Thus, the program should consider ways to make participation in co-op marketing easier, and emphasize participation requirements in the trade ally orientation. The marketing support service should also be a key component of trade ally recruitment.

- **Emphasize training for experienced trade allies.** 74 percent of active vendors, and 60 percent of non-active vendors, have worked with Energy Trust for more than two years. Only 28 percent of active vendors and 14 percent of non-active vendors had participated in trade ally training in the past year. However, almost all respondents were interested in further training, specifically on technical training on program equipment and compliance, general training on Energy Trust programs, and sales and marketing training. Increased training opportunities and outreach to the more long-serving allies in particular would increase vendor expertise and may re-invigorate the program. The HES program should also explore why contractors are not using HES standard promotional materials and if the materials can be better suited to fit their needs.

- **Consider adding additional content to the trade ally web pages.** The program should look for opportunities to increase the utility of the web page for current trade allies, as most survey respondents had tepid reactions to the helpfulness of the web pages. Topics of interest might include technical advice on installing the HES measures and more details on the marketing support offered. Examples of the collateral produced by firms that have used the co-op marketing support, as well as specific information on the financial incentives offered, may increase the appeal of the co-op marketing service.

3.4 Assessment of Program Marketing and Communication Strategies

HES Marketing Process

Marketing is a key component contributing to the success of the HES—first to generate awareness of the program, and second—and more important—to encourage participation. The diverse and broad goals of the HES marketing effort help ensure that multiple players are involved. While Energy Trust has the overall responsibility for marketing, aspects of marketing and marketing communications related to HES are handled by both Program Management Contractors (PMCs) and Energy Trust, as well as by the utilities. This collaborative effort has both advantages and disadvantages.

Advantages of the collaborative approach include the wide range of perspectives and experience brought to the development of individual marketing initiatives. Both the PMCs involved with HES have extensive experience in the marketing of energy efficiency programs: Energy Trust has the broader view of the HES in the context of the overall program targeted to the residential sector and the utilities have a long-standing relationship with and knowledge of their residential customers. Utilizing the strengths of each of these groups provides the HES program with the potential to develop advertising, collateral, websites, and other marketing pieces with powerful, targeted messages.

On the other hand, this collaborative effort calls for good communication and coordination between different members of the team, which, according to some program staff members, has not evolved as rapidly as needed. In some cases the involvement of different team members ends up being more of a review or vetting of materials for legal requirements. When team members do interact, it is usually in a sequential manner rather than in a way that encourages collaborative "brainstorming."

For example, the PMC will typically seek Energy Trust approval to initiate a project. The approval is usually forthcoming within a few days, which then allows the PMC to proceed with the creative development of the project or marketing piece. Once developed, the draft copy for that piece has to be reviewed by Energy Trust for consistency with the Energy Trust's goals and requirements. Any comments or recommended changes are then addressed by the PMC, after which the final copy still has to be reviewed by Energy Trust's legal department. Even when it runs smoothly, this process can easily take a month. While both the PMCs and Energy Trust praised the responsiveness of the other organization, the delays inherent in this process are a source of frustration.

There is also some concern about the limited opportunity for PMC marketing staff to interact with the utilities. Utilities remain an important information source for customers, and their websites and bill stuffers are significant marketing channels for the HES program. To simplify the process for the utility representatives, Energy Trust has generally served as the sole point of contact with the utilities. This has obvious advantages for both the utilities and Energy Trust, but it may limit the ability of HES program staff to make the best use of utilities as a marketing resource.

Tools at the marketing team's disposal include websites, collateral, bill stuffers, events, press interest, cooperative advertising for trade allies, ads, and articles in magazines. All of these have been used either to create awareness of Energy Trust and its programs or to encourage participation in a program.

Effectiveness of Marketing

As detailed in the survey results in Section 2, utilities are important marketing allies. Participants and non-participants most frequently learned of the Energy Trust, the HES, and the HER through bill inserts from their electric or gas utilities. Contractors and newspaper articles advertisements were also primary sources.

While program awareness is one indicator of marketing effectiveness, the ultimate goal of the marketing effort is influencing customers to actually participate in HES or other programs.

Results of the participant and vendor surveys suggest that program marketing may influence participation indirectly. When vendors were asked about how HES customers most commonly found them, both active and non-active vendors said that word of mouth (44 and 56 percent, respectively) was the most common method, while advertising was second (15 percent for active, 20 percent for non-active vendors). Even active vendors were much less likely to mention referrals from the Energy Trust website (nine percent), the ETO contractor list (four percent), and ETO generally (two percent).

Co-op Marketing

A potentially powerful method of leveraging the Energy Trust marketing effort is the use of HES or other Energy Trust marketing materials by vendors. For example, the co-op advertising feature of the HES program provides trade allies 33 percent co-funding for their advertising, subject to a quarterly cap, and authorizes the vendors to use the Energy Trust logo in their advertising. However, the vendor survey found that only 19 percent of active vendors and none of the less active vendors were using the co-op advertising feature.

Home Energy Review Versus Home Energy Analyzer[22]

In addition, Energy Trust funds support Home Energy Reviews (HER) in which a CSG trained Energy Advisor conducts a home assessment and recommends measures that a household can implement to save energy. HERs are free of charge and available upon request to single-family households in Energy Trust service territory. The HER is meant to drive participation in the HES program, spur major measure installation, and install CFL bulbs, and high performance showerheads, and faucet aerators. The Energy Advisor typically installs up to ten compact fluorescent light bulbs, as well as faucet aerators and a low flow showerheads based on gallons per minute flow of the existing and new aerators and showerheads. The HER is a comprehensive and personalized home energy assessment that often leads to further program participation through the installation of recommended efficiency measures.

Customers can sign up for a HER on the Energy Trust website and many utility websites include links to this HER sign-up page. HERs are also advertised through promotional events (such as the upcoming Home Show sponsored by Energy Trust), and CSG reports that it succeeds in signing significant numbers of customers for HERs at these events.

Moreover, there is substantial demand for Home Energy Reviews. Energy Trust conducted 1,966 HERs in 2005, and 5,767 HERs in 2006. The program targets homes that are at least twenty years old. It is believed that older homes are more likely to benefit from the HER and advisor recommendations. The rate of HER measure implementation is examined in similar fashion to the method used for Home Energy Analyzer (HEA) participants. The same menu of measures is available to an HER participant as an HEA participant, including Oregon tax credit measures. HER participants who had only CFLs, aerators, and showerheads installed as part of the HER are not considered action takers. Action takers must have implemented a measure sometime after the HER.

[22] Information for this section is primarily from the Energy Trust

Table 151 lists measures implemented by HER households that received cash rebates (data from Energy Trust tracking database). The HER leads to higher levels of program participation than the Home Energy Analyzer (HEA). 22 percent (1,692 of 7,733) of 2005 and 2006 HER participants went on to receive an incentive from Energy Trust or tax credit from the state of Oregon. Ceiling insulation is the most implemented measure which was installed by 45 percent of HER action takers. Floor and wall insulation were also installed by many households who installed ceiling insulation. Heating, ventilation, and air conditioning (HVAC) improvements and or replacement is second to insulation measures with 28 percent of households installing an efficient gas furnace or heat pump. There is a substantial amount of overlap in the installed measures, with more than one measure often installed at the same time.

Table 151: Measures Implemented by HER Households

Measure	Number Implemented (N=1,692)
Ceiling Insulation	763
Weatherization promotion	559
Floor Insulation	505
Gas Furnace	417
Duct Insulation	379
Clothes Washer	328
Wall Insulation	264
Windows	241
Duct Seal	219
Air Sealing	129
Heat Pump	64
Water Heater	46
Dish Washer	43
Boiler	7

The recommendations given by Energy Advisors appear to be implemented only a small percentage of the time. On average, recommendations for a particular measure result in action four percent of the time within the period studied. It is unlikely that action is taken immediately to address recommendations, given the large investment required for many of the measures. However, it does appear that households are increasingly likely to take action in the next year after the HER. The 35 percent rate of action for 2005 HER households is double that of the rate of action among 2006 HER households at 17 percent. It is likely that the rate of action will increase even two years after a Home Energy Review.

Moreover, CSG collects a substantial amount of data on the homes that participate in HERs. However, the Fast Track database used to record HER audits was not designed to capture

extensive information during the 2005 and 2006 period. The Information Technology staff has been working to resolve this issue in subsequent years. Therefore, while less data is available for analysis from HERs than with HEAs from 2005 and 2006, the available data do identify some differences between action takers and participants.

- Action takers' homes are significantly older and slightly larger than participant homes.
- Action takers are more likely to use gas for space and water heating fuel.
- Action takers are significantly more likely to have air conditioning in their homes. Households that replaced a gas furnace had a previous furnace that was an average of 18 years old. Households that installed insulation had low existing insulation levels. The average existing R–value for ceilings, walls, and floors was 17, 2.5, and 3 respectively, compared to 21, 7, and 7 for households who did not install insulation.
- Households that implemented measures tend to be older, and larger, with outdated heating systems with little to no insulation in the walls and floors, and a lack of insulation in the ceiling.

Table 152: Action Taking Homes and Participant Homes

Measure	Action Taker	Participant
House Age (avg.)	1931	1950
House Size (avg.)	1,804 sqft	1,790 sqft
Heating Fuel	83% gas, 16% electric	79% gas, 20% electric
Water Heating Fuel	62% gas, 37% electric	59% gas, 40% electric
Air Conditioning	20%	6%

Other Utility Audits

In addition to the HER and HEA, some utility websites, such as Pacific Power's Home Energy Analysis, offer the option of a paper self-audit that is sent to the utility. In this case, too, there does not appear to be a linkage to the HES or other programs, so a valuable opportunity to market the program to self-selected potential participants is missed.

Conclusions

- Bill stuffers are the most effective marketing tool for both overall awareness of Energy Trust and for specific programs, such as the HES and HER.
- Utilities (primarily through their bill stuffers) continue to be seen by customers as important information channels. Moreover, utilities have the data to support targeted marketing appropriate to the HES program.

- Because the collaborative process of developing marketing materials is inherently cumbersome, every effort should be made to coordinate marketing approaches, including collaborative face-to-face brainstorming and concept development between Energy Trust, the PMCs, and the utilities. The lengthy process required to produce a marketing product limits the usefulness of time-sensitive marketing information.

- Cooperative marketing has the potential to be a key instrument of the program marketing effort.

- To encourage adoption of HES measures, HER audits are more effective marketing activities than online HEA audits. In addition, adjusting the Fast Track database to incorporate all the information that HERs contractors collect can allow for greater analysis of these customer characteristics and more targeted marketing efforts.

- There may be an opportunity to link other Oregon utility audit programs with HES incentives.

3.5 Assessment of Key Program Measures

This assessment of key program measures examines the incentive levels for HES measures compared to the incentives offered through the Oregon tax credit for the same measures. Participant survey data are also used to weigh the importance of the HES incentive with the Oregon tax credit on participant purchase decisions.

Table 153 compares the HES program cash incentive amount with the Oregon tax credits available for the same measures in 2006. Adjustments to incentive levels are made in March of each year. Energy Trust data were obtained from the Program Information Sheets 0320G, 0350G, and 03050E and Oregon tax credit information came from the Oregon Department of Energy. In general, while the 2006 Oregon tax credits were higher than Energy Trust cash incentives, the relative incentive levels across measure categories were similar for both programs. Water heaters are an exception, where the Energy Trust offered only $25 and the Oregon tax credit was about $200 to $400, depending on the model. Notably, the HES incentive for tankless water heaters has been increased since 2006 to $200.

Table 153: 2006 Cash Incentives in Oregon, by Measure

High Efficiency Measure Type	HES Incentive	Oregon Tax Credit
Duct insulation	50% of cost up to **$100**	25% of the cost of the work up to **$250**
Duct sealing	**$1** per CFM reduction, **$250** max (gas), **$300** max (electric)	25% of the cost of the work up to **$250**
Heat pump	**$200 or $400** (upgrade or replace electric furnace)	**$300-$640,** varies by model
Gas furnace	**$150** (through Feb 2006) **$200** (through Feb 2007)	**$350** (add $150 for premium efficiency ducts
Gas boiler	**$200**	**$225** (add $150 for premium efficiency ducts)
Water heater	**$25**, gas or electric, convention or tankless	**$200-$400,** varies by model

In addition, Table 154 displays survey data from participants in the HES program, which show that the majority of respondents who received an Energy Trust cash incentive also received an Oregon tax credit. Almost all (93 percent) of the respondents who purchased a gas furnace received an Oregon tax credit. Similarly, about 80 percent of respondents who bought a heat pump or had their ducts insulated, and 60 percent of respondent who sealed their ducts, also received a tax credit.

When probed further, only 16 respondents explained why they did not receive a tax credit. Responses included: measure did not cost anything (3), did not have proper paperwork (3), did not file taxes (2), tax credit was not available (1), was not aware of the tax credit (1), and don't know (1). Five of the answers could not be deciphered.

Notably, there is high awareness of the Oregon tax credits among the participants surveyed—88 percent said that they were aware of Oregon tax credits for energy saving measures.

Table 154: Received Oregon Tax Credit

Measure Type	Received Oregon Tax Credit	No	Don't Know
Duct insulation (N=83)	80%	6%	15%
Duct sealing (N=60)	60%	28%	12%
Heat pump (N=168)	83%	11%	6%
Gas furnace (N=121)	93%	3%	3%

Respondents who bought a gas furnace were asked if the Oregon tax credit or Energy Trust cash incentive was more influential in their purchase decisions. 27 percent of respondents said that the Energy Trust cash incentive was more influential and 15 percent said the Oregon tax credit was more influential. Most frequently, however, respondents said that the two cash incentives were equally important (38 percent). 20 percent of respondents said that they did not know which was more influential.

Table 155: Influence of Various Cash Incentives

Measure Type	Oregon Tax Credit More Influential	Energy Trust Cash Incentive More Influential	Both Equal	Don't Know
Gas furnace (N=112)	15%	27%	38%	20%

As shown in Table 156, over half of the surveyed HES participants said it was "very likely" that they would have purchased the same heat pump or a gas furnace without the Oregon tax credit. 11 percent of respondents who purchased heat pumps said that it was "not at all likely" that they would have purchased the same heat pump without the Oregon tax credit, and this number is four percent for gas furnaces.

Table 156: Would Make Purchase Without Oregon Tax Credit?

Measure Type	Very Likely	Somewhat Likely	Not at all Likely	Don't Know
Heat Pump (N=139)	55%	33%	11%	1%
Gas Furnace (N=113)	61%	34%	4%	1%

To conclude, the HES incentives and Oregon tax credits appear to exert roughly equal influence on participants' purchase decisions. In addition, the Oregon tax credits also do not play a critical role in many peoples' purchasing decisions (i.e., there is significant free ridership).

3.6 Assessment of Data Tracking, Data Collection, Processing and Payment Activities

Interviews with Energy Trust staff indicate that a key challenge in the 2005–2006 program phase was the inaccuracy of the program tracking database, which is particularly problematic as savings allocations for the various utilities are based upon the database. One CSG staff member said that the "Energy Trust does not close out months, so total can change. The database is not always clean." He also noted that both the Energy Trust and CSG are to blame for data problems. An Energy Trust staffer said that there were also often errors in invoice records for program delivery activities.

In addition, the transition from Ecos Consulting to CSG generated challenges for the IT department. The HES program uses the program Fast Track to record information on each home site serviced and this information had to be inputted in the FastTrack program before an incentive check could be sent out. Unlike Ecos Consulting, which collected only the necessary information for the incentive checks to be processed, CSG recorded data on a wide variety of household characteristics (such as pre and post wattages on light bulbs, burn times by socket, and location). Energy Trust had trouble integrating these additional data into the Fast Track database, which led to delays in incentive payments.

Data Tracking

Table 157 through Table 160 show the billing data available for single-family and mobile home HES participants, by measure type. Table 157 and Table 158 list individual measures and measure combinations for installed measures by single-family participants. There are billing data available for about 30 percent of single-family participants. Of those with billing data, almost all had phone numbers in the dataset. During the participant survey, Itron reported that they had a high rate of success completing the surveys, indicating that the name and phone data contained in the tracking database was accurate. For individual measures, the least amount of data are available for water heaters and boilers, and for measure combinations, data are missing most frequently in the water heater and CFL categories.

Table 159 and Table 160 show billing data available for mobile home participants, also separated by individual measures and measure combinations. Billing data and phone data are available for about 30 percent of mobile-home participants, and again, information is lacking most frequently for CFLs.

Table 157: Single Family Participants – Individual Measures

Measure	All Participants	Participants with Billing Data	Participants with Billing & Phone Data
Gas furnace	11,742	30%	30%
CFL	8,197	27%	26%
HER	7,768	31%	30%
Aerator	3,438	38%	38%
Ceiling insulation	3,211	30%	28%
Showerhead	2,526	37%	36%
Floor insulation	1,904	32%	29%
Water heater	1,726	10%	10%
Weatherization promotion	1,705	31%	28%
Heat pump	1,596	47%	44%
Wall insulation	1,227	30%	27%
Duct insulation	1,058	34%	30%
Windows	930	32%	29%
Duct Seal	620	33%	28%
Air seal	215	33%	28%
Boiler	51	8%	8%
Total	47,914	31%	30%

Table 158: Single Family Participants – Measure Combinations

Measure	All Participants	Participants with Billing Data	Participants with Billing & Phone Data
Gas Furnace only	10,890	30%	30%
HER and CFL's	2,544	22%	22%
CFL's only	1,513	0%	0%
Water Heater only	1,479	8%	8%
HER, CFL's, Aerator and Showerhead	1,461	38%	36%
Heat Pump only	1,446	47%	44%
Ceiling Insulation only	1,156	27%	25%
HER, CFL's, and Aerator	1,121	40%	39%
HER only	752	20%	19%
HER, CFL's, and Showerhead	489	35%	34%
Floor insulation only	327	28%	25%
Wall insulation only	281	26%	24%
HER and Aerator	193	36%	35%
Weather Promo, Floor Insulation, and Ceiling Insulation	189	31%	28%
HER, Aerator, and Showerhead	176	26%	26%
Duct Insulation + any measures	1,054	34%	30%
HER + any measures	7,752	31%	30%
Other combinations	2,530	32%	30%
Total	10,890	28%	27%

Table 159: Mobile Homes – Individual Measures

Measure	All Participants	Participants with Billing Data	Participants with Billing & Phone Data
Duct Seal	917	29%	28%
CFL	723	23%	22%
Air Seal	157	35%	34%
Heat Pump	1	100%	100%
Total	1,798	27%	26%

Table 160: Mobile Homes – Measure Combinations

Measure	All Participants	Participants with Billing Data	Participants with Billing & Phone Data
Duct Seal and CFL's	530	23%	22%
Duct Seal only	224	41%	37%
CFL's only	95	14%	14%
Air Seal, Duct Seal, and CFL's	90	29%	29%
Air Seal and Duct Seal	64	44%	42%
Heat Pump, Duct Seal, and CFL's	2	50%	50%
Air Seal and CFL's	1	0%	0%
Waterheater and Duct Seal	1	100%	100%
Waterheater, Duct Seal, and CFL's	1	0%	0%
Total	1,008	28%	27%

Table 161 shows the phone call dispositions for the participant, non-participant, and vendor surveys conducted for the process evaluation. The hit rate (the number of completed surveys divided by the total number of people in the sample) for the participant dataset was 20 percent, while the hit rate for the non-participant dataset was significantly lower at 10 percent. The hit rates for the active, non-active, and non-participant vendor surveys were 18 percent, 12 percent, and seven percent, respectively.

For the participant and non-participant surveys, the largest disposition percentages were for refusals/hang-ups (45 percent) and maximum attempts made (33 percent). For the active participating vendors, disconnected phone numbers (27 percent) and participant unavailability (29 percent) comprised the largest categories of dispositions.[23] Similarly, many inactive vendors were also unavailable (37 percent). Among the non-participating vendors, 55 percent of the non-respondents said they do not actually do equipment installations.

Overall, the call disposition data do not reveal any significant or systematic data collection deficiencies. For instance, it is reasonable to expect that phone numbers will change and be disconnected over time, that some participants will not recall their participation, and that some non-participants may mistakenly recall their participation in a different program. On the whole, the data that were used for the phone surveys were in good condition. Therefore, while not a lot of billing data are collected (see Table 157 through Table 160 above), the contact information that is recorded is generally accurate.

[23] "Unavailability" means that they could not respond due to illness, travel, other time commitments, etc. If they were only temporarily unavailable, they would have been called back.

Table 161: Survey Call Disposition Report

	Customers		Vendors		
	Participant	**Non-participants**	**Active Vendors**	**Inactive Vendors**	**Non-Participant Vendors**
Total Sample	**4,698**	**19,613**	**558**	**433**	**436**
Declined/Not Available/Error	3,359	15,270	125	208	430
Not Called/No Final Disposition (Still Active)	380	2,340	335	175	6
Total Completes	**958**	**2,003**	**98**	**50**	**30**
Refusals/Hang ups	1,522	7,449	18	14	15
Terminated (started survey but then quit part-way)	34	0	-	-	-
Disconnected number	273	1,213	34	25	41
Duplicate	27	67	2	1	2
Participant not available	158	206	36	77	66
Language barrier	13	206	-	-	1
Residential	0	-	8	-	2
Home office	4	-	-	-	-
Business	80	164	-	-	-
Fax	29	314	7	3	5
Did not receive review	26	-		-	-
Does not install	0	-	12	33	236
Not familiar with HES	0		4	27	18
Not lived in residence since Jan 2006	21	-	-	-	-
Moved after Jan (or Feb) 2006	6	151	-	-	-
Other utility company	3	320	-	-	-
Past participant in ET program	0	117	-	-	-
Participated in HER	0	21	-	-	-
Rent	50	303	-	-	-
MAX (5 attempts made)	1,113	4,736	4	28	44
Total	**3,359**	**15,720**	**125**	**208**	**430**

Processing and Payment Activities

An important task of the evaluation was to review the timeliness of incentive payments to program participants and assess how easy or difficult program participants felt the financial incentive process was.

Respondents were asked to rank their interactions with Energy Trust on a scale from 1 to 5, where 1 is very unsatisfactory and 5 is very satisfactory. Table 162 shows how respondents rated the ease of their transactions that specifically involved any paperwork or payments. Of the 33 respondents that gave a rating of 1 or 2, the most common reasons for their dissatisfaction were paperwork "issues" and complications (19 responses).

Table 162: Satisfaction with HES Paperwork/Payments Transactions

Rating	Percent (N=958)
5 Very satisfactory	56%
4	20%
3	7%
2	2%
1 Very unsatisfactory	1%
Not applicable (No contact or paperwork)	11%
Don't know	3%
Average Score (N=825)	4.47

Survey respondents were also asked to rate their satisfaction with the HES financial incentive process. Table 163 shows that the HES program participants are relatively satisfied with the financial incentive process. The average satisfaction scores for information completeness, application difficulty, and incentive turnaround time are greater than 4 and indicate that the incentive program runs smoothly enough that participants typically do not get discouraged. However, it is important to note that these satisfaction score averages are the lowest scores for any of the satisfaction questions asked of participants, regarding either Energy Trust, the HES program, or the HER program.

Interviews with HES staff indicated that in 2005 and 2006, the program was struggling with missing customer information issues. The incentive payment forms were often incorrectly filled-out or missing critical data, and as a result, the incentive payment process was protracted as the call center tracked down the necessary information. HES staff members explained that part of the challenge was the design of the forms. Many were multiple pages, and in some cases, a separate form was required for each measure installed.

All interviewed Energy Trust staff members highlighted the need for a more streamlined and electronic incentive payment process. Said one staffer: "It would be awesome if we could go electronic. We are such a paper company."

Table 163: Home Energy Solutions Program Satisfaction

Rating	Quality and Completeness of Information Regarding Financial Incentives (N=958)	Ease of Applying for Financial Incentives from Energy Trust (N=956)	Turnaround Time in Receiving Financial Incentive (N=956)
5 Very satisfied	48%	38%	33%
4	26%	19%	20%
3	12%	11%	10%
2	4%	3%	2%
1 Very dissatisfied	2%	2%	2%
Not applicable	5%	22%	27%
Don't know	3%	4%	5%
Average Score	4.24	4.18	4.19

Conclusions

- **Some program staffers question the accuracy of the program tracking database.** Interviews with program staff members indicate that the program records, including data on measures installed and invoices for program activities, often contained errors during the 2005 and 2006 period. Efforts have been made to address these data issues in 2007 and 2008.

- **The incentive processing system is cumbersome and often leads to delays**. Energy Trust staffers reported that the incentive forms are multiple pages, and often separate forms must be filled out for each measure. As a result, both contractors and their customers often omit critical information, which delays incentive payments. While few surveyed participants were extremely dissatisfied with the incentive payment process, they gave the lowest satisfaction scores for the ease of applying for financial incentives and the turnaround time in receiving the incentive.

Recommendations

- **Streamline the incentive processing system.** Efforts should be made to shorten and simplify incentive payment forms that the contractor or client fills out. This will lessen the occurrence of omitted information and speed up the process, as well as minimizing potential participants who are dissuaded by lengthy paperwork. A web-based form should also be considered. Web-based forms can decrease database errors (currently information must be transferred from paper forms to Fast Track), require all fields to be completed, and allow for an instantaneous information transfer.

3.7 PROCESS EVALUATION RESULTS AND THE HES PROGRAM LOGIC MODEL

Figure 2 lists the elements of the HES program logic model (see Figure 1) and the applicable process evaluation results. Overall, the evaluation results indicate that all activities dictated by the logic model are underway; however, the strength of each component varies. For example, HES promotion through partner utilities and coordination with the Oregon RETC program are particular strengths, while recruitment of new trade allies and the collaborative marketing element are less vigorous components.

Figure 2. Process Evaluation Results and the HES Logic Model

Logic Model Element	Evaluation Results
ACTIVITY	
Marketing and outreach to trade allies	Recruitment of new trade allies is low. Results of the vendor survey indicate that few contractors had been working with the Energy Trust for less than a year (only three percent of active vendors). Instead, most vendors have been working with the Energy Trust for over three years. In addition, a low percentage of vendors (or their staff) had participated in the Trade Ally Training offered by Energy Trust in the last year, only 28 percent of active vendors and 14 percent of non-active vendors. The majority of vendors said that they had not noticed a change in their relationships with Energy Trust over the past year. 29 percent of active respondents said that the relationship had improved, compared to only seven percent who indicated that it had become worse. Similarly, 22 percent of non-active respondents said that the relationship had improved and only two percent said that it had become worse.
Customer and education outreach	There is substantial awareness of Energy Trust offerings, although there is room for growth. Vendors were asked how many of their customers were already aware of the HES rebate when the project was first discussed. 36 percent of active vendors and 38 percent of non-active vendors said that most of their customers were already aware of the rebate. 45 percent of non-participants were familiar with the Energy Trust of Oregon, and that awareness is higher in northern Oregon than in southern Oregon. Furthermore, 31 percent of respondents were aware of the Home Energy Savings program and 42 percent were aware of the Home Energy Review program. Non-participants had heard of the Energy Trust of Oregon or its programs from a variety of sources. However, the most commonly mentioned sources include electric utility bill inserts (19 percent), newspaper articles (16 percent), and television (13 percent). About half (52 percent) of non-participants who had heard of the Energy Trust did not know what the Energy Trust does.
Home Energy Review (HER) created	Respondents primarily hear about HERs through their energy utilities. HER respondents most commonly learned of Energy Trust opportunities through an electric utility bill insert (23 percent), a gas utility bill insert (18 percent), and word-of-mouth (17 percent).

Logic Model Element	Evaluation Results
Customer incentives	Customers most frequently associate windows and insulation with HES incentives. HES program participants were most commonly aware of incentives for windows (40 percent of respondents), followed by three different types of insulation: ceiling/attic (34 percent), floor (31 percent), and wall (28 percent). Non-participants were most commonly aware of incentives for windows, gas furnaces, and water heaters. Some respondents named appliances that are not a part of the HES program. Eighteen percent of this subgroup of respondents said that they knew the eligibility requirements for the cash incentives they named.
Coordination with ODOE's RETC program	Most participants who receive a HES incentive also receive an Oregon tax credit, when applicable. Almost all (93 percent) of the respondents who purchased a gas furnace received an Oregon tax credit. Similarly, about 80 percent of respondents who bought a heat pump or had their ducts insulated, and 60 percent of respondent who sealed their ducts, also received a tax credit. There is high awareness of the Oregon tax credits among the participants surveyed—88 percent said that they were aware of Oregon tax credits for energy saving measures. The majority of non-participants (71 percent) were aware of Oregon tax credits, primarily through a retail sales representative (17 percent), a utility (14 percent), or a tax form (13 percent). About half of the active vendors said they always provide their customers with information about the Oregon tax credit, when applicable.
OUTPUTS	
Contractors participate in program, listed on ETO website	The majority of participating vendors are on the HES List of Trade Ally Contractors. Almost 70 percent of active vendors were on the HES List of Trade Ally Contractors. Vendor understanding of the program design and delivery was not assessed.
Website, ads, utility promotions, brochures, community outreach, mailings, POS materials created	Energy utilities are a primary channel to promote the HES program. The top two ways participants learned of Energy Trust opportunities was through their electric and gas utilities, 27 and 19 percent, respectively. Notably, only four percent of HER participants heard of Energy Trust programs and incentives from their contractors, while 25 percent of other HES participants learned of the Energy Trust offerings from their contractors. The most popular form of media was a bill insert, which was mentioned by 23 percent of participants.
In-home audits available to customers to identify energy efficiency opportunities	Participants receive HERs to save energy and money on energy bills. HER participants were asked why they requested a Home Energy Review. The top responses included saving energy (27 percent), saving money on energy bills (27 percent), and improving the temperature comfort of their homes (13 percent).

Logic Model Element	Evaluation Results
Incentives available for approved measures	Vendors most frequently install gas furnaces and windows through the HES program. Active vendors most commonly installed gas furnaces (49 percent) through the HES program, while non-active vendors most commonly installed windows (48 percent). Alternatively, duct sealing and duct insulation are the least popular measures for vendors. The process to apply and receive the incentive can be improved. Participants gave the lowest average satisfaction scores for processing the incentive payments (information completeness, application difficulty, and incentive turnaround time). Interviews with HES staff indicated that in 2005 and 2006, the program was struggling with missing customer information issues. The incentive payment forms were often incorrectly filled-out or missing critical data, and as a result, the incentive payment process was protracted as the call center tracked down the necessary information. HES staff members explained that part of the challenge was the design of the forms. Many were multiple pages, and in some cases, a separate form was required for each measure installed.
Collaborative marketing efforts developed and implemented	Few vendors employ collaborate marketing. Most vendors have not used any promotional literature or marketing materials given to them by Energy Trust. 67 percent of active vendors had not utilized any of the materials, compared to 80 percent of non-active vendors who indicated that they had not used any of the materials. A low percentage of participating vendors have used the co-op marketing service, which offers funds to help pay for marketing that promotes the HES program. Only 17 percent of active vendors have used the co-op marketing and four percent of non-active vendors have used this service.
SHORT-TERM OUTCOMES	
Trade allies promote program	Vendors primarily rely on traditional marketing techniques to promote the HES program and the majority promote the incentive offers. Vendors report that the most common ways that their HES customers find them is through word-of-mouth (44 percent of active and 56 percent of non-active vendors) and advertisements (15 percent of active and 20 percent of non-active vendors). Only four percent of both groups named the Energy Trust List of Allied Contractors. 67 percent of active vendors are on the HES List of Trade Ally Contractors and 40 percent of this group said that the list has increased their sales of energy efficient equipment. An additional nine percent said that the list has significantly increased their sales. However, about half have noticed no change. In addition, 71 percent of active vendors indicated that they did actively promote the incentive offers, compared to 50 percent of non-active vendors. Notably, this implies that 29 percent of active vendors are not promoting the incentive offers.
Customers aware of program and energy saving opportunities, measures identified during HER	The HER does motivate some of its recipients to install measures through the HES program. 56 percent of HER respondents said that as a result of taking the HER, the likelihood that they will participate in the HES program is greater, while 33 percent said the likelihood of participating in HES is the same as before they took the HER audit.

Logic Model Element	Evaluation Results
Customers purchase energy efficient equipment	About half of HER participants purchased energy efficient equipment as a result of their audits. As a result of their HERs, the majority (71 percent) of respondents took conservation actions and 35 percent purchased new equipment for their homes. About half (46 percent) of those who purchased equipment received an Energy Trust cash incentive. Windows (27 percent), gas furnaces (21 percent), and insulation (21 percent) were the most frequently installed measures. Participants who had a Home Performance with ENERGY STAR assessment were not included in the survey sample. Program free-ridership is estimated to be highest for heat pumps and lowest for CFLs.
kWh, kW, and therm savings and energy bill reductions	See the billing analysis model results.
MID-TERM OUTCOMES	
Participants more knowledgeable about energy efficiency and recognize benefits of energy efficiency investments	Not evaluated
Demand for energy efficient equipment increases, growth in trade ally business revenues and jobs	About one-third of active vendors thought they would increase their sales of energy efficient equipment in the next year. Vendors were asked if they anticipate a change in the proportion of projects involving Energy Trust over the next year. 35 percent of active vendors and 47 percent of non-active vendors said that they expect the proportion to increase. Most (63 percent) active vendors expect that the proportion of Energy Trust projects they will do in the next year will stay the same and only two percent think it will decrease.
Market participants view energy efficiency programs as a business opportunity and actively promote energy efficiency	The majority of vendors actively promote energy saving measures and incentives, but do not view this business as their primary revenue earning activity. 57 percent of active vendors and 52 percent of non-active vendors, promoted energy saving measures more often since the incentive offers became available. In addition, 71 percent of active vendors indicated that they actively promote the incentive offers, compared to 50 percent of non-active vendors. In addition, 55 percent of active vendors and 76 percent of non-active vendors earned between one and 24 percent of their company revenues from Energy Trust jobs. Only 21 percent of active vendors report to earn over 50 percent of their revenues from Energy Trust jobs. The affects of the program on other market participants were not assessed.

Logic Model Element	Evaluation Results
LONG-TERM OUTCOMES	
Increased availability of energy efficient equipment and reduced prices	Vendors report that the prices for energy efficient gas furnaces and heat pumps rose more than 10 percent in the past year. The majority of active and non-active vendors thought that the prices for gas furnaces (AFUE .90 or higher) and heat pumps (HSPF 8.5 or higher) had increased by more than 10 percent over the last year. None of the respondents said the prices went down. In addition, respondents were asked about the availability of gas furnaces with AFUE .95. Over half of active (56 percent) and non-active (63 percent) vendors said that this efficiency grade was easily available. Less than five percent of respondents said that the efficiency grade was "not available" or "difficult to find." Moreover, about half of active vendors said that windows with U Values of 0.30 or less are easily available, 22 percent said that some models are available, and 19 percent said that they are difficult to find. Price changes in other energy efficient equipment types were not assessed.
Market actors incorporate energy efficient products and services as standard business	Not evaluated
National ratings/specifications made more stringent, OR building codes changed	Not evaluated
Sustained kWh, kW and therm savings	Not evaluated

4. IMPACT EVALUATION

4.1 SELF REPORT RESULTS

The self report analysis estimates free ridership and spillover from the HES program using data from the participant and non-participant surveys. Free ridership is presented first.

Free Ridership By Measure

Free ridership rates estimate the share of participants who would have installed the same high efficiency measure, at the same time, if the HES program did not exist. The evaluation team used the Energy Trust Free Ridership Methodology (June 2008) to estimate free ridership rate for each measure.

The free ridership score consists of two parts: (1) the Program Influence score and (2) the Participant Intent score. Each of the two scores is halved and then summed together to produce the final free ridership score for each respondent. The average free ridership score is then calculated for each measure. The Program Influence score and the Participant Intent are detailed below.

1. **Program Influence:** The program influence score represents the level of influence of the HES program cash incentive on the customer's decision to make the qualifying purchase. There are three different levels of influence:

    - *Critical Influence.* If the program was very influential, the respondent's free ridership score for program influence is zero.

    - *Some influence.* If the program was somewhat influential, the respondent's free ridership score is 0.5.

    - *No influence.* If the program was not at all influential, the respondent's score is 1.

    - If the respondent does not know, the free ridership score is the range of all possible values. Two free ridership scores are calculated with the minimum and maximum values of the range.

2. **Participant Intent:** The participant intent score represents the likelihood that the participant would have made the same purchase in absence of the program's cash incentive. There are three different levels of intent:

    - *Significant change with none or little of program energy efficiency.* In absence of the cash incentive, if the respondent would have made a different purchase with no significant energy efficiency component or no purchase at all, the respondent's free ridership score is 0.

    - *Change with some energy efficiency.* In absence of the cash incentive, if the respondent would have changed his/her purchase but retained some energy efficiency features, the respondent's free ridership score is 0.5. For example, in absence of the cash incentive, if the respondent would still have purchased insulation, but less of it,

he/she would receive a score of 0.5. Additionally, in absence of the cash incentive, if the respondent would have installed insulation at a later date, this timing change also receives a score of 0.5.

- *No change in project.* If participant would have installed the exact same measure at the same time, the respondent's free ridership score is 1.

- If the respondent does not know, the free ridership score is the range of all possible values. Two free ridership scores are calculated with the minimum and maximum values of the range.

Heat Pump Free Riders

Five questions are used to determine the Program Influence and the Participant Intent scores for heat pumps, listed in Figure 3 below.

Program Influence

Responses to HP45 are used to determine the Program Influence score for each respondent. Respondents who were not at all influenced by the cash incentive are assigned a score of 1 (HP45=c), those who were somewhat influenced were assigned a score of 0.5 (HP45=b), those who were very influenced were assigned a score of 0 (HP45=a), and those who said they "don't know" (HP45=d) were assigned the range of possibilities from 0 to 1.

Participant Intent

Questions HP30 through HP35 determine what the customer would have done if the program did not exist, to estimate the Participant Intent score for each respondent. In absence of the program, those who would not have purchased a heat pump (HP30 or HP30=a), would have purchased a standard efficiency heat pump (HP30=b or HP30F=c), or would have purchased a new forced air furnace (HP30F=b) are assumed to have made a significant change due to the program and are assigned an intent score of 0. Those who would have purchased a heat pump with the same efficiency grade (HP30=c or HP30F=d and HP32=a) at the same time (HP35=a) in absence of the program would have not changed their purchase and therefore are assigned an intent score of 1.

In absence of the program, respondents who would have changed their project but retained some energy efficiency features are assigned a score of 0.5. This includes respondents who would have purchased an energy efficient heat pump in absence of the program (HP30=a or HP30F=d), but not at the same time (HP35=b or c) and/or if they would have purchased a less energy efficient heat pump (HP32=b).

Respondents who did not know what action they would take if the program did not exist (HP30=d or HP30F=e) are assigned a score that is a range of the possibilities, from 0 to 1. Respondents who would have purchased the same unit (HP30=c or HP30F=d and HP32=a) but did not know at what time (HP35=d) were also assigned the range of possibilities, from 0.5 to 1. Respondents who would have purchased an energy efficient unit (HP30=c or HP30F=d) at the

same time (HP35=a), but did not know if it would be as energy efficient as the one bought through the program (HP32=c) were also given the range of 0.5 to 1.

Figure 3. Replacing Existing Heat Pump Free Ridership Questions

[Asked if respondent was replacing an old heat pump]
HP30. Which of the following three statements best describes the actions you would have taken had the cash incentive NOT existed:
a. We would not have bought a heat pump
b. We would have bought a standard efficiency heat pump
c. We would have bought an energy efficient heat pump
d. Don't Know

[Asked if respondent converted from a forced air furnace]
HP30F. Which of the following three statements best describes the actions you would have taken had the cash incentive NOT existed:
a. We would not have bought anything
b. We would have bought a new forced air furnace instead of a heat pump
c. We would have bought a standard efficiency heat pump
d. We would have bought an energy efficient heat pump
e. Don't Know

HP32. If the cash incentive had not existed, would you have bought the SAME heat pump that you purchased through the program, or would you have selected a heat pump that was less expensive and less efficient, although still an energy efficient unit?
a. We would bought the same <equipment> as we did through the program
b. We would have bought a less expensive/less efficient unit
c. Don't Know

HP35. If the cash incentive was not available, would you have bought the energy efficient heat pump?
a. At the same time
b. Within a year
c. More than a year later
d. Don't Know

HP45. We'd like to get a sense of what influenced you to purchase your heat pump. How influential was the cash incentive in your decision to purchase an energy efficient heat pump? Would you say the cash incentive was…
a. Very Influential
b. Somewhat Influential
c. Not at all Influential
d. Don't Know

Table 164 lists Participant Intent, Program Influence, and Total scores for each respondent, as well as the average minimum (63 percent) and maximum (65 percent) free ridership score for heat pumps.

Table 164: Free Ridership for Heat Pump Participants (N=191)

What Would Have Been Purchased in Absence of the Program?			Participant Intent Score	How Influential Was the Cash Incentive?	Program Influence Score	Frequency	Min Free Ridership Score	Max Free Ridership Score
What action would you have taken?	How efficient?	When would you have made the purchase?						
HP30/HP30F	HP32	HP35		HP45				
No purchase	-	-	0	Very Infl	0	4	0	0
No purchase	-	-	0	Somewhat Infl	0.5	2	0.25	0.25
No purchase	-	-	0	Not at all Infl	1	1	0.5	0.5
Standard Efficiency	-	-	0	Very Infl	0	6	0	0
Standard Efficiency	-	-	0	Somewhat Infl	0.5	10	0.25	0.25
Standard Efficiency	-	-	0	Not at all Infl	1	1	0.5	0.5
Forced Air	-	-	0	Very Infl	0	1	0	0
Forced Air	-	-	0	Somewhat Infl	0.5	3	0.25	0.25
Forced Air	-	-	0	Not at all Infl	1	1	0.5	0.5
Energy Efficient	Same Unit	Same Time	1	Very Infl	0	9	0.5	0.5
Energy Efficient	Same Unit	Same Time	1	Somewhat Infl	0.5	52	0.75	0.75
Energy Efficient	Same Unit	Same Time	1	Not at all Infl	1	45	1	1
Energy Efficient	Same Unit	Later, but within 1 Year	0.5	Very Infl	0	1	0.25	0.25
Energy Efficient	Same Unit	Later, but within 1 Year	0.5	Somewhat Infl	0.5	11	0.5	0.5
Energy Efficient	Same Unit	Later, but within 1 Year	0.5	Not at all Infl	1	4	0.75	0.75
Energy Efficient	Same Unit	Don't Know	.5-1	Somewhat Infl	0.5	2	0.5	0.75
Energy Efficient	Same Unit	> 1 Year Later	0.5	Very Infl	0	1	0.25	0.25
Energy Efficient	Same Unit	> 1 Year Later	0.5	Somewhat Infl	0.5	1	0.5	0.5
Energy Efficient	Less Efficient	Same Time	0.5	Very Infl	0	6	0.25	0.25
Energy Efficient	Less Efficient	Same Time	0.5	Somewhat Infl	0.5	12	0.5	0.5

Energy Efficient	Less Efficient	Same Time	0.5	Not at all Infl	1	5	0.75	0.75
Energy Efficient	Less Efficient	Later, but within 1 Year	0.5	Very Infl	0	3	0.25	0.25
Energy Efficient	Less Efficient	Later, but within 1 Year	0.5	Somewhat Infl	0.5	2	0.5	0.5
Energy Efficient	Less Efficient	Later, but within 1 Year	0.5	Not at all Infl	1	1	0.75	0.75
Energy Efficient	Don't Know	Same Time	.5-1	Somewhat Infl	0.5	1	0.5	0.75
Energy Efficient	Don't know	Later, but within 1 Year	0.5	Somewhat Infl	0.5	1	0.5	0.5
Don't Know	-	-	0-1	Somewhat Infl	0.5	2	0.25	0.75
Don't Know	-	-	0-1	Not at all Infl	1	3	0.5	1
					Total Free Ridership Score:		**63%**	**65%**

Gas Furnace Free Riders

Five questions are used to determine the Program Influence and the Participant Intent free ridership scores for gas furnace respondents, listed in Figure 4 below.

Program Influence

Responses to GF50 are used to assign the program influence score for each respondent. Respondents who were not at all influenced by the cash incentive are assigned a score of 1 (GF50=c), those who were somewhat influenced were assigned a 0.5 (GF50=b), those who were very influenced were assigned a 0 (GF50=a), and those who said they "don't know" were assigned the range from 0 to 1.

Participant Intent

Questions GF30 through GF40 are used to determine the customer's Participant Intent if the program did not exist. Respondents who purchased a gas furnace with an ECM blower answered question GF30 and respondents who purchased a gas furnace without an ECM blower answered GF31. In absence of the program, those who would not have purchased a gas furnace (GF30 or GF31=a) or would have purchased a standard efficiency gas furnace (GF30 or GF31=b and GF31=b) are assumed to have made a significant change due to the program and are assigned an intent score of 0. Those who would have purchased the same type of gas furnace (GF30 or GF31=c and GF32=a) at the same time (GF40=a) in absence of the program would not have changed their purchase and therefore are assigned an intent score of 1.

In absence of the program, respondents who would have changed their projects but retained some energy efficiency features are assigned a score of 0.5. This includes respondents who would have purchased a less efficient gas furnace than the one they purchased through the program (GF32=b). For respondents who purchased a gas furnace with an ECM blower, if they would have bought an energy efficient furnace but without an ECM blower if the program did not exist, they are assigned a score of 0.5. Respondents who would have purchased the same gas furnace in absence of the program (GF30 or GF31=c and GF32=a), but not at the same time (GF40=b or c) are also assigned a score of 0.5.

Respondents who did not know what action they would take if the program did not exist (GF30=e or GF31=d) are assigned a score that is a range of the possibilities, from 0 to 1. Respondents who would have purchased the same unit (GF30 or GF31=c and GF32=a) but did not know when (GF40=d) were also assigned the range of possibilities, from 0.5 to 1. Respondents who would have purchased an energy efficient unit (GF30 or GF31=c) at the same time (GF40=a), but did not know if it would be as energy efficient as the one bought through the program (GF32=c), were also given the range of 0.5 to 1.

Figure 4. Gas Furnace Free Ridership Questions

[Asked if purchased Gas Furnace with ECM]
GF30. Which of the following three statements best describes the actions you would have taken had the cash incentive NOT existed:
a. We would not have bought a Gas Furnace
b. We would have bought a standard efficiency Gas Furnace

c. We would have bought an energy efficient Gas Furnace and ECM Blower anyway
d. We would have bought an energy efficient Gas Furnace, but would not have bought the ECM Blower
e. Don't Know

[Asked if purchased Gas Furnace without ECM]
GF31. Which of the following three statements best describes the actions you would have taken had the cash incentive NOT existed:
a. We would not have bought a Gas Furnace
b. We would have bought a standard efficiency Gas Furnace
c. We would have bought an energy efficient Gas Furnace
d. Don't Know

GF32. If the cash incentive had not existed, would you have bought the SAME Gas Furnace that you purchased through the program, or would you have selected a Gas Furnace that was less expensive and less efficient, although still an energy efficient unit?
a. We would bought the same Gas Furnace as we did through the program
b. We would have bought a less expensive/less efficient unit
c. Don't Know

GF40. If the cash incentive was not available, would you have bought the energy efficient Gas Furnace?
a. At the same time
b. Within a year
c. More than a year later
d. Don't Know

GF50. We'd like to get a sense of what influenced you to purchase your Gas Furnace. How influential was the cash incentive in your decision to purchase an energy efficient Gas Furnace? Would you say the cash incentive was…
a. Very Influential
b. Somewhat Influential
c. Not at all Influential
d. Don't Know

Table 165 lists Participant Intent, Program Influence, and Total free ridership scores for each respondent who purchased a gas furnace with an ECM blower (N=83). Table 166 lists these values for the respondents who purchased a gas furnace without an ECM blower (N=49). The average minimum (56 percent) and maximum (57 percent) free ridership scores for all gas furnace respondents (N=132) are listed in Table 167.

Table 165: Free Ridership for Gas Furnace (WITH ECM BLOWER) Participants (N=83)

What Would Have Been Purchased in Absence of the Program?			Participant Intent Score	How Influential Was the Cash Incentive?	Program Influence Score	Frequency	Min Free Ridership Score	Max Free Ridership Score
What action would you have taken?	How efficient?	When would you have made the purchase?						
GF30	GF32	GF40		GF50				
No purchase	-	-	0	Very infl	0	2	0	0
Standard Efficiency	-	-	0	Very infl	0	4	0	0
Standard Efficiency	-	-	0	Somewhat infl	0.5	2	0.25	0.25
Energy Efficient with ECM	Same Unit	Same Time	1	Very infl	0	4	0.5	0.5
Energy Efficient with ECM	Same Unit	Same Time	1	Somewhat infl	0.5	14	0.75	0.75
Energy Efficient with ECM	Same Unit	Same Time	1	Not at all infl	1	17	1	1
Energy Efficient with ECM	Same Unit	Later, but within 1 yr	0.5	Very infl	0	1	0.25	0.25
Energy Efficient with ECM	Same Unit	Later, but within 1 yr	0.5	Somewhat infl	0.5	7	0.5	0.5
Energy Efficient with ECM	Same Unit	Don't Know	.5-1	Somewhat infl	0.5	1	0.5	0.75
Energy Efficient with ECM	Less Efficient	Same Time	0.5	Very infl	0	2	0.25	0.25
Energy Efficient with ECM	Less Efficient	Same Time	0.5	Somewhat infl	0.5	1	0.5	0.5
Energy Efficient with ECM	Less Efficient	Same Time	0.5	Not at all infl	1	1	0.75	0.75
Energy Efficient with ECM	Less Efficient	Later, but within 1 yr	0.5	Very infl	0	1	0.25	0.25
Energy Efficient with ECM	Less Efficient	Later, but within 1 yr	0.5	Somewhat infl	0.5	2	0.5	0.5
Energy Efficient with ECM	Less Efficient	> 1 year Later	0.5	Very infl	0	1	0.25	0.25
Energy Efficient with ECM	Less Efficient	Refused	0.5	Not at all infl	1	1	0.75	0.75
Energy Efficient with ECM	Don't know	Same Time	.5-1	Somewhat infl	0.5	2	0.5	0.75
Energy Efficient with ECM	Don't know	Later, but within 1 yr	0.5	Somewhat infl	0.5	1	0.5	0.5
Energy Efficient but no ECM	Same Unit	Same Time	0.5	Very infl	0	2	0.25	0.25
Energy Efficient but no ECM	Same Unit	Same Time	0.5	Somewhat infl	0.5	3	0.5	0.5

Energy Efficient but no ECM	Same Unit	Later, but within 1 yr	0.5	Very infl	0	1	0.25	0.25
Energy Efficient but no ECM	Same Unit	Later, but within 1 yr	0.5	Somewhat infl	0.5	1	0.5	0.5
Energy Efficient but no ECM	Same Unit	Don't Know	0.5	Somewhat infl	0.5	1	0.5	0.5
Energy Efficient but no ECM	Less Efficient	Same Time	0.5	Very infl	0	4	0.25	0.25
Energy Efficient but no ECM	Less Efficient	Same Time	0.5	Somewhat infl	0.5	2	0.5	0.5
Energy Efficient but no ECM	Less Efficient	Later, but within 1 yr	0.5	Very infl	0	1	0.25	0.25
Energy Efficient but no ECM	Less Efficient	Later, but within 1 yr	0.5	Somewhat infl	0.5	1	0.5	0.5
Energy Efficient but no ECM	Less Efficient	> 1 year Later	0.5	Very infl	0	1	0.25	0.25
Don't Know	-	-	0-1	Very infl	0	1	0	0.5
Don't Know	-	-	0-1	Somewhat infl	0.5	1	0.25	0.75

Table 166: Free Ridership for Gas Furnace (NO ECM BLOWER) Participants (N=49)

What Would Have Been Purchased in Absence of the Program?			Participant Intent Score	How Influential Was the Cash Incentive?	Program Influence Score	Frequency	Min Free Ridership Score	Max Free Ridership Score
What action would you have taken?	How efficient?	When would you have made the purchase?						
GF31	GF32	GF40		GF50				
Standard Efficiency	-	-	0	Very infl	0	7	0	0
Standard Efficiency	-	-	0	Somewhat infl	0.5	2	0.25	0.25
Standard Efficiency	-	-	0	Not at all infl	1	2	0.5	0.5
Energy Efficient	Same Unit	Same Time	1	Very infl	0	1	0.5	0.5
Energy Efficient	Same Unit	Same Time	1	Somewhat infl	0.5	10	0.75	0.75
Energy Efficient	Same Unit	Same Time	1	Not at all infl	1	10	1	1
Energy Efficient	Same Unit	Later, but within 1 yr	0.5	Somewhat infl	0.5	6	0.5	0.5
Energy Efficient	Same Unit	Later, but within 1 yr	0.5	Not at all infl	1	1	0.75	0.75
Energy Efficient	Less Efficient	Same Time	0.5	Very infl	0	3	0.25	0.25
Energy Efficient	Less Efficient	Same Time	0.5	Somewhat infl	0.5	4	0.5	0.5
Energy Efficient	Don't Know	Same Time	.5-1	Somewhat infl	0.5	1	0.5	0.75
Energy Efficient	Don't Know	Same Time	.5-1	Not at all infl	1	1	0.75	1
Energy Efficient	Don't Know	Don't Know	.5-1	Very infl	0	1	0.25	0.5

Table 167: Combined Gas Furnace Free Ridership Scores (N=132)

	Min Free Ridership Score	Max Free Ridership Score
Total Free Ridership Score	**56%**	**58%**

Windows Free Riders

Five questions are used to determine the Program Influence and the Participant Intent free ridership scores for window respondents, listed in Figure 5 below.

Program Influence

Responses to WIN45 are used to assign the program influence score for each respondent. Respondents who were not at all influenced by the cash incentive are assigned an influence score of 1 (WIN45=c), those who were somewhat influenced were assigned a 0.5 (WIN45=b), those who were very influenced were assigned a 0 (WIN45=a), and those who said they "don't know" were assigned the range from 0 to 1.

Participant Intent

Questions WIN6 through WIN35 determine the customer's purchase intent if the program did not exist. In absence of the program, those who would not have purchased new windows (WIN30=b) or windows that were about as efficient as their old ones (WIN33=a) [24] are assumed to have made a significant change due to the program and are assigned an intent score of 0.

Next, for respondents who said they would have purchased windows in absence of the program, responses to WIN6 and WIN33 are compared to assess if the respondent would have purchased windows that were less efficient or as efficient as those purchased through the program. Respondents who said that the windows they purchased through the program were the same efficiency as the windows they would have purchased without the program (WIN33=WIN6) and that they would have made the purchase at the same time (WIN35=a) would not have changed their purchases. These respondents are therefore assigned an intent score of 1. A few respondents said that if the program did not exist, they would have purchased windows that were more efficient than the ones they bought through the program. These respondents also receive an intent score of 1.

Alternatively, respondents who would have changed their purchase but still retained some energy efficient features are assigned a score of 0.5. This includes respondents who would have purchased windows that were less efficient (but still more efficient than their old ones) in absence of the program (WIN30>WIN6) and respondents who would have purchased windows of the same efficiency level (WIN30=WIN6), but at a different time (WIN35=b or c) are assigned a score of 0.5.

Respondents who did not know what action they would take if the program did not exist (WIN30=c) are assigned a score that is a range of the possibilities, from 0 to 1. In absence of the program, respondents who did not know if their windows would be about as energy efficient as

[24] WIN33 was not equal to "a" for any of the respondents, and therefore all respondents were assumed to have purchased windows that were more efficient than their old ones. Therefore, all program window purchases were can be described as having some level of increased energy efficiency. The exception is respondents who said WIN33=e, which is "don't know," for which the Program Intent score is the range of possibilities from 0 to 1.

their old ones, the same efficiency, or more efficient than the windows they purchased through the program receive a Program Intent score range of 0 to 1.

Figure 5. Windows Free Ridership Questions

WIN30. If the program did not exist, would you still have purchased new windows?
a. Yes
b. No
c. Don't Know

WIN6. Thinking about your new windows that were purchased through the program, how energy efficient are they relative to the old ones? Would you say your new windows are…
a. About as energy efficient as the old ones
b. Slightly more energy efficient than the old ones
c. Significantly more energy efficient than the old ones
d. The most energy efficient windows available
e. Don't Know

WIN33. Thinking about the efficiency of the old windows that were replaced through the program…if the program did not exist would you have bought windows that were…(READ)
a. About as energy efficient as the old ones
b. Slightly more energy efficient than the old ones
c. Significantly more energy efficient than the old ones
d. The most energy efficient windows available
e. Don't Know

WIN35. If the cash incentive was not available, when would you have bought new windows…(READ)
a. At the same time
b. Within a year
c. More than a year later
d. Don't Know

WIN45. We'd like to get a sense of what influenced you to purchase your windows. How influential was the cash incentive in your decision to purchase Energy Star windows? Would you say the cash incentive was…
a. Very Influential
b. Somewhat Influential
c. Not at all Influential
d. Don't Know

Table 168 lists Participant Intent, Program Influence, and Total scores for each respondent, as well as the average minimum (50 percent) and maximum (55 percent) free ridership scores for windows.

Table 168: Free Ridership for Windows Participants (N=44)

What Would Have Been Purchased in Absence of the Program?			Participant Intent Score	How Influential Was the Cash Incentive?	Program Influence Score	Frequency	Min Free Ridership Score	Max Free Ridership Score
What action would you have taken?	How efficient?	When would you have made the purchase?						
WIN30	WIN6/WIN33	WIN35		WIN45				
No	-	-	0	Very Infl	0	6	0	0
No	-	-	0	Somewhat Infl	0.5	1	0.25	0.25
Yes	Less Efficient	> than a Yr Later	.5	Very Infl	0	3	0.25	0.25
Yes	Don't Know	> than a Yr Later	0-1	Very Infl	0	2	0	0.5
Yes	Don't Know	> than a Yr Later	0-1	Somewhat Infl	0.5	1	0.25	0.75
Yes	Same Efficiency	> than a Yr Later	0.5	Very Infl	0	1	0.25	0.25
Yes	Same Efficiency	> than a Yr Later	0.5	Somewhat Infl	0.5	1	0.5	0.5
Yes	More Efficient	Later, but within a Yr	0.5	Very Infl	0	1	0.25	0.25
Yes	Same Efficiency	Later, but within a Yr	0.5	Somewhat Infl	0.5	2	0.5	0.5
Yes	Same Efficiency	Later, but within a Yr	0.5	Not at all Infl	1	1	0.75	0.75
Yes	Less Efficient	Same Time	0.5	Very Infl	0	1	0.25	0.25
Yes	Less Efficient	Same Time	0.5	Somewhat Infl	0.5	1	0.5	0.5
Yes	More Efficient	Same Time	1	Somewhat Infl	0.5	1	0.75	0.75
Yes	Same Efficiency	Same Time	1	Very Infl	0	3	0.5	0.5
Yes	Same Efficiency	Same Time	1	Somewhat Infl	0.5	8	0.75	0.75
Yes	Same Efficiency	Same Time	1	Not at all Infl	1	10	1	1
Don't Know	-	-	0-1	Somewhat Infl	0.5	1	0.25	0.75
					Total Free Ridership Scores		**53%**	**57%**

Insulation Free Riders

The four questions in Figure 6 are used to determine the Program Influence and the Participant Intent free ridership scores for insulation.

Program Influence

Responses to IN30 are used to assign the Program Influence score for each respondent. Respondents who were not at all influenced by the cash incentive are assigned an influence score of 1 (IN30=c), those who were somewhat influenced were assigned a 0.5 (IN30=b), those who were very influenced were assigned a 0 (IN30=a), and those who said they "don't know" were assigned the range from 0 to 1.

Participant Intent

Questions IN15 through IN25 determine the customer's purchase intent if the program did not exist. In absence of the program, those who would not have installed insulation (IN15=a) are assumed to have made a significant change due to the program and are assigned an intent score of 0. Respondents who would have installed insulation at the same time (IN15=c) and in all the same areas (IN25=a) would have not changed their projects in absence of the program and are assigned an intent score of 1.[25]

If the program did not exist, respondents who would have changed their projects but still retained some energy efficiency features include those who would have installed insulation at a later date (IN20=a or b) or if they would have installed insulation in less areas (IN25=b).

Respondents who did not know what action they would take if the program did not exist (IN15=d) are assigned a score that is a range of the possibilities, from 0 to 1. Similarly, respondents who did not know when they would have install insulation or did not know how much insulation they would have installed are assigned the range of possibilities from 0.5 to 1.

Figure 6. Insulation Free Ridership Questions

IN15. Which of the following THREE statements best describes the actions you would have taken had the cash incentive NOT existed:
a. We would not have installed insulation
b. We would have installed insulation anyway, but at a later date
c. We would have installed insulation anyway, and at the same time
d. Don't Know

IN20. If the cash incentive was not available, when would you have installed insulation? (Asked if IN15=b)
a. Within a year
b. More than a year later
c. Don't Know

[25] Respondents who only installed one type of insulation (wall, ceiling, floor, duct) did not answer question IN25. Thus, these respondents who would not have changed their project and installed only one type of insulation are treated as if they answered IN25=a "I would have installed insulation in all of these areas."

IN25. Our records indicate that you installed insulation in your [Ceiling, Ducts, Floor, Wall] If the program did not exist would you have installed insulation in all of these areas, or just some of these areas? (Asked if Participant installed insulation in more than one area)
a. I would have installed insulation in ALL of these areas
b. I would have installed insulation in SOME of these areas
c. Don't Know

IN30. We'd like to get a sense of what influenced you to purchase your insulation. How influential was the cash incentive in your decision to install insulation? Would you say the cash incentive was…
a. Very Influential
b. Somewhat Influential
c. Not at all Influential
d. Don't Know

Table 169 lists Participant Intent, Program Influence, and Total scores for each respondent, as well as the average minimum (60 percent) and maximum (61 percent) free ridership scores for insulation.

Table 169: Free Ridership for Insulation Participants (N=193)

What Would Have Been Purchased in Absence of the Program?			Participant Intent Score	How Influential Was the Cash Incentive?	Program Influence Score	Frequency	Min Free Ridership Score	Max Free Ridership Score
What action would you have taken?	How much?	When would you have made the purchase?						
IN15	IN25	IN20		IN30				
No	-	-	0	Very Infl	0	11	0	0
No	-	-	0	Not at all Infl	1	3	0.5	0.5
Yes	Fewer Areas	Later, but within 1 Yr	0.5	Very Infl	0	2	0.25	0.25
Yes	Fewer Areas	Later, but within 1 Yr	0.5	Somewhat Infl	0.5	1	0.5	0.5
Yes	Fewer Areas	Later, but within 1 Yr	0.5	Not at all Infl	1	1	0.75	0.75
Yes	Same Area(s)	Later, but within 1 Yr	0.5	Very Infl	0	6	0.25	0.25
Yes	Same Area(s)	Later, but within 1 Yr	0.5	Somewhat Infl	0.5	9	0.5	0.5
Yes	Same Area(s)	Later, but within 1 Yr	0.5	Not at all Infl	1	1	0.75	0.75
Yes	Don't Know	> 1 Yr Later	0.5	Very Infl	0	1	0.25	0.25
Yes	Fewer Areas	> 1 Yr Later	0.5	Very Infl	0	5	0.25	0.25
Yes	Fewer Areas	> 1 Yr Later	0.5	Somewhat Infl	0.5	5	0.5	0.5
Yes	Fewer Areas	> 1 Yr Later	0.5	Not at all Infl	1	1	0.75	0.75
Yes	Same Area(s)	> 1 Yr Later	0.5	Very Infl	0	15	0.25	0.25
Yes	Same Area(s)	> 1 Yr Later	0.5	Somewhat Infl	0.5	10	0.5	0.5
Yes	Fewer Areas	Same Time	0.5	Very Infl	0	1	0.25	0.25
Yes	Fewer Areas	Same Time	0.5	Somewhat Infl	0.5	8	0.5	0.5
Yes	Same Area(s)	Same Time	1	Very Infl	0	19	0.5	0.5
Yes	Same Area(s)	Same Time	1	Somewhat Infl	0.5	47	0.75	0.75
Yes	Same Area(s)	Same Time	1	Not at all Infl	1	41	1	1
Yes	Same Area(s)	Same Time	1	Don't Know	0-1	1	0.5	1

Yes	Fewer Areas	Don't Know	0.5	Very Infl	0	2	0.25	0.25
Yes	Refused	Don't Know	.5-1	Somewhat Infl	0.5	1	0.5	0.75
Don't Know	Same Area(s)	-	0-1	Very Infl	0	1	0	0.5
Refused	-	-	0-1	Somewhat Infl	0.5	1	0.25	0.75
						Total Free Ridership Scores	**60%**	**61%**

CFL Free Riders

As a standard practice during Home Energy Reviews (HER), the CSG Energy Advisors install free CFLs in their customers' homes. This type of turnkey service is expected to have low levels of free ridership. As no cash incentive was offered, only an intent free ridership score can be estimated. Respondents considered for free ridership are those who had never purchased CFLs for their homes prior to receiving a HER (N=139).

Participant Intent

The respondent's intent to install CFLs in absence of their HER is determined through questions CFL20 through CFL30. Respondents who would not have installed CFLs without a HER are not considered free riders and are assigned an intent score of 0 (CFL20=b or CFL25=a).

Respondents who did have specific plans to install CFLs in their homes (CFL20=a) and would have installed the same number of CFLs (CFL25=c) at roughly the same time (CFL30=a) are assumed to be free riders and assigned an intent score of 1.

Middle scores are assigned to those who would have installed some CFLs but would have installed fewer (CFL25=b) and/or would have done so at a later date (CFL30=b, c, or d). Respondents who do not know what they would have done without a HER (CFL20=c) are assigned the range of possibilities from 0 to 1. Those who would have installed CFLs, but do not know how many (CFL25=d) are also assigned the appropriate range of possibilities from 0 to 1. Those who do not know when (CFL30=e) are also assigned the appropriate range of possibilities from 0.5 to 1.

Figure 7. CFL Free Ridership Questions

CFL20. Before your Home Energy Review, did you have specific plans to install CFLs in your home?
a. Yes
b. No
c. Don't Know

CFL25. If you had not received free CFLs during the Home Energy Review, which of the following three statements best describes the actions you would have taken:
a. We would not have installed CFLs in our home
b. We would have installed fewer CFLs
c. We would have installed the same number of CFL's
d. Don't Know

CFL30. If you had not participated in the Home Energy Review and received free CFL bulbs, when would you have bought CFLs:
a. At roughly the same time as the Home Energy Review
b. Within a few months of the Home Energy Review
c. Within a year of the Home Energy Review
d. More than a year after the Home Energy Review
e. Don't Know

Table 170 lists the free ridership scores for each respondent, as well as the average minimum (6 percent) and maximum (11 percent) free ridership scores for CFLs.

Table 170: Free Ridership for CFL Participants (N=139)

What Would Have Been Purchased in Absence of the Program?			Frequency	Low Free Ridership (Intent) Score	High Free Ridership (Intent) Score
Did you have plans to purchase CFLs?	How many would you have installed?	When would you have made the purchase?			
CFL20	CFL25	CFL30			
No	None	-	46	0	0
No	Installed Fewer	Same Time	3	0	0
No	Installed Fewer	Within a Few Months	13	0	0
No	Installed Fewer	Within a Yr	16	0	0
No	Installed Fewer	More Than 1 Yr	4	0	0
No	Installed Fewer	Don't Know	2	0	0
No	Installed Same Number	Within a Few Months	7	0	0
No	Installed Same Number	Within a year	9	0	0
No	Installed Same Number	More Than 1 Yr	1	0	0
No	Installed Same Number	Don't Know	3	0	0
No	Don't Know	-	7	0	0
No	Missing	-	3	0	0
Yes	None	-	2	0	0
Yes	Installed Same Number	Same Time	1	1	1
Yes	Installed Same Number	Within a Few Months	4	0.5	0.5
Yes	Installed Fewer	Within a Few Months	2	0.5	0.5
Yes	Installed Same Number	Within a Yr	2	0.5	0.5
Yes	Installed Fewer	Within a Yr	8	0.5	0.5
Yes	Don't Know	-	1	0	1
Don't Know	Don't Know	-	5	0	1
		Total Free Ridership Scores		**6%**	**11%**

Free ridership, by measure, is summarized in Table 171. The highest free ridership was for heat pumps and the lowest was for CFLs.

Table 171: Participant Free Ridership Score

Measure Type	Low Score Percent	High Score Percent	Midpoint Percent
Heat Pump	63%	65%	64%
Gas Furnace	56%	58%	57%
Windows	53%	57%	55%
Insulation	60%	61%	60%
CFLs	6%	11%	9%

Participant Spillover

This section calculates participant spillover from HES (N=958). The spillover effect can be defined as all adoptions of energy savings measures that result from the program, but are not done through direct program participation. This analysis of participant spillover identifies program-eligible adoptions that were not rebated through HES. Equipment types considered include insulation, windows, heat pumps, gas furnaces, and CFLs.

The participant survey gathered information on spillover equipment installations by participants during 2006 and 2007. In a previous evaluation, Itron calculated HES participant spillover for equipment purchases made in 2004 and 2005 and the same methodology is repeated in this evaluation to allow for a comparison across program years[26].

The sample distribution of measure installations is as follows.

- Gas Furnace (N=18)
- Heat Pump (N=14)
- Windows (N=121)
- Insulation (N=81)
- CFLs (N=258)

The survey instrument was designed to collect information about the efficiency level of measures installed, the self-reported influence of the Energy Trust on the purchase decisions, and if cash incentives were received for the high efficiency product. A participant measure adoption is considered a spillover adoption if the following criteria are met:

1. The measure qualifies for the HES program

[26] 2003-2004 Home Energy Savings Program Residential Impact Evaluation For the Energy Trust of Oregon, Inc.

2. The degree of self-reported influence of the Energy Trust on the purchase decision is sufficiently high to determine that the purchase would not have been made in absence of the program.

3. The customer did not receive any cash incentives for the measure purchase or installation

The remainder of this section will determine which of the adopted measures satisfy the three criteria above. Measures that meet all three requirements are considered HES participant spillover. Respondents who had purchased more than one type of measure were questioned separately about each one. Therefore, in this section, the sample size (N) refers to the number of respondents who installed a particular type of measure.

Criterion 1. Measure Qualifies for the HES program

High efficiency equipment measures are considered eligible for the HES program. Various question batteries determined the efficiency level of each measure type. Notably, equipment that is recommended by the respondent's Home Energy Review is not included in the participant spillover.[27]

Gas Furnaces and Heat Pumps

To meet the first criterion, the gas furnaces and heat pumps had to be high efficiency. Therefore, the respondent was asked if the equipment was high efficiency or standard efficiency, and probed further to ask "Why do you think it is that efficiency?" For the equipment to be considered eligible, the respondent must have said that the measure is "high efficiency" and provide sufficient justification for his/her response. The reply "don't know" or a refusal to answer is not considered adequate. This question battery from the non-participant survey instrument is presented below.

Is the new <gas furnace/heat pump> high or standard efficiency?
a. High Efficiency
b. Standard efficiency
c. Don't Know

Why do you say that?
a. Record Verbatim
b. Don't Know

Windows

Windows are considered eligible for the program if they are ENERGY STAR windows, argon-gas filled, or Low-E. While some ENERGY STAR windows do not have sufficiently low U-values to receive a HES incentive, more technical questions about windows often yield

[27] A measure that is recommended by the Home Energy Review and subsequently installed is the result of a direct program activity. This is determined by question SP3: Did your Home Energy Review include a recommendation for installing a new <equipment>. Respondents who said "yes" are removed.

unreliable data, and so were avoided.[28] Therefore, the final spillover for windows is assumed to be an overstated figure. Respondents who said "yes" to WK1, WK3, or WK5 below are considered to have installed HES-eligible windows and therefore meet the first criterion.

WK1. Are the new windows you purchased Energy Star?
a. Yes
b. No
c. Don't know

WK1. Are the new windows you purchased Argon Gas filled?
a. Yes
b. No
c. Don't know

WK1. Do the new windows you purchased have Low E glass?
a. Yes
b. No
c. Don't know

Insulation and CFLs

With the exception of insulation measures that were recommended by the respondent's Home Energy Review, all insulation measures are assumed to be eligible for the HES program. All CFLs are considered to be program-qualifying.

Table 172 shows the breakdown of HES-eligible measures by equipment type.

Table 172: Meets Criterion 1
HES Eligible Measures Installed Since January 2006[29]

Measure Type	HES Eligible Measures Number of Respondents
Gas Furnace (N=18)	13
Heat Pump (N=14)	6
Windows (N=121)	81
Insulation (N=81)	39
CFLs (N=258)	258

Multiple responses accepted

[28] The 2003-2004 Itron report included only ENERGY STAR windows in its spillover

[29] An additional screening question was used for respondents who had a Home Energy Review. Did your Home Energy Review include a recommendation for installing <new equipment>? Respondents who answered "yes," were removed from this spillover in Table 172, as an affirmative response indicates that the measure was adopted due to program participation.

Criterion 2. Energy Trust "Very Influential"

The second criterion for spillover requires that it can be reasonably determined that the measures would not have been adopted in absence of the program. To assess this metric, the level of influence of the HES program on the purchase decision is explored. Respondents who installed HES-eligible measures were asked how influential HES programs or program materials were on their decisions to purchase high efficiency equipment. See questions below.[30]

It is assumed that a respondent who said that the Home Energy Review or the Home Energy Solutions program was "very influential" on his/her purchase decision would not have adopted the measure in absence of the program. These respondents who meet the first two criteria for spillover are listed in Table 173.

How influential was the Home Energy Review in your decision to purchase <equipment type>? Would you say…
a. Very Influential
b. Somewhat influential
c. Not at all influential
d. Don't Know

How influential was your experience in the Home Energy Solutions program or information provided through the program in your decision to purchase <equipment type>? Would you say…
a. Very Influential
b. Somewhat influential
c. Not at all influential
d. Don't Know

Table 173: Meets Criteria 1 & 2
Energy Trust "Very Influential" On Purchase Decision

Measure Type	Energy Trust "Very Influential"
	Number of Respondents
Gas Furnace (N=18)	2
Heat Pump (N=14)	1
Windows (N=121)	11
Insulation (N=81)	10
CFLs (N=258)	100

Multiple responses accepted

[30] For CFLs, only the second question was asked.

Criterion 3. No Cash Incentives Received

The final criterion for spillover is that the respondents did not receive any cash incentives for the purchases. When asked if they received a cash incentive for the purchase, only respondents who said "no" are included in the final spillover (rather than "yes" or "don't know"). Notably, cash incentives are not available for CFLs, and so the CFL measure category is exempt from this requirement. See Table 174 for the measures that meet all three criteria and represent the spillover in the participant sample.

Did you receive a cash incentive for installing your new <equipment>?
a. Yes
b. No
c. Don't Know

Table 174: Meets Criteria 1, 2, & 3
No Cash Incentives Received

Measure Type	No Cash Incentives Received
	Number of Respondents
Gas Furnace (N=18)	1
Heat Pump (N=14)	1
Windows (N=121)	10
Insulation (N=81)	3
CFLs (N=258)	100

Participant Spillover

The values listed in Table 174 above represent the HES program spillover adoptions for our participant sample over 2006 and 2007. To determine the annual spillover rate in the sample, these values are converted into annual figures by multiplying the values by a factor of 0.5. The resulting sample spillover values are then divided by the total survey sample (N=958) for each measure type to obtain the sample spillover rates.

The sample spillover rates are then extrapolated to the appropriate participant population to yield the final participant spillover rate.

The appropriate participant population is less than the total population. Appropriate participants are ones who we can reasonably assume will make an additional purchase. It is less likely that a participant who installs a particular measure through the HES program will install that same measure again. Thus, it is reasonable to assume that a person who installs a measure, such as a gas furnace, is less likely to install an additional gas furnace. Therefore, the appropriate population excludes the number of installations within the respective measure category for which spillover is being calculated. For example, there were 15,068 total single-family customer

installation sites through the HES program in 2006. 5,535 of these were gas furnaces. Therefore, the appropriate population for gas furnaces is 9,533 (15,068 – 5,535) and an estimate of the final population spillover is calculated by multiplying the gas furnace spillover rate (0.05%) by the population (9,533). [31]

Lastly, the final participant spillover rate expresses participant spillover as a percent of program savings. To obtain the final participant spillover rate, the number of program participants in 2006 is divided by the estimated final population spillover adoptions.

The spillover adoptions and spillover rates for our sample are listed Table 175 and spillover rates extrapolated to the population in 2005 and 2006 are listed in Table 176. In part, the low final spillover rate for gas furnaces is likely due to the high share of participants who have already installed one through the HES program.

Table 175: Participant Spillover (Sample)

Measure Type	Total Spillover Measures Adopted, 2006 & 2007	Total Spillover Measures Adopted, Per Year	Spillover Rate, Per Year
Gas furnace	1	0.5	0.05%
Heat pump	1	0.5	0.05%
Windows	10	5	0.52%
Insulation	3	1.5	0.16%
CFLs	100	50	5.22%

[31] Total Population data are from the Energy Trust program tracking database

Table 176: Participant Spillover (Extrapolated to 2005 and 2006 Populations)

	2005				2006			
Measure Type	**Participant Population (excluding measure)**	**Population Extrapolated Spillover Adoptions**	**Number of Program Year Participants**	**Final Participant Spillover Rate**	**Participant Population (excluding measure)**	**Population Extrapolated Spillover Adoptions**	**Number of Program Year Participants**	**Final Participant Spillover Rate**
Gas furnace	7,824	4	5,907	<1%	9,533	5	5,535	<1%
Heat pump	13,151	7	580	1%	14,119	7	949	1%
Windows	13,018	68	713	9%	14,567	76	501	15%
Insulation	11,399	16	3,775	<1%	11,537	18	3,531	1%
CFLs	10,422	544	3,309	16%	9,524	497	5,544	9%

Non-Participant Spillover

This section calculates non-participant spillover from the HES program (N=2,003). Energy efficient measures installed by non-participants due to influences from Energy Trust are spillovers from program activities.

The non-participant survey gathered information on equipment installations by non-participants during 2006 and 2007. As with the participant spillover, Itron calculated HES non-participant spillover for equipment purchases made in 2004 and 2005 and the same methodology is repeated in this evaluation to allow for a comparison across program years.[32]

The sample distribution of measure installations is as follows.

- Gas Furnace (N=75)
- Windows (N=285)
- Heat Pump (N=65)
- Insulation (N=208)
- CFLs (N=1,233)

The survey instrument was designed to collect information about the efficiency level of measures installed, the self-reported influence of the Energy Trust on the purchase decisions, and if cash incentives were received for the installation or the purchase of the high efficiency product. A non-participant measure adoption is considered a spillover adoption if the following criteria are met:

1. The measure qualifies for the HES program

[32] 2003-2004 Home Energy Savings Program Residential Impact Evaluation For the Energy Trust of Oregon, Inc.

2. The degree of self-reported influence of the Energy Trust on the purchase decision is sufficiently high to determine that the purchase would not have been made in absence of the program.

3. The customer did not receive any cash incentives for the measure purchase or installation

The remainder of this section will determine which of the adopted measures satisfy the three criteria above. Measures that meet all three requirements are considered HES spillover. Respondents who had purchased more than one type of measure were questioned separately about each one. Therefore, in this section, the sample size (N) refers to the number of respondents who installed a particular type of measure.

Criterion 1. Measure Qualifies for the HES program

High efficiency equipment measures are considered eligible for the HES program. Various question batteries determined the efficiency level of each measure type.

Gas Furnaces and Heat Pumps

To meet the first criterion, the gas furnaces and heat pumps had to be high efficiency. For gas furnaces and heat pumps, the respondent was asked if the equipment was high efficiency or standard efficiency, and probed further to ask "Why do you think it is that efficiency?" For the equipment to be considered eligible, the respondent must have said that the measure is "high efficiency" and provide sufficient justification for his/her response. The reply "don't know" is not considered adequate. This question battery from the non-participant survey instrument is presented below.

Have you purchased a new <gas furnace/heat pump> for your home since January 2006?
a. Yes
b. No
c. Don't know

Is the new <gas furnace/heat pump> high or standard efficiency?
a. High Efficiency
b. Standard efficiency
c. Don't Know

Why do you think that it is that efficiency?
a. Record Verbatim
b. Don't Know

Windows

Windows are considered eligible for the program if they are ENERGY STAR windows, argon-gas filled, or Low-E. While some ENERGY STAR windows do not have sufficiently low U-values to receive a HES incentive, more technical questions about windows often yield

unreliable data, and so were avoided.[33] Therefore, the final spillover for windows is assumed to be an overstated figure. Respondents who said "yes" to WK1, WK3, or WK5 below are considered to have installed HES-eligible windows and therefore meet the first criterion.

WK1. Are the new windows you purchased Energy Star?
a. Yes
b. No
c. Don't know

WK1. Are the new windows you purchased Argon Gas filled?
a. Yes
b. No
c. Don't know

WK1. Do the new windows you purchased have Low E glass?
a. Yes
b. No
c. Don't know

Insulation and CFLs

All CFL and insulation adoptions are considered to be eligible for the HES program. Respondents who said "yes" to the questions below are considered eligible for the HES program.

Since January 2006, have you installed any CFLs in your home?
a. Yes
b. No
c. Don't know

Have you added any insulation to your home since January 2006?
a. Yes
b. No
c. Don't know

Table 177 shows the breakdown of HES-eligible measures by equipment type. Over 75 percent gas furnaces and heat pumps were high efficiency, and therefore eligible for the HES program.

[33] This is the same methodology used in the 2003-2004 Itron report

Table 177: Meets Criterion 1
HES Eligible Measures Installed Since January 2006

Measure Type	HES Eligible Measures Number of Respondents
Gas furnace (N=75)	57
Heat pump (N=65)	51
Windows (N=285)	245
Insulation (N=208)	208
CFLs (N=1,233)	1,233

Multiple responses accepted

Criterion 2. Energy Trust "Very Influential"

The second criterion for spillover requires that it can be reasonably assumed that the measures would not have been adopted in absence of the program. To assess this metric, the level of influence of the Energy Trust on the purchase decision is determined. Respondents who installed HES-eligible measures (and were aware of Energy Trust and/or its sub-programs) were asked how influential Energy Trust programs or program materials were on their decisions to purchase high efficiency equipment. See question below.

How influential was the Energy Trust of Oregon, or any specific Trust programs or program materials on your decision to purchase an energy efficient <equipment type>?

Would you say…
a. Very Influential
b. Somewhat influential
c. Not at all influential
d. Don't Know

It is assumed that a respondent who said that the Energy Trust was "very influential" on his/her purchase decision would not have adopted the measure in absence of the program. These respondents who meet the first two criteria for spillover and are listed in Table 178.

Table 178: Meets Criteria 1 & 2
Energy Trust "Very Influential" On Purchase Decision

Measure Type	Energy Trust "Very Influential"
	Number of Respondents
Gas furnace (N=75)	5
Heat pump (N=65)	2
Windows (N=285)	30
Insulation (N=208)	8
CFLs (N=1,233)	92

Multiple responses accepted

Criterion 3. No Cash Incentives Received

The final criterion for spillover is that the respondents did not receive any cash incentives for the purchases. When asked if they received a cash incentive for the purchase, only respondents who said "no" are included in the spillover (rather than "yes" or "don't know"). Notably, cash incentives are not available for CFLs, and so the CFL measure category is exempt from this requirement.

In addition, respondents who purchased gas furnaces or heat pumps were asked if they received an Oregon tax credit for their purchase and only respondents who said "no" are retained in the final spillover (shown in Table 179).

Did you receive a cash incentive for installing your new <equipment>?
a. Yes
b. No
c. Don't Know

Did you take advantage of the Oregon Tax Credit for the <gas furnace/heat pump> you installed? (If respondent states they haven't paid taxes yet, "Do you plan to take advantage of the Oregon Tax Credit?)
a. Yes
b. No
c. Don't Know

Table 179: Meets Criteria 1, 2, & 3
No Cash Incentives Received

Measure Type	No Cash Incentives Received
	Number of Respondents
Gas furnace (N=75)	2
Heat pump (N=65)	1
Windows (N=285)	26
Insulation (N=208)	8
CFLs (N=1,233)	92

Non-Participant Spillover

Sample Spillover Rates

The values listed in Table 179 above represent the HES program spillover adoptions for our non-participant sample over 2006 and 2007. To determine the annual spillover adoptions, these values are first converted into annual figures, by multiplying the values by a factor of 0.5.

Next, two different spillover rates are calculated for our non-participant sample and listed in Table 180.

- The first is the Sample Spillover Rate, generated by diving the number of annual spillover adoptions for each measure by the total non-participant sample (N=2,003). For example, for gas furnaces, only one non-participant surveyed purchased a gas furnace that qualifies as a spillover adoption (annually), so the Sample Spillover is one divided by the total non-participant sample (2,003), which yields 0.05 percent (1/2003).

- The second spillover rate is the Measure Sample Spillover Rate, calculated by dividing the number of annual spillover adoptions by the total number of respondents who installed that type of measure in the sample. For example, 75 nonparticipants surveyed installed a gas furnace, so the Measure Sample Spillover Rate for gas furnace is calculated by dividing the one eligible spillover adoption by the number of respondents who purchased a gas furnace (75), which yields a Measure Spillover Rate of 1.3 percent (1/75).

The sample spillover is then extrapolated to the total population of single-family non-participating Energy Trust customers in Oregon. This process can be achieved by using the Sample Spillover Rate or the Measure Sample Spillover Rate.

Table 180: Non-Participant Sample Spillover Rates

Measure Type	Non-participants in Sample with Spillover Adoptions (2006 & 2007)	Non-participants in Sample with Spillover Adoptions (per Year)	Sample Spillover Rate	Measure Sample Spillover Rate
Gas furnace	2	1	0.05%	1.3%
Heat pump	1	0.5	0.02%	0.8%
Windows	26	13	0.65%	4.6%
Insulation	8	4	0.20%	1.9%
CFLs	92	46	2.30%	3.7%

Extrapolation to the Population Using "Sample Spillover Rate"

Table 181 lists the estimated non-participant Spillover Adoptions in Oregon for each measure by applying the Sample Spillover Rate to the non-participant population. For example, the Sample Spillover Rate for gas furnaces is 0.05 percent, which is multiplied by the 2005 non-participant population (896,816 households) to yield a spillover of 448 households in Oregon.

This calculation results in an estimated 20,000 CFL spillover adoptions among non-participants in Oregon each year. For comparison, the Northwest Energy Efficiency Alliance (NEEA) estimates that there were over 2 million CFLs sold in Oregon in 2005. In this context, this CFL non-participant spillover for the HES program is relatively small compared with the overall CFL market in the region. There are also several other agencies such as NEEA, Earth Advantage, and the City of Portland that are actively promoting CFLs in Oregon. CFLs that have been installed as a result of these other program efforts should not be counted as non-participant spillover. Consequently, the CFL estimates presented here are likely overstated as they are reflecting in part the promotional efforts from these other entities.

The final Non-Participant Spillover Rate is expressed as a percentage of program savings in 2005 and 2006 and is shown in Table 181. This last computation divides our estimate of non-participant Spillover Adoptions in Oregon by the number of HES Program Participants for each measure type for both years.

Table 181: Extrapolated to Population Using Sample Spillover Rate

	2005			2006		
Measure Type	**Spillover Adoptions in Oregon**	**Number of HES Program Participants**	**Final Non-Participant Spillover Rate**	**Spillover Adoptions in Oregon**	**Number of HES Program Participants**	**Final Non-Participant Spillover Rate**
Gas furnace	448	5,907	8%	448	5,535	8%
Heat pump	179	580	31%	179	949	19%
Windows	5,829	713	818%	5,821	501	1,162%
Insulation	1,794	3,775	48%	1,791	3,531	51%
CFLs	20,627	3,309	623%	20,596	5,544	372%

Extrapolation to the Population Using "Measure Sample Spillover Rate"

For gas furnaces, heat pumps, and windows, the spillover is also extrapolated to the population using the Measure Sample Spillover Rate. This methodology applies the Measure Sample Spillover Rate to the estimated number of households (existing homes only) who installed each equipment type in Oregon in 2005 and 2006.

The estimated sales figures are listed in Table 182 and were obtained from external reports on these markets. For example, there are an estimated 21,280 existing households that purchase gas furnaces each year. So, the population spillover for gas furnaces is calculated by multiplying the Measure Sample Spillover Rate of 1.3 percent by the number of households that purchased furnaces each year (21,280) to arrive at a spillover value of 284.[34] The annual non-participant spillover households for heat pumps are calculated to be 54[35] and for windows it is over 10,000.[36]

[34] Sales figures for gas furnaces are from the report "Gas Furnaces: Energy Trust of Oregon Natural Gas Furnace Market Assessment" (2005). The report estimates that 36,000 to 40,000 gas furnaces were sold to households in the NW Natural service territory and 56 percent were to existing homes. Annual sales of gas furnaces are estimated to be 56 percent of 38,000 households.

[35] Sales figures for heat pumps are from the report "NEEA Single-Family Residential Existing Construction Stock Assessment" (2007). The study estimates that 14 percent of existing households in the Pacific Northwest have a heat pump (which is equivalent to 125,554 non-participant households). Data from the Regional Technical Forum show that the Usable Equipment Life for heat pumps is 18 years and therefore, 5.5 percent of heat pumps are assumed to be replaced each year. Annual sales of heat pumps per household are therefore estimated to be 6,975 (5.5 percent of 125,554).

[36] Sales figures for windows are from the report "NEEA Long Term Monitoring and Tracking Report on 2007 Activities 2007." The study estimates that 1,661,000 windows were shipped to existing households in Oregon, Washington, Idaho, and Montana in 2005 and that 1,634,000 were shipped in 2006. Population weights were used from 2007 Census data to determine the number of sales in Oregon. The average number of windows purchased by each household is estimated using the Energy Trust HES participant tracking database (In 2005 average windows purchased per household = 2.08, in 2006 average = 1.07). The number windows sold to existing homes in Oregon

Table 182: Estimated Number of Existing Households with Equipment Purchases

Measure Type	2005	2006
Gas furnace	21,280	21,280
Heat pump	6,975	6,975
Windows	236,134	450,567

Table 183: Extrapolated to Population Using Measure Sample Spillover Rate

	2005			2006		
Measure Type	Spillover Adoptions in Oregon	Number of HES Program Participants	Final Non-Participant Spillover Rate	Spillover Adoptions in Oregon	Number of HES Program Participants	Final Non-Participant Spillover Rate
Gas furnace	284	5,907	5%	284	5,535	5%
Heat pump	54	580	9%	54	949	6%
Windows	10,771	713	1,511%	20,552	501	4,102%

The final estimates of 2005 and 2006 non-participant program spillover vary widely among the measure types. The broad fluctuations are an expected outcome, as only about 0.2 percent (2,003 out of about 900,000) of the total non-participant Energy Trust customers were sampled. Therefore, each spillover adoption identified in the non-participant survey represents approximately 450 non-participant adoptions. In contrast, about seven percent of the participant population was surveyed in the HES participant survey (results shown in previous section), and as a result, each participant spillover adoption identified represents less than eight participant adoptions. In addition, the spillover for windows is affected by an upward bias, as all ENERGY STAR windows in our sample are considered as spillover for this analysis (as not all ENERGY STAR windows are eligible for HES cash incentives). With these definitions, the higher windows spillover numbers are not surprising given that the vast majority of windows sold in Oregon meet (at a minimum) the ENERGY STAR criteria.

Overall, this analysis shows that there is some non-participant spillover for each measure. These estimates are similar to those found in the 2003–2004 HES impact evaluation using a similar method. The process of weighting survey results to the population, however, results in very high levels of nonparticipant spillover for some measures, as shown in Table 181. We are also not able to disentangle the influence of other efficiency programs in Oregon on the adoption of these measures, which also inflates the spillover estimate. For these reasons, the spillover estimates are presented here for illustrative purposes and we do not recommend that these estimates be used in

each year is divided by the average number of windows sold to each household each years to yield the final estimate of the number of households who purchased windows in Oregon each year.

the impact calculations for the HES program.

5. GROSS BILLING/NET IMPACT ANALYSIS

The gross billing analysis discussed in this section serves to determine the realized energy savings resulting from the installation of measures through the Home Energy Solutions program. Billing models were estimated separately for electric and gas measures. These models were estimated using a sample of participants and some non-participants from program years 2005-06. Ordinary least squares (OLS) regression methods were used in estimating the models. Other estimation techniques such as a random effects model were attempted, but were abandoned in favor of more stable estimates resulting from the OLS models. Data sources as well as model specifications, data censoring, and model results for the electric and gas models are discussed below. Following the model discussions, the results are adjusted using free ridership and spillover rates to determine the *ex post* realized net impacts for the program.

5.1 DATA SOURCES

Information from program tracking data in combination with survey data were used in conducting a billing analysis to determine gross savings impacts for the Home Energy Solutions program. Specifically, three sources of data were used in this billing analysis: utility billing data with weather information, program tracking data from Energy Trust participant databases, and telephone survey data for participants and non-participants.

Utility billing data for the electric model were collected from Portland General Electric (PGE) and Pacific Power. For gas utility customers billing data were obtained from Northwest Natural Gas. Monthly meter reads were included in the data, along with the exact date of the read, site addresses, kWh or therm usage, and length of days in between meter reads. Energy Trust also added monthly weather data in terms of heating degree days and cooling degree days for each customer. The period of billing data collected spans from the start of 2004 (and earlier for some customers) through the end of 2007. We were able to obtain electric and gas billing data for a sample of non-participants from the utilities by matching addresses to account numbers in the database. Because of this, a select number of non-participants with complete billing data were able to be included in the billing models.

Energy Trust provided program tracking data from their database of HES and HER participants. These data included information on the type of equipment installed, quantities installed, date of installation, and expected annual savings estimates in kWh and therms. Tracking data were provided for participants in program years 2005–06. These data were matched to utility billing data by customer address.

The telephone survey data were used to supplement information provided in the program tracking data. Survey data provided additional demographic information on customers and their residences, including square feet, changes in number of residents, appliance mix, and other changes to the residence that may affect energy use.

5.2 ELECTRIC BILLING MODELS

Monthly billing models were used to estimate realization rates for electric measures installed through the program. Three separate models were estimated to obtain precise realization rates for different measures. These models used OLS regression techniques with a sample of surveyed

participants and nonparticipants from program years 2005–06. This inclusion of nonparticipants as a control group takes into account any free ridership effects. A monthly model specification was chosen over an annual model for its stability and yielding the most logical results as a cross-section time series model.

Several criteria were used to censor out observations from the electric billing models. Customers were dropped for having too large variations in energy usage between the pre and post period. Additional observations were dropped for having fewer than 20 days or greater than 40 days between meter reads. Finally, some participants were dropped because of missing savings values from the program tracking data. The number of observations dropped due to each of these screens is listed below in Table 184. It should be noted that some customers fell into more than one of the censoring categories listed. The final number of observations used in each model is a subset of the larger sample of all customers. These subsets were chosen based on type of equipment installed by participants, whether survey data was available (in some cases), and distributions of electricity usage.

Table 184: Electric Model Data Censoring

	Observations
Participants and nonparticipants with electric billing data	450,109
Post usage 2 times pre usage	162,146
Pre usage 2 times post usage	72,818
Less than 20 or greater than 40 days between meter reads	7,816
Full sample available for models	**208,861**
Final heat pump model sample	**5,855**
Participants	1,157
Nonparticipants	4,698
Final windows/insulation model sample	**6,318**
Participants	3,123
Nonparticipants	3,195
Final survey model sample	**3,000**
Participants	3,000
Nonparticipants	0

Electric Heat Pump Model Specification

A monthly electric billing model was used to estimate a realization rate for heat pump installations that replaced existing heat pumps. Survey data were used in the model to capture the effects of changes to the home and weather data controls for weather related usage changes.

The specification for the electric billing model is as follows and variable definitions are provided in Table 185 below:

$$Post\_kWh = \alpha_{Month} + Pre\_kWh + \beta HDD\_Electric + \beta CDD\_AC$$
$$+\beta HeatPump + \beta SqFtInc + \beta PeopleInc + \beta PeopleDec + \beta Remodel$$

Table 185: Electric Heat Pump Model Variable Definitions

Variable Name	Definition
Post_kwh	Monthly kWh usage in the post-program month
Pre_kwh	Monthly kWh usage in the pre-program month
Jan	Month specific constant for January
Feb	Month specific constant for February
Mar	Month specific constant for March
Apr	Month specific constant for April
May	Month specific constant for May
June	Month specific constant for June
July	Month specific constant for July
Aug	Month specific constant for August
Sept	Month specific constant for September
Oct	Month specific constant for October
Nov	Month specific constant for November
Dec	Month specific constant for December
HDD_Electric	The difference in heating degree days between post and pre periods multiplied by dummy indicating customer has electric heating
CDD_AC	The difference in cooling degree days between post and pre periods multiplied by dummy indicating customer has air conditioning
HeatPump	Monthly kWh savings for heat pump installations that replaced an existing heat pump
SqFtInc	Increase in square footage of the home between pre and post periods
PeopleInc	Increase in number of people living in home between pre and post periods
PeopleDec	Decrease in number of people living in home between pre and post periods
Remodel	Dummy variable indicating customer remodeled home

Electric Heat Pump Model Results

The results of the electric heat pump billing model are shown in Table 186 below, with the coefficient estimates to be used as realization rates shaded in blue. Since the electric model uses a sample containing both participants and nonparticipants, the baseline installation activities are captured in the model. As a result, the coefficient estimates on the impact variables can be

interpreted as net realization rates as the effect of potential free ridership is reflected in the nonparticipant billing data.

The estimate for heat pump replacements is -0.23 and significant at less than one percent. This indicates that 23 percent of the expected electricity savings from installing a new heat pump are being realized in customers' bills. The variables indicating changes in the number of people living in the home (PeopleInc and PeopleDec) have the expected sign and PeopleInc is statistically significant at less than one percent. The other survey variables in the model (SqFtInc and Remodel) are both positive as expected, but not statistically significant. The month specific constants indicate that electricity usage is highest in the winter months and in July, which is typical of customers who have heat pumps.

Table 186: Electric Heat Pump Model Estimation Results

Variable Name	Coefficient Estimate	Standard Error	t statistic	Significance Level
Jan	76.20	16.12	4.73	<1%
Feb	107.68	16.52	6.52	<1%
Mar	111.26	15.16	7.34	<1%
Apr	112.43	18.25	6.16	<1%
May	91.69	18.52	4.95	<1%
June	70.76	14.20	4.98	<1%
July	125.43	14.56	8.61	<1%
Aug	60.09	16.54	3.63	<1%
Sept	75.37	14.42	5.23	<1%
Oct	93.70	13.60	6.89	<1%
Nov	81.90	14.42	5.68	<1%
Dec	151.76	14.82	10.24	<1%
Pre_kwh	0.89	0.005	179.67	<1%
HDD_Electric	1.79	0.10	17.27	<1%
CDD_AC	1.39	0.17	8.29	<1%
HeatPump	-0.23	0.06	-4.06	<1%
SqFtInc	0.09	0.16	0.54	60%
PeopleInc	88.06	15.97	5.51	<1%
PeopleDec	-14.77	11.87	-1.24	21%
Remodel	4.02	9.52	0.42	67%

Electric Windows and Insulation Model Specification

A separate monthly electric billing model was used to estimate realization rates for windows, envelope insulation, and duct insulation. No survey data was used in this model, but weather data

is included to control for weather related usage changes. This model sample consists of participants who replaced windows or installed envelope or duct insulation as well as a nonparticipant group with a matching distribution of energy consumption.

The specification for the electric windows and insulation model is as follows and variable definitions are provided in Table 187 below:

$$Post\_kWh = \alpha_{Month} + \beta' Pre\_kWh + \beta' HDD\_Electric + \beta' CDD\_AC + \beta' Windows + \beta' Insulation + \beta' DuctIns$$

Table 187: Electric Windows/Insulation Model Variable Definitions

Variable Name	Definition
Post_kwh	Monthly kWh usage in the post-program month
Pre_kwh	Monthly kWh usage in the pre-program month
Jan	Month specific constant for January
Feb	Month specific constant for February
Mar	Month specific constant for March
Apr	Month specific constant for April
May	Month specific constant for May
June	Month specific constant for June
July	Month specific constant for July
Aug	Month specific constant for August
Sept	Month specific constant for September
Oct	Month specific constant for October
Nov	Month specific constant for November
Dec	Month specific constant for December
HDD_Electric	The difference in heating degree days between post and pre periods multiplied by dummy indicating customer has electric heating
CDD_AC	The difference in cooling degree days between post and pre periods multiplied by dummy indicating customer has air conditioning
Windows	Monthly kWh savings for window replacements
Insulation	Monthly kWh savings for installation of envelope insulation
DuctIns	Monthly kWh savings for installation of duct insulation

Electric Windows and Insulation Model Results

The results of the electric windows and insulation model are shown in Table 188 below, with the coefficient estimates to be used as realization rates shaded in blue. Since the model also uses a sample containing both participants and nonparticipants, the baseline installation activities are

captured in the model. Again, the coefficient estimates on the impact variables can be interpreted as net realization rates as the effect of potential free ridership is reflected in the nonparticipant billing data.

The estimates for windows and duct insulation are the opposite sign than expected but the coefficient on windows is not significant. This suggests that the realized savings for these measure types is effectively zero in this model specification. The estimate for envelope insulation has a value of -0.72 and is significant at less than one percent, indicating that customers realize 72 percent of expected electricity savings in their bills.

Table 188: Electric Windows/Insulation Model Estimation Results

Variable Name	Coefficient Estimate	Standard Error	t statistic	Significance Level
Jan	187.84	16.25	11.56	<1%
Feb	179.14	15.82	11.32	<1%
Mar	117.10	14.88	7.87	<1%
Apr	115.43	15.59	7.4	<1%
May	96.35	15.69	6.14	<1%
June	75.33	13.85	5.44	<1%
July	103.90	13.95	7.45	<1%
Aug	56.31	14.08	4	<1%
Sept	91.57	14.67	6.24	<1%
Oct	95.33	14.03	6.79	<1%
Nov	131.07	14.88	8.81	<1%
Dec	165.37	15.96	10.36	<1%
Pre_kwh	0.86	0.005	174.63	<1%
HDD_Electric	1.32	0.062	21.21	<1%
CDD_AC	0.69	0.26	2.63	<1%
Windows	0.04	0.12	0.3	76%
Insulation	-0.72	0.18	-3.94	<1%
DuctIns	0.50	0.20	2.49	1%

Electric Survey Data Model Specification

Finally, a monthly electric billing model was used to estimate realization rates for CFLs, heat pumps, envelope insulation, and a category of other measures. Survey data were used in this model to capture the effects of changes to the home and weather data controls for weather related usage changes. The sample for this model includes participants with survey data who installed any of the measures listed above.

The specification for the electric survey billing model is as follows and variable definitions are provided in Table 189 below:

$$Post\_kWh = \alpha_{Month} + \beta' Pre\_kWh + \beta' HDD\_Pre + \beta' CDD\_Pre$$
$$+\beta' CFL + \beta' HeatPump + \beta' Insulation + \beta' Other$$
$$+\beta' PeopleInc + \beta' PeopleDec + \beta' Remodel$$

Table 189: Electric Survey Data Model Variable Definitions

Variable Name	Definition
Post_kwh	Monthly kWh usage in the post-program month
Pre_kwh	Monthly kWh usage in the pre-program month
Jan	Month specific constant for January
Feb	Month specific constant for February
Mar	Month specific constant for March
Apr	Month specific constant for April
May	Month specific constant for May
June	Month specific constant for June
July	Month specific constant for July
Aug	Month specific constant for August
Sept	Month specific constant for September
Oct	Month specific constant for October
Nov	Month specific constant for November
Dec	Month specific constant for December
HDD_Pre	The difference in heating degree days between post and pre periods multiplied by dummy indicating customer has electric heating
CDD_Pre	The difference in cooling degree days between post and pre periods multiplied by dummy indicating customer has air conditioning
CFL	Monthly kWh savings for CFL installations
HeatPump	Monthly kWh savings for heat pump installations that replaced an existing heat pump
Insulation	Monthly kWh savings for installation of envelope insulation
Other	Monthly kWh savings for installation of other measures (windows, duct insulation, air seal)
PeopleInc	Increase in number of people living in home between pre and post periods
PeopleDec	Decrease in number of people living in home between pre and post periods
Remodel	Dummy variable indicating customer remodeled home

Electric Survey Model Results

The results of the electric survey billing model are shown in Table 190 below, with the coefficient estimates to be used as realization rates shaded in blue. Since this model uses a sample containing both participants and nonparticipants, the baseline installation activities are captured in the model. As a result, the coefficient estimates on the impact variables can be interpreted as net realization rates as the effect of potential free ridership is reflected in the nonparticipant billing data.

The estimates for all measures are the expected sign (negative). The CFL estimate of -0.18 indicates that customers are realizing 18 percent of the expected electricity savings in their bills. This estimate for heat pumps is 19 percent, for envelope insulation it is 470 percent, and for other measures (windows, duct insulation, and air seal combined) it is 9 percent. Of these only heat pumps and envelope insulation have statistically significant results. The variables indicating changes in the number of people living in the home (PeopleInc and PeopleDec) are both statistically significant, but PeopleDec does not have the expected sign.

Table 190: Electric Survey Data Model Estimation Results

Variable Name	Coefficient Estimate	Standard Error	t statistic	Significance Level
Jan	280.78	30.68	9.15	<1%
Feb	224.93	29.75	7.56	<1%
Mar	218.62	27.41	7.97	<1%
Apr	206.05	25.75	8	<1%
May	203.10	25.75	7.89	<1%
June	215.68	24.67	8.74	<1%
July	203.83	25.33	8.05	<1%
Aug	224.80	26.02	8.64	<1%
Sept	192.73	24.46	7.88	<1%
Oct	195.31	24.21	8.07	<1%
Nov	239.50	25.92	9.24	<1%
Dec	343.68	29.44	11.67	<1%
Pre_kwh	0.80	0.0078	103.86	<1%
HDD_Pre	0.00073	0.000034	21.75	<1%
CDD_Pre	0.00093	0.00019	4.87	<1%
CFL	-0.18	0.18	-1.03	30%
HeatPump	-0.19	0.07	-2.92	<1%
Insulation	-4.70	1.40	-3.37	<1%
Other	-0.092	0.26	-0.35	72%
PeopleInc	82.94	20.81	3.99	<1%
PeopleDec	57.39	23.26	2.47	1%
Remodel	9.46	14.71	0.64	52%

5.3 GAS BILLING MODEL

The gas billing model follows the same general process as described for the electric billing models. The gas model utilizes billing data for both participants and nonparticipants, and consequently has a control group like that in the electric models. The gas model was estimated using an OLS regression, although other models such as an annual billing model and a random effects model were explored. Ultimately the cross-section time series gas billing model yielded results that fell within an expected and logical range.

Two separate gas models were estimated to obtain a range of likely realization rates for the measures. The first model is referred to as the full model and includes all participants with gas heat and a matching nonparticipant sample. The second model is smaller and includes gas heated participants that were surveyed and a matching sample of surveyed nonparticipants.

Several criteria were used to screen out observations from the gas billing model. Customers were dropped if there were large variations in usage between the pre and post periods. Some observations were dropped for having less than 20 or more than 40 days between meter reads. Observations were also dropped if they were missing savings information or data from the survey that are required in the final billing model. The number of observations dropped for each of these screens is shown in Table 191. The final gas billing models use samples that are a subset of the full sample available for model runs.

Table 191: Gas Billing Model Data Censoring

	Observations
Participants and nonparticipants with gas billing data	190,033
Post usage 2 times pre usage	86,360
Pre usage 2 times post usage	12,941
Savings values = 0	1,416
Less than 20 or greater than 40 days between meter reads	7,467
Full sample available for models	**86,999**
Final gas full model sample	**57,094**
Participants	39,092
Nonparticipants	18,002
Final gas survey model sample	**5,415**
Participants	3,383
Nonparticipants	2,032

Gas Full Model Specification

A monthly billing model was used to estimate gas impacts for duct insulation, envelope insulation, windows, gas furnaces, and other measures that affect therm usage (water heaters,

faucet aerators, and showerheads). Weather effects are also controlled for in the model by including a usage variable interacted with heating degree days (HDD).

The specification for the full gas billing model is shown below and variable definitions are provided in Table 192 below:

$$Post\_therm = \alpha_{Month} + \beta' Pre\_therm + \beta' HDD\_Pre + \beta' DuctIns + \beta' Insulation + \beta' Windows + \beta' GasFurn + \beta' Other$$

Table 192: Gas Full Model Variable Definitions

Variable Name	Definition
Post_therm	Monthly therm usage in the post-program month
Pre_therm	Monthly therm usage in the pre-program month
Jan	Month specific constant for January
Feb	Month specific constant for February
Mar	Month specific constant for March
Apr	Month specific constant for April
May	Month specific constant for May
June	Month specific constant for June
July	Month specific constant for July
Aug	Month specific constant for August
Sept	Month specific constant for September
Oct	Month specific constant for October
Nov	Month specific constant for November
Dec	Month specific constant for December
HDD_Pre	The difference in heating degree days between post and pre periods multiplied by pre therm usage
DuctIns	Monthly therm savings for duct insulation
Insulation	Monthly therm savings for installation of envelope insulation
Windows	Monthly therm savings for replacement of windows
GasFurn	Monthly therm savings for installing gas furnace
Other	Monthly therm savings for installation of other gas equipment (water heater, faucet aerator, showerhead)

Gas Full Model Results

The results of the full gas billing model are shown in Table 193 below, with the coefficient estimates to be used as realization rates shaded in blue. In general, the gas billing models provide more robust coefficient estimates on the impact variables than the electric billing models. The signs on all measure variable coefficients are as expected (negative) and all, except duct

insulation, are significant at less than one percent. The estimate for duct insulation is significant at 10 percen, but has a low magnitude of .13 indicating that only 13 percent of the expected savings for this measure are being realized. The estimate for windows indicates that 88 percent of savings are realized in customers' utility bills, while envelope insulation has an even higher realization rate of 102 percent.

Table 193: Gas Furnace Model Estimation Results

Variable Name	Coefficient Estimate	Standard Error	T statistic	Significance Level
Jan	0.28	0.43	0.66	51%
Feb	2.29	0.44	5.2	< 1%
Mar	2.39	0.41	5.77	< 1%
Apr	2.82	0.41	6.87	< 1%
May	1.60	0.43	3.69	< 1%
June	0.83	0.41	2.02	4%
July	1.49	0.43	3.43	< 1%
Aug	2.74	0.43	6.36	< 1%
Sept	1.25	0.44	2.83	< 1%
Oct	0.91	0.44	2.07	4%
Nov	1.04	0.41	2.52	1%
Dec	3.47	0.42	8.31	< 1%
Pre_therm	0.93	0.0011	843.03	< 1%
HDD_Pre	0.001	0.00001	100.7	< 1%
DuctIns	-0.13	0.08	-1.6	11%
Insulation	-1.02	0.13	-7.58	< 1%
Windows	-0.89	0.23	-3.92	< 1%
GasFurn	-0.28	0.03	-8.22	< 1%
Other	-2.14	0.44	-4.82	< 1%

Gas Survey Model Specification

Finally, another monthly billing model was used to estimate gas impacts for duct insulation, envelope insulation, windows, gas furnaces, and other measures and includes additional information obtained from phone surveys. Weather effects are also controlled for in the model by including variables interacted with heating degree days (HDD). This model contains only surveyed participants and nonparticipants.

The specification for the gas survey billing model is identical to the one above with the addition of three survey variables. The exact specification is shown below and variable definitions are provided in Table 194:

$$Post\_therm = \alpha_{Month} + \beta' Pre\_therm + \beta' HDD\_Pre + \beta' DuctIns + \beta' Insulation + \beta' Windows + \beta' GasFurn + \beta' Other + \beta' SqFtInc + \beta' PeopleInc + \beta' PeopleDec$$

Table 194: Gas Survey Model Variable Definitions

Variable Name	Definition
Post_therm	Monthly therm usage in the post-program month
Pre_therm	Monthly therm usage in the pre-program month
Jan	Month specific constant for January
Feb	Month specific constant for February
Mar	Month specific constant for March
Apr	Month specific constant for April
May	Month specific constant for May
June	Month specific constant for June
July	Month specific constant for July
Aug	Month specific constant for August
Sept	Month specific constant for September
Oct	Month specific constant for October
Nov	Month specific constant for November
Dec	Month specific constant for December
HDD_Pre	The difference in heating degree days between post and pre periods multiplied by pre therm usage
DuctIns	Monthly therm savings for duct insulation
Insulation	Monthly therm savings for installation of envelope insulation
Windows	Monthly therm savings for replacement of windows
GasFurn	Monthly therm savings for installing gas furnace
Other	Monthly therm savings for installation of other gas equipment (water heater, faucet aerator, showerhead)
SqFtInc	Increase in square footage of the home between pre and post periods
PeopleInc	Increase in number of people living in home between pre and post periods
PeopleDec	Decrease in number of people living in home between pre and post periods

Gas Survey Model Results

The results of the gas survey billing model are shown in Table 195 below, with the coefficient estimates to be used as realization rates shaded in blue. Unlike the full gas model, here the

estimate for duct insulation is the opposite sign than expected and is significant at less than one percent. The estimate for envelope insulation is much higher with a magnitude of 3.45 and is significant at one percent. The realization rates for gas furnaces and other measures are also higher in this specification, at 84 and 55 percent respectively. All three survey variables included in the model (SqFtInc, PeopleInc, PeopleDec) have the expected signs, but none is statistically significant.

Table 195: Gas Survey Model Estimation Results

Variable Name	Coefficient Estimate	Standard Error	T statistic	Significance Level
Jan	13.98	0.97	14.4	< 1%
Feb	12.90	0.91	14.19	< 1%
Mar	13.39	0.79	16.9	< 1%
Apr	8.39	0.73	11.56	< 1%
May	5.29	0.72	7.37	< 1%
June	4.11	0.68	6.07	< 1%
July	3.39	0.69	4.88	< 1%
Aug	4.02	0.69	5.86	< 1%
Sept	3.85	0.69	5.58	< 1%
Oct	4.14	0.71	5.81	< 1%
Nov	10.16	0.72	14.14	< 1%
Dec	14.77	0.87	16.98	< 1%
Pre_therm	0.82	0.006	146.06	< 1%
HDD_Pre	0.0011	0.000022	50.85	< 1%
DuctIns	0.58	0.11	5.21	< 1%
Insulation	-3.45	0.30	-11.4	< 1%
Windows	-0.64	0.26	-2.52	1%
GasFurn	-0.84	0.09	-9.6	< 1%
Other	-0.55	0.27	-2.05	4%
SqFtInc	0.0012	0.0027	0.43	67%
PeopleInc	0.08	0.53	0.16	88%
PeopleDec	-0.56	0.60	-0.93	35%

Both the electric and gas billing models produced very low realization rates for most measures. In the process of developing these models, numerous different specifications were explored, which resulted in widely diverging impact estimates and sometimes very counterintuitive results. The models presented in this report are the specifications that appear to be the most reasonable

based on the expected signs and magnitudes of the coefficient estimates. Nevertheless, the sensitivity of coefficient estimates across reasonable alternative model specifications suggest that there are other influences affecting consumption that we were unable to capture in these models.

5.4 NET IMPACT ANALYSIS

The results of the billing models and the self-report free ridership results are combined with the gross impacts to determine the net realized impacts. As discussed above, both electric and gas billing models incorporated the effects of nonparticipants and as a consequence the coefficient estimates can be interpreted as net realization rates with no additional adjustments.

The results of these calculations are shown in Table 196 through Table 199 by measure and program year. The impacts are shown using a range of coefficient estimates to illustrate the high and low case scenarios based on the different model specifications. The midpoint between the high and low scenarios is then used to calculate the overall net impacts for each program years.

Using the midpoint realization rates, in 2005 the HES achieved average net electric impacts that were 68 percent of gross impacts. For 2006, the program achieved average net electric impacts that were 73 percent of gross impact estimates. On the gas side, in 2005 the HES achieved average net realized impacts that were 132 percent of gross impacts. For 2006, net average realized gas impacts were 115 percent of gross impacts.

Table 196: kWh Savings 2005

Measure Type	Expected Gross Impacts	Net Realization Rate (Low)	Net Realization Rate (High)	Net Realized Impacts (Low)	Net Realized Impacts (High)
Windows***	366,835	64%	89%	235,853	326,329
Water heater	250,888	9%	--	22,979	--
Heat pump	1,465,931	19%	23%	282,265	343,746
Gas furnace*	1,249,138	39%	--	487,164	--
Air seal	627	39%	--	245	--
Duct insulation	54,460	0%	--	0	--
Duct sealing**	62,210	0%	--	0	--
Floor insulation	506,504	72%	470%	366,734	2,379,515
Wall insulation	169,136	72%	470%	122,463	794,587
Ceiling insulation	617,542	72%	470%	447,131	2,901,163
CFLs	1,935,877	18%	--	354,111	--
Faucet aerator	11,270	9%	--	1,032	--
Shower head	12,497	9%	--	1,145	--
Door*	3,629	39%	--	1,415	--
Total	6,706,544			2,322,536	6,745,341

*Average realization rate applied

**Duct insulation realization rate applied
***Gas realization rate applied

Table 197: kWh Savings 2006

Measure Type	Expected Gross Impacts	Net Realization Rate (Low)	Net Realization Rate (High)	Net Realized Impacts (Low)	Net Realized Impacts (High)
Windows***	81,065	64%	89%	52,120	72,114
Water heater	25,590	9%	--	2,344	--
Heat pump	2,227,395	19%	23%	428,885	522,302
Gas furnace*	86,840	39%	--	33,868	--
Air seal	45,521	39%	--	17,753	--
Duct insulation	37,791	0%	--	0	--
Duct sealing**	97,990	0%	--	0	--
Floor insulation	282,145	72%	470%	204,287	1,325,495
Wall insulation	65,063	72%	470%	47,109	305,661
Ceiling insulation	300,103	72%	470%	217,290	1,409,860
CFLs	3,231,542	18%	--	591,114	--
Faucet aerator	283,550	9%	--	25,970	--
Shower head	317,422	9%	--	29,073	--
Total	7,082,017			1,649,812	3,635,431

*Average realization rate applied
**Duct insulation realization rate applied
***Gas realization rate applied

Table 198: Therm Savings 2005

Measure Type	Expected Gross	Realization Rate (Low)	Realization Rate (High)	Net Realized Impacts (Low)	Net Realized Impacts (High)
Windows	9,988	64%	89%	6,422	8,885
Water heater	2,761	55%	214%	1,530	5,906
Boiler**	708	28%	84%	197	595
Gas furnace	490,025	28%	84%	135,943	411,606
Air seal*	584	66%	178%	385	1,040
Duct insulation	31,561	0%	13%	0	4,187
Duct sealing***	25,121	0%	13%	0	3,332
Floor insulation	93,629	102%	345%	95,632	323,421
Wall insulation	117,040	102%	345%	119,543	404,289
Ceiling insulation	293,027	102%	345%	299,295	1,012,198
Faucet aerator	730	55%	214%	404	1,561
Shower head	686	55%	214%	380	1,467
Total	1,067,566			660,856	2,181,522

*Average realization rate applied
**Gas furnace realization rate applied
***Duct insulation realization rate applied

Table 199: Therm Savings 2006

Measure Type	Expected Gross	Realization Rate (Low)	Realization Rate (High)	Net Realized Impacts (Low)	Net Realized Impacts (High)
Windows	11,560	64%	89%	7,432	10,283
Water heater	3,456	55%	214%	1,915	7,391
Boiler**	2,190	28%	84%	607	1,839
Gas furnace	359,443	28%	84%	99,717	301,921
Air seal*	5,833	66%	178%	3,850	10,383
Duct insulation	14,883	0%	13%	0	1,974
Duct sealing***	10,484	0%	13%	0	1,391
Floor insulation	64,724	102%	345%	66,108	223,573
Wall insulation	39,879	102%	345%	40,732	137,753
Ceiling insulation	82,471	102%	345%	84,235	284,877
Faucet aerator	19,430	55%	214%	10,766	41,559
Shower head	28,294	55%	214%	15,678	60,519
Total	651,563			336,925	1,099,338

*Average realization rate applied
**Gas furnace realization rate applied
***Duct insulation realization rate applied

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

Overall conclusions for this evaluation are presented below.

- **Utilities are a key partner in promoting the HES program in Oregon.** Most frequently, participants and non-participants learned of the program through utility bill stuffers. There may be other ways to utilize utility marketing channels to promote the HES program, such as through more extensive advertisement on individual utility websites.

- **Among non-participants, there is a relatively high level of awareness about Energy Trust and its incentive programs, but there is room for growth.** Almost half of all non-participants surveyed are aware of Energy Trust or its programs, but about half of this group did not know what the Energy Trust does. More respondents were familiar with the Oregon tax credit for energy efficient measures (71 percent) and the ENERGY STAR brand name (51 percent), than they were with Energy Trust.

- **Multiple factors are influential in participant decisions to install program measures, including a desire to save energy, the HES cash incentive, contractor suggestions, the HER, and the Oregon tax credit.**

    - The most common reason participants purchased new equipment across all measure categories was to save energy.

    - Roughly one-third of respondents said that the HES cash incentive was "very influential" on their purchase decisions.

    - 30 to 50 percent said that their contractors were "very influential" on their purchase decisions, depending on measure category.

    - 35 percent of respondents who had a Home Energy Review subsequently installed new equipment, and about half of that equipment was rebated through the HES program.

    - Most HES participants also received an Oregon tax credit, when available. 93 percent of participants who received a HES cash incentive for gas furnace also received an Oregon tax credit, and the two incentives appear to exert a roughly equal influence on the purchase decision.

- **Free ridership is highest for heat pumps and lowest for CFLs.** Free ridership for heat pumps is estimated to be 64 percent of respondents. Gas furnaces, windows, and insulation rates range from 55 to 60 percent. As expected, free ridership is low for CFLs (nine percent), which are free and directly installed during the Home Energy Reviews.

- **Spillover rates are highest for windows and CFLs and lowest for gas furnaces.** For participant spillover, the self-report results show that the rates for CFLs and windows are

13 and 12 percent, respectively, when averaged over the two years of the program. Gas furnaces have an average participant spillover rate of less than one percent. Non-participant spillover for windows was estimated to be almost 1,900 percent. Gas furnaces had a non-participant spillover rate of 7 percent.

- **The billing analysis results were quite sensitive to changes in the model specification.** The electric model yielded an average kWh realization rate of 68 percent for 2005. For 2006, the program achieved average net electric impacts that were 73 percent of gross impact estimates. On the gas impacts side, in 2005 the HES achieved a realization rate of 132 percent. In 2006, the average realization rate was slightly lower at 115 percent.

- **Participants report that some contractors are promoting multiple measures to their clients.** Only 23 to 48 percent of participants (depending on measure category) reported that their contractors recommended other energy saving measures for their homes. Vendors report that they promote multiple measures to their customers at higher rates, but a substantial share of vendors still rarely or never engage in this activity. Of all measure types, vendors who perform duct sealing most frequently promote additional HES measures to their customers. 73 percent of active vendors who perform duct sealing through the HES program said that they promoted multiple measures at these jobs and 75 percent of this subgroup said that they *always* do.

- **Many vendors consider the HES program to be a valuable component of their marketing to sell energy efficient equipment, but most have not utilized Energy Trust marketing support.** Almost 70 percent of active vendors were on the HES List of Trade Ally Contractors and half of this group said that the list has increased (40 percent) or significantly increased (nine percent) their sales of energy efficient equipment. However, most participating vendors (67 percent of active vendors and 80 percent of non-active vendors) have not utilized any Energy Trust marketing materials or program literature and most frequently, vendors attract customers through word-of-mouth. In addition, 83 percent of active vendors, and 96 percent of non-active vendors, have not used Energy Trust co-op marketing service. Interviews with Energy Trust staff indicate that the lengthy process required to receive co-op funding was an impediment during the 2005–2006 program cycle.

- **Most participating vendors find the trade ally training useful, but only a small portion of vendors have been to a training in the past year.** Only 28 percent of active vendors and 14 percent of non-active vendors have participated in Trade Ally Training in the past year. About 70 percent of both vendor groups who had participated in the training rated it as extremely or very useful. One Energy Trust staff member explained that in the 2005–2006 period, few structured classes were offered, and instead the HES program trained large contractors on an individual basis.

- **Vendors had a lukewarm reaction to the trade ally web pages.** Only about half of active and non-active vendors found the web pages to be moderately or very helpful.

- **Satisfaction with HES contractors is high.** Over 70 percent of respondents within each measure category were extremely or moderately satisfied with their contractors overall. Over 60 percent of respondents were either extremely or moderately satisfied with the quality and completeness of the information provided by their contractors about energy saving opportunities.

- **Satisfaction with the HER process is high.** 70 to 90 percent of respondents were very satisfied with various aspects of the HER process. Less than three percent of respondents were moderately or very unsatisfied across all categories. The lowest satisfaction scores were assigned to Energy Trust's role as a provider of information about saving energy and Energy Trust programs.

- **Satisfaction with Energy Trust staff is generally high.** Overall, about 60 percent of participants were very satisfied with the Energy Trust staff, and about 80 percent were at least moderately satisfied. Less than four percent of these respondents were moderately or very unsatisfied across all categories. Similarly, about 60 percent of active vendors and 50 percent of non-active vendors offered a score of 4 or 5 (5 = very satisfied) when asked about the Energy Trust staff. The highest rate of dissatisfaction for active vendors pertained to response time, where 10 percent of respondents are moderately unsatisfied.

- **The incentive processing system is cumbersome and often leads to delays**. Energy Trust staffers reported that the incentive forms are multiple pages, and often separate forms must be filled out for each measure. As a result, both contractors and their customers often omit critical information, which delays incentive payments. While few surveyed participants were extremely dissatisfied with the incentive payment process, they gave the lowest satisfaction scores for the ease of applying for financial incentives and the turnaround time in receiving the incentive.

- **The process of developing program marketing materials is inherently cumbersome.** Marketing pieces are vetted by CSG, Energy Trust, and the appropriate utilities. The time lags for this sequential process limits the usefulness of time-sensitive marketing information.

6.2 RECOMMENDATIONS

The following recommendations are for the 2005–2006 program cycle. The evaluation team recognizes that many of these issues are currently being addressed.

- **Streamline the incentive processing system.** Efforts should be made to shorten and simplify incentive payment forms that the contractor or client fills out. This will lessen the occurrence of omitted information and speed up the process, as well as minimizing potential participants who are dissuaded by lengthy paperwork. A web-based form should also be considered. Web-based forms can decrease database errors (currently information must be transferred from paper forms to Fast Track), require all fields to be completed, and allow for an instantaneous information transfer.

- **Emphasize Energy Trust marketing support services to trade allies.** Only 32 percent of active vendors have utilized Energy Trust marketing materials or program literature. Even less—17 percent—have used the co-op marketing service. While the majority of active vendors do actively promote the incentive offers as a part of their marketing activities, 28 percent do not. Thus, the program should consider ways to make participation in co-op marketing easier, and emphasize participation requirements in the trade ally orientation. The marketing support service should also be a key component of trade ally recruitment. In addition, the program should consider if the underutilized Energy Trust marketing materials could be better tailored to fit the needs of HES contractors.

- **Ramp up efforts to encourage contractors to deliver other information about saving energy and Energy Trust program offerings while on-site.** Most respondents are very happy with the Energy Trust staff and HES contractors, and thus represent a captive audience for further energy efficiency recommendations. Data from both the participant and vendor surveys indicate that only some contractors recommended other energy saving measures to their HES clients. Contractors can increase their collective business and energy savings allocated to the Energy Trust if they more frequently integrate other energy efficiency recommendations into their normal home visits.

- **Add additional content to the trade ally web pages.** The program should look for opportunities to increase the utility of the web page for current trade allies, as most survey respondents had tepid reactions to the helpfulness of the web pages. Topics of interest might include technical advice on installing the HES measures and more details on the marketing support offered. Examples of the collateral produced by firms that have used the co-op marketing support, as well as specific information on the financial incentives offered, may increase the appeal of the co-op marketing service.

- **Further investigate what other information HER participants would like to receive during or after their audits.** Currently, HER participants receive a checklist of energy saving opportunities, which also notes the maximum Energy Trust cash incentives for each measure and whether there is a state tax credit available for each measure. The paperwork also lists the next steps to find a qualified HES contractor to install the measures, the Trade Ally List of Contractors, and brochures explaining the Home Performance with ENERGY STAR. However, respondents indicated that they were the least satisfied with the information provided on how to find more information on saving energy. While they are on-site, contractors could ask if there is additional specific information that customers want. In the future, contractors could be trained to provide this information directly or they might distribute redesigned or additional program materials that more clearly identify other information sources.

- **Include a link to the Energy Trust HES program on the Oregon Department of Energy "Residential Energy Tax Credit" website.** There is a high level of awareness of the Oregon tax credit among non-participants, but respondents still most frequently cite the higher costs of energy efficient products/services as a barrier to adoption. Therefore, increasing the visibility of the Energy Trust HES program through modes connected to the Oregon tax credit may increase awareness and participation in the HES

program. Currently, the Oregon tax credit website includes links to other energy efficiency programs, including: utility incentives, the ENERGY STAR website, the State Home Oil Weatherization program, and federal incentives. Energy Trust may want to consider working with the Oregon Department of Energy to add an additional link on the tax credit website that launches web-surfers to the HES program website, which would increase the visibility of the HES program. Notably, Energy Trust already advertises for Oregon tax credits on its HES website.

- **Work with the electric and gas utilities to increase advertising for Energy Trust cash incentives on their websites.** Only three percent of non-participants learned of the Energy Trust or its incentives from their utility websites. Non-participants in this sample receive electricity from PGE, Pacific Power, and EWEB, and purchase gas from NW Natural, AVISTA, and Cascade Natural Gas. EWEB does not advertise for Energy Trust/HES or link to the Energy Trust website.[37] PGE advertises only HES cash incentives for heat pumps. Increasing the visibility of the HES program on these websites is a low-cost manner of channeling utility customers to the Energy Trust program.

  In addition, there may be untapped opportunities to link on-line and paper energy audit services provided by local utilities to HES cash incentives and HERs.

- **Explore ways to better coordinate the production of marketing materials.** Because the collaborative process of developing marketing materials is inherently cumbersome, every effort should be made to coordinate marketing approaches, including collaborative face-to-face brainstorming and concept development between Energy Trust, the PMCs, and the utilities.

[37] Utility websites scanned in March 2008

APPENDIX A: Survey Instruments

1. PARTICIPANT SURVEY INSTRUMENT

Intro. Hello, this is <INTERVIEWER NAME> calling from Itron on behalf of Energy Trust of Oregon. This is not a sales call. May I please speak with [PROGRAM CONTACT]?
I'm calling to do a follow-up survey about your participation in Energy Trust's [Home Energy Solutions/Home Energy Review] program.
[IF PROGRAM CONTACT NOT AVAILABLE]
Who would be the best person to talk to about your household's participation in the [Home Energy Solutions/Home Energy Review]?
[IF NEEDED] Energy Trust of Oregon would like to better understand how home owners like you think about and manage their energy consumption, and how satisfied you are with your experience with the Program. Your input is very important to Energy Trust.
ASK IF HES=1 and HER=0
S2. Just to check did your household participate in Energy Trust's Home Energy Solutions Program in &Year? This is a program that provides cash incentives for installing one or more energy-efficient products covered under the program.

1	Yes, participated	S10
2	NO, did NOT participate/receive cash incentive/CFLs	T&T
77	Other (specify)	T&T
88	Refused	T&T
99	Don't know	T&T

ASK if HER=1, ELSE SKIP TO S10
Aud1. Our records show that you received a Home Energy Review, where an energy consultant visited your home and provided a list of potential energy efficiency improvements and also installed &NUM CFL bulbs. Is that correct?

1	Yes, correct		S10
2	Yes, but number of CFL's incorrect		AUD2
3	No		T&T
88	Refused		T&T
99	Don't Know		T&T

AUD2. How many CFL's were installed during the Home Energy Review?

#	Correct number of CFL's		AUD3
88	Refused		AUD3
99	Don't Know		AUD3

AUD3. Did you purchase any new equipment or do anything for your home as a result of the recommendations made during the Home Energy Review?

1	Yes		AUD4
3	No		S10
88	Refused		S10
99	Don't Know		S10

AUD4. What, if any, actions did you take as a result of the Home Energy Review? (DO NOT READ, ACCEPT MULTIPLES)

1	Turned down thermostat		AUD5
2	Purchased setback thermostat		AUD5
3	Participated in the HES		AUD5
4	Got a duct test		AUD5
5	Turn off lights more		AUD5
6	Installed more CFL's		AUD5
7	None		AUD5

77	Other (specify)		AUD5
88	Refused		S10
99	Don't Know		S10

AUD5. What did you purchase? (DO NOT READ, ACCEPT MULTIPLES)

1	Air Conditioner		AUD6
2	Gas Furnace		AUD6
3	Heat Pump		AUD6
4	Insulation		AUD6
5	Windows		AUD6
6	CFL's		AUD6
7	Water heater		AUD6
8	Duct insulation		AUD6
9	Duct sealing		AUD6
10	Duct testing		AUD6
11	Clothes washer		AUD6
12	Solar PV		AUD6
13	Solar hot water		AUD6
77	Other (specify)		AUD6
88	Refused		S10
99	Don't Know		S10

AUD6. Did you receive a cash incentive from the Energy Trust for any of these purchases?

1	Yes		S10
3	No		S10
88	Refused		S10
99	Don't Know		S10

S10. Have you lived at your current residence since January 2006?

1	Yes		S20
2	No		T&T
88	Refused		T&T
99	Don't Know		T&T

S20. What type of home do you live in?

1	Single Family Detached		S25
2	Manufactured Home		S20a
3	Townhouse, condominium		T&T
4	Other (Multifamily, apartment)		T&T
88	Refused		T&T
99	Don't Know		T&T

S20a. Is your manufactured home a standalone home or in a manufactured home park?

1	Standalone		S25
2	Home park		T&T
88	Refused		T&T
99	Don't Know		T&T

S25. Do you own your home or rent?

1	Own		VER
2	Rent		T&T
88	Refused		T&T
99	Don't Know		T&T

ASK IF HES=1
VER. We would like to verify our records regarding your participation in the Home Energy Solutions program. Our records indicate that you installed….[MEASURE] is that correct? And [NEXT MEASURE]? And [NEXT MEASURE]? etc.

Ductse1	Duct Seal	0 or 1	ETO1
Duct1	Duct Insulation	0 or 1	ETO1
Ceil1	Ceiling or Attic Insulation	0 or 1	ETO1
Floor1	Floor Insulation	0 or 1	ETO1
Wall1	Wall Insulation	0 or 1	ETO1
Win1	High efficiency Windows	0 or 1	ETO1
HP1	Heat Pump	0 or 1	ETO1
GF1	Gas Furnace	0 or 1	ETO1
GFE1	Gas Furnace with Blower	0 or 1	ETO1

IF SUM OF (CFL1, DUCT1, CEIL1, FLOOR1, WALL1, WIN1, HP1, GF1, GFE1)=0 THEN T&T

Satisfaction with ETO

This first set of questions deals specifically with any interactions you may have had with Energy Trust. If you have had more than one interaction with Energy Trust program staff, please give us your response based on all experiences with them, not just a single event.
Please use a scale from 1 to 5, where 1 indicates very unsatisfactory and 5 indicates very satisfactory.
Please rate …
ETO1. Program staff courtesy on the phone.

#	Ranking	ETO1a
76	Not Applicable – No phone contact	ETO3
88	Refused	ETO2
99	Don't Know	ETO2

ASK IF ETO1 <=2
ETO1a. Can you describe the factors leading to your lack of satisfaction?

77	RECORD VERBATIM	ETO2
88	Refused	ETO2
99	Don't Know	ETO2

ETO2. Energy Trust's helpfulness on the phone.

#	Ranking	ETO2a
76	Not Applicable – No phone contact	ETO3
88	Refused	ETO3
99	Don't Know	ETO3

ASK IF ETO2 <=2
ETO2a. Can you describe the factors leading to your lack of satisfaction?

77	RECORD VERBATIM	ETO3
88	Refused	ETO3
99	Don't Know	ETO3

ETO3. Staff knowledge of program services.

#	Ranking	ETO3a
76	Not Applicable – No contact	ETO4
88	Refused	ETO4
99	Don't Know	ETO4

ASK IF ETO3 <=2

ETO3a. Can you describe the factors leading to your lack of satisfaction?

77	RECORD VERBATIM	ETO4
88	Refused	ETO4
99	Don't Know	ETO4

ETO4. The ease of your transactions (paperwork / payments).

#	Ranking	ETO4a
76	Not Applicable – Did not do paperwork or receive payment	ETO5
88	Refused	ETO5
99	Don't Know	ETO5

ASK IF ETO4 <=2

ETO4a. Can you describe the factors leading to your lack of satisfaction?

77	RECORD VERBATIM	ETO5
88	Refused	ETO5
99	Don't Know	ETO5

ETO5. Your satisfaction with any issue that needed resolution.

#	Ranking	ETO5a
77	Not Applicable	ETO6
88	Refused	ETO6
99	Don't Know	ETO6

ASK IF ETO5 <=2

ETO5a. Can you describe the factors leading to your lack of satisfaction?

77	RECORD VERBATIM	ETO6
88	Refused	ETO6
99	Don't Know	ETO6

ETO6. Your overall satisfaction with the program.

#	Ranking	ETO6a
77	Not Applicable	SAT1
88	Refused	SAT1
99	Don't Know	SAT1

ASK IF ETO6 <=2

ETO6a. Can you describe the factors leading to your lack of satisfaction?

77	RECORD VERBATIM	SAT1
88	Refused	SAT1
99	Don't Know	SAT1

Program Satisfaction and Program Awareness

Next, we'd like to talk about your participation in the program and your satisfaction with this experience.

ASK IF HER=1, ELSE SKIP TO SAT2

SAT1. We'd like to get a sense of your satisfaction with your Home Energy Review. Please use a 1 to 5 scale, where 1 means VERY DISSATISFIED and 5 means VERY SATISFIED. How satisfied were you with the following:

SAT1a	Scheduling Process.	Number from 1 to 5	SAT1b
SAT1b	Promptness of the Energy Reviewer.	Number from 1 to 5	SAT1c
SAT1c	Length of time required for the review.	Number from 1 to 5	SAT1d
SAT1d	Quality and completeness of recommendations	Number from 1 to 5	SAT1e

	provided at the completion of the review.		
SAT1e	Knowledge of reviewer		SAT1f
SAT1f	Reviewer courtesy		SAT1g
SAT1g	Information provided on how to find more information on saving energy.	Number from 1 to 5	SAT1h
SAT1h	Quality and completeness of information provided on how to participate in Energy Trust Programs.	Number from 1 to 5	MEF1

MEF1. From where or whom did you hear about Energy Trust programs or incentives?

1	Electric utility bill insert	MEF4
2	Gas utility bill insert	MEF4
3	Electric utility website	MEF4
4	Gas utility website	MEF4
5	Television	MEF4
6	Radio	MEF4
7	Magazine	MEF4
8	Newspaper article	MEF4
9	Newspaper advertisement	MEF4
10	Friends/family	MEF4
11	Web search	MEF4
12	Mass transit	MEF4
13	Contractor	MEF4
14	Retailer/salesperson	MEF4
15	Event (please specify)	MEF4
77	Other (specify)	MEF4
88	Refused	MEF4
99	Don't know	MEF4

MEF4. What was the primary reason that you requested a Home Energy Review? (DO NOT READ)

1	Save Energy	MEF5
2	Improve comfort –House was too cold/too hot	MEF5
4	Peace of mind	MEF5
5	Get free CFL' s	MEF5
6	Save money on energy bills	MEF5
7	Find out about available incentives	MEF5
8	Reduce carbon footprint	MEF5
9	Global warming	MEF5
10	Climate change	MEF5
11	Help the environment	MEF5
12	Reduce environmental impact	MEF5
77	Other (specify)	MEF5
88	Refused	MEF5
99	Don't know	MEF5

MEF5. As a result of the Home Energy Review, is the likelihood that you will participate in the Home Energy Solutions program greater than, less than, or about the same as before?

1	Greater than before	MEF6
2	Less than before	MEF6
3	About the Same as before the review	MEF6
88	Refused	MEF6
99	Don't know	MEF6

MEF6. Do you plan on participating in an Energy Trust program again?

1	Yes	SAT2

2	No	SAT2
88	Refused	SAT2
99	Don't know	SAT2

ASK IF HES=1, ELSE SKIP TO EFF1

SAT2. We'd like to get a sense of your satisfaction with the Home Energy Solutions program. Please use a 1 to 5 scale, where 1 means VERY DISSATISFIED and 5 means VERY SATISFIED. How satisfied were you with the following:

SAT2a	Quality and completeness of information provided by the Energy Trust about energy savings opportunities?	Number from 1 to 5	SAT2b
SAT2b	Quality and completeness of information provided to you about financial incentives available from the Energy Trust?	Number from 1 to 5	SAT2c
SAT2c	Performance of the measures that you installed under this program?	Number from 1 to 5	SAT2d
SAT2d	Ease of applying for financial incentives from the Energy Trust?	Number from 1 to 5	SAT2e
SAT2e	Turnaround time in receiving your financial incentive?	Number from 1 to 5	SAT2f
SAT2f	Overall program experience?	Number from 1 to 5	SAT3

SAT3. From whom did you hear about Energy Trust of Oregon and its programs? (ACCEPT MULTIPLE)

1	Contractor	SAT4
2	Energy Trust	SAT4
3	Retailer/Salesperson	SAT4
4	Gas Utility	SAT4
5	Electric Utility	SAT4
77	Other (specify)	SAT4
88	Refused	SAT4
99	Don't Know	SAT4

SAT4. From what forms of media did you hear about Energy Trust programs or incentives? (DO NOT READ, ACCEPT MULTIPLE)

1	Bill insert/Utility Newsletter	CONF1
2	Brochure	CONF1
3	Email	CONF1
4	Event	CONF1
5	Letter or mail	CONF1
6	Magazine	CONF1
7	Mass transit	CONF1
8	Newspaper	CONF1
9	Radio	CONF1
10	Sales call	CONF1
11	Sign	CONF1
12	Television	CONF1
13	Website	CONF1
14	Yard sign	CONF1
77	Other (specify)	CONF1
88	Refused	CONF1
99	Don't Know	CONF1

CONF1. How confident are you that the measures you installed through the program are saving energy? Would you say you are…

1	Very Confident the measures will save energy	EFF1
2	Somewhat Confident	EFF1
3	Not at all Confident	EFF1
88	Refused	EFF1
99	Don't know	EFF1

ASK IF KWH_SAVE=1, ELSE SKIP TO EFF3

EFF1. As a result of participating in the program, have you seen any savings on your monthly ELECTRIC bill?

1	Yes	EFF2
2	No	EFF3
88	Refused	EFF3
99	Don't know	EFF3

EFF2. Are the savings on your monthly ELECTRIC bill higher, lower or about the same as you expected?

1	Higher	EFF3
2	Lower	EFF3
3	Same	EFF3
77	Other (specify)	EFF3
88	Refused	EFF3
99	Don't Know	EFF3

ASK IF THM_SAVE=1, ELSE SKIP TO A1

EFF3. As a result of participating in the program, have you seen any savings on your monthly GAS bill?

1	Yes	EFF4
2	No	A1
88	Refused	A1
99	Don't know	A1

EFF4. Are the savings on your monthly GAS bill higher, lower or about the same as you expected?

1	Higher	A1
2	Lower	A1
3	Same	A1
77	Other (specify)	A1
88	Refused	A1
99	Don't Know	A1

General EE Knowledge and Awareness

I'd like to ask you some questions about your knowledge of energy efficiency.

A1. Overall, how would you rate your knowledge of the ways you could save energy in your home? On a scale of 1 to 5, with 1 meaning "you are not at all knowledgeable" and 5 meaning "you are very knowledgeable," how knowledgeable are you about ways to save energy in your home?

#	Rating from 1 to 5	A3
88	Refused	A3
99	Don't Know	A3

A3. My next question is about the benefits of energy efficient measures. I will name five benefits of energy efficient measures and I'd like you to rate each one on a 5 point scale where 1 means not at all important and 5 means very important…(RANDOMLY CHANGE ORDER OF BENEFITS READ)

1 – 5	Increased comfort in your home	PART5a
1 – 5	Improved air quality and similar health benefits	PART5a
1 – 5	Saving money on energy bills	PART5a
1 – 5	Reduce Global warming	PART5a
1 – 5	Promote Energy independence	PART5a

88	Refused	PART5a
99	Don't know	PART5a

PART5a. Are you aware that information is available online about Energy Trust programs?

1	Yes	PART6
2	No	PART6
88	Refused	PART6
99	Don't know	PART6

PART6. What energy efficient equipment are you aware of that Energy Trust will provide financial incentives for? (DO NOT READ, ACCEPT MULIPLES)

1	Ceiling/Attic Insulation	PA8
2	Floor Insulation	PA8
3	Wall Insulation	PA8
4	Windows	PA8
5	Water Heaters	PA8
6	Duct Insulation	PA8
7	Duct Sealing	PA8
8	Heat Pump Installation	PA8
9	Air Sealing	PA8
10	Gas Furnace	PA8
11	Direct Vent Gas Heater	PA8
77	Other (specify)	PA8
88	Refused	PA8
99	Don't know	PA8

PA8. Are you aware of Oregon tax credits available for the purchase and installation of certain energy saving equipment?

1	Yes	PB8
2	No	INS3
88	Refused	INS3
99	Don't know	INS3

PB8. Where did you hear about the Oregon tax credits? (DO NOT READ, ACCEPT MULTIPLES)

1	Energy Trust Website	PC8
2	Contractor	PC8
3	Utility	PC8
4	Newspaper or magazine	PC8
5	Retail sales representative	PC8
6	Manufacturer	PC8
7	Tax form	PC8
8	Friend/family (word-of-mouth)	PC8
9	Northwest Energy Efficiency Alliance (NEEA)	PC8
10	Office of Sustainable Development (OSD)	PC8
11	Oregon Department of Energy WEBSITE	PC8
77	Other (specify)	PC8
88	Refused	PC8
99	Don't know	PC8

PC8. What products have your received an Oregon income tax credit for since January 1, 2006?

1	PV Panels	INS3
2	Dishwashers	INS3
3	Washing machine	INS3
4	Tankless water heaters	INS3

5	Duct Insulation	INS3
6	Duct Sealing	INS3
7	High efficiency Heat Pump	INS3
8	Gas Furnace	INS3
77	Other (specify)	INS3
88	Refused	INS3
99	Don't know	INS3

Insulation

ASK if INS=1, else skip to DUCT SEALING BATTERY

We'd like to ask some questions about the insulation you installed.

INS3. Did you hire a contractor to install your new Insulation or did you install it yourself?

1	Contractor	INC4
2	Self-installed	PRT3
88	Refused	PRT3
99	Don't Know	PRT3

Ask if INS3=1, ELSE SKIP TO PRT3

INC4. Please rate your satisfaction with your insulation contractor on a 1 to 5 scale, where 1 means very DISSATISFIED and 5 means very SATISFIED.

#	Rating from 1 (Very Dissatisfied) to 5 (Very Satisfied)	INC5
88	Refused	SAT2BI
99	Don't Know	SAT2BI

ASK If INC4 < 5, Else skip to INC6

INC5. Why do you say that?

77	Record Verbatim	SAT2BI
88	Refused	SAT2BI
99	Don't Know	SAT2BI

SAT2BI. On the same 1 to 5 scale, how satisfied are you with the quality and completeness of information provided by your contractor about energy savings opportunities?

#	Rating from 1 (Very Dissatisfied) to 5 (Very Satisfied)	INC6
88	Refused	INC6
99	Don't Know	INC6

End Skip

INC6. How did you find the contractor you used?

1	Energy Trust list of qualified contractors	INC7
2	Yellow pages	INC13
3	Friend/family recommended	INC13
4	Contractor contacted me	INC13
77	Other (specify)	INC13
88	Refused	INC13
99	Don't Know	INC13

INC7. How important was the Energy Trust list in selecting a contractor? Please give me a rating from 1 to 5, where 1 means NOT AT ALL important and 5 means VERY important.

#	Rating from 1 (Not at all Important) to 5 (Very Important)	INC13
88	Refused	INC13
99	Don't Know	INC13

INC13. Did your contractor inform you of the Home Energy Solutions cash incentive program?

1	Yes	INC15
2	No	INC15

88	Refused	INC15
99	Don't Know	INC15

INC15. How influential was your contractor in your decision to install insulation? Would you say your contractor was: (READ)

1	Very Influential	INC17
2	Somewhat influential	INC17
3	Not at all influential	INC17
88	Refused	INC17
99	Don't Know	INC17

INC17. Did the contractor that installed your insulation recommend other energy saving measures for your home?

1	Yes	INC17a
2	No	PRT3
88	Refused	PRT3
99	Don't Know	PRT3

INC17a. What measures did the contractor recommend?

77	Record verbatim	PRT3
88	Refused	PRT3
99	Don't Know	PRT3

END SKIP
END CONTRACTOR BATTERY
PRT3. What was the primary reason you installed Insulation? (DO NOT READ)

1	To save energy	IN10
2	Available cash incentive	IN10
3	To improve comfort	IN10
4	To improve health	IN10
5	Reduce carbon footprint	IN10
6	Reduce Global warming	IN10
7	Promote Energy independence	IN10
77	Other (specify)	IN10
88	Refused	IN10
99	Don't know	IN10

IN10. Did you become aware of the cash incentive before or after you decided to install insulation?

1	Before	IN15
2	After	IN15
3	Same time	IN15
88	Refused	IN15
99	Don't know	IN15

IN15. Which of the following THREE statements best describes the actions you would have taken had the cash incentive NOT existed:

1	We would not have installed insulation	IN30
2	We would have installed insulation anyway, but at a later date	IN20
3	We would have installed insulation anyway, and at the same time	IN25
88	Refused	IN25
99	Don't know	IN25

ASK IF IN15 = 2
IN20. If the cash incentive was not available, when would you have installed insulation?

1	Within a year	IN25

2	More than a year	IN21
88	Refused	IN25
99	Don't know	IN25

ASK IF IN20 = 2
IN21. How many years would you have waited before installing insulation if the cash incentive had not existed?

#	Number of Years	IN25
88	Refused	IN25
99	Don't know	IN25

ASK IF &NUM_INS GREATER THAN 1 AND IN15 NOT EQUAL 1
IN25. Our records indicate that you installed insulation in your [Ceiling, Ducts, Floor, Wall]. If the program did not exist would you have installed insulation in all of these areas, or just some of these areas?

1	I would have installed insulation in ALL of these areas	IN30
2	I would have installed insulation in SOME of these areas	IN25A
88	Refused	IN30
99	Don't know	IN30

IF IN25=2 then read "If the program did not exist…" then go to IN25A

ASK IF &Ceil=1, Else skip to IN25B
IN25A. Would you have installed Ceiling insulation?

1	Yes	IN25B
2	No	IN25B
88	Refused	IN25B
99	Don't know	IN25B

ASK IF &Duct=1, Else skip to IN25C
IN25B. Would you have installed Duct Insulation?

1	Yes	IN25C
2	No	IN25C
88	Refused	IN25C
99	Don't know	IN25C

ASK IF &FLOR=1, Else skip to IN25D
IN25C. Would you have installed Floor Insulation?

1	Yes	IN25D
2	No	IN25D
88	Refused	IN25D
99	Don't know	IN25D

ASK IF &WALL=1, Else skip to IN30
IN25D. Would you have installed Wall Insulation?

1	Yes	IN30
2	No	IN30
88	Refused	IN30
99	Don't know	IN30

IN30. We'd like to get a sense of what influenced you to purchase your insulation. How influential was the cash incentive in your decision to install insulation? Would you say the cash incentive was…

1	Very Influential	INTX
2	Somewhat influential	INTX
3	Not at all influential	INTX
88	Refused	INTX

99	Don't know	INTX

ASK IF PA8=1 and IF DUCT=1
INTX. Did you take advantage of the Oregon Tax Credit for the duct insulation you installed through the program?

1	Yes	IND3
2	No	INTXa
88	Refused	IND3
99	Don't know	IND3

INTXa. Why not? (IF NECESSARY: Why didn't you take advantage of the Oregon Tax Credit for the duct insulation you installed?)

77	RECORD VERBATIM	IND3
88	Refused	IND3
99	Don't know	IND3

Duct Sealing

ASK if Ductse1=1, else skip to HEAT PUMP BATTERY
We'd like to ask some questions about the duct sealing you installed.

IND3. Did you hire a contractor to install your new duct seals or did you install them yourself?

1	Contractor	IND4
2	Self-installed	DSE3
88	Refused	DSE3
99	Don't Know	DSE3

Ask if IND3=1, ELSE SKIP TO DSE3
IND4. Please rate your satisfaction with your duct seal contractor on a 1 to 5 scale, where 1 means very DISSATISFIED and 5 means very SATISFIED.

#	Rating from 1 (Very Dissatisfied) to 5 (Very Satisfied)	IND5
88	Refused	SAT2BD
99	Don't Know	SAT2BD

ASK If IND4 < 5, Else skip to IND6
IND5. Why do you say that?

77	Record Verbatim	SAT2BD
88	Refused	SAT2BD
99	Don't Know	SAT2BD

SAT2BD. On the same 1 to 5 scale, how satisfied are you with the quality and completeness of information provided by your contractor about energy savings opportunities?

#	Rating from 1 (Very Dissatisfied) to 5 (Very Satisfied)	IND6
88	Refused	IND6
99	Don't Know	IND6

End Skip
IND6. How did you find the contractor you used?

1	Energy Trust list of qualified contractors	IND7
2	Yellow pages	IND13
3	Friend/family recommended	IND13
4	Contractor contacted me	IND13
77	Other (specify)	IND13
88	Refused	IND13
99	Don't Know	IND13

IND7. How important was the Energy Trust list in selecting a contractor? Please give me a rating from 1 to 5, where 1 means NOT AT ALL important and 5 means VERY important.

#	Rating from 1 (Not at all Important) to 5 (Very Important)	IND13
88	Refused	IND13
99	Don't Know	IND13

IND13. Did your contractor inform you of the Home Energy Solutions cash incentive program?

1	Yes	IND15
2	No	IND15
88	Refused	IND15
99	Don't Know	IND15

IND15. How influential was your contractor in your decision to install duct seals? Would you say your contractor was: (READ)

1	Very Influential	IND17
2	Somewhat influential	IND17
3	Not at all influential	IND17
88	Refused	IND17
99	Don't Know	IND17

IND17. Did the contractor that installed your duct seals recommend other energy saving measures for your home?

1	Yes	IND17a
2	No	DSE3
88	Refused	DSE3
99	Don't Know	DSE3

IND17a. What measures did the contractor recommend?

77	Record verbatim	DSE3
88	Refused	DSE3
99	Don't Know	DSE3

END SKIP
END CONTRACTOR BATTERY

DSE3. What was the primary reason you installed duct seals? (DO NOT READ)

1	To save energy	DSE10
2	Available cash incentive	DSE10
3	To improve comfort	DSE10
4	To improve health	DSE10
5	Reduce carbon footprint	DSE10
6	Reduce Global warming	DSE10
7	Promote Energy independence	DSE10
77	Other (specify)	DSE10
88	Refused	DSE10
99	Don't know	DSE10

DSE10. Did you become aware of the cash incentive before or after you decided to install duct seals?

1	Before	DSE15
2	After	DSE15
3	Same time	DSE15
88	Refused	DSE15
99	Don't know	DSE15

DSE15. Which of the following THREE statements best describes the actions you would have taken had the cash incentive NOT existed:

1	We would not have installed duct seals	DSE30
2	We would have installed duct seals anyway, but at a later date	DSE20
3	We would have installed duct seals anyway, and at the same time	DSE30
88	Refused	DSE30
99	Don't know	DSE30

ASK IF DSE15 = 2
DSE20. If the cash incentive was not available, when would you have installed duct seals?

1	Within a year	DSE30
2	More than a year	DSE21
88	Refused	DSE30
99	Don't know	DSE30

ASK IF DSE20 = 2
DSE21. How many years would you have waited before installing duct seals if the cash incentive had not existed?

#	Number of Years	DSE30
88	Refused	DSE30
99	Don't know	DSE30

DSE30. We'd like to get a sense of what influenced you to purchase your duct sealing. How influential was the cash incentive in your decision to install duct seals? Would you say the cash incentive was…

1	Very Influential	DSETX
2	Somewhat influential	DSETX
3	Not at all influential	DSETX
88	Refused	DSETX
99	Don't know	DSETX

ASK IF PA8=1
DSETX. Did you take advantage of the Oregon Tax Credit for the duct sealing you installed through the program?

1	Yes	INH3
2	No	DSETXa
88	Refused	INH3
99	Don't know	INH3

DSETXa. Why not? (IF NECESSARY: Why didn't you take advantage of the Oregon Tax Credit for the duct sealing you installed?)

77	RECORD VERBATIM	INH3
88	Refused	INH3
99	Don't know	INH3

Heat Pump

IF HP1=1 Ask INH3, Else skip to Gas Furnace Battery
We'd like to ask some questions about the Heat Pump that you installed through the Home Energy Solutions cash incentive program.
INH3. Did a contractor install your new Heat Pump or did you install it yourself?

1	Contractor	CH4
2	Self-installed	HP2
88	Refused	HP2
99	Don't Know	HP2

Ask if INH3=1, ELSE SKIP TO HP2

CH4. Please rate your satisfaction with your contractor on a 1-5 scale, where 5 means very SATISFIED and 1 means very DISSATISFIED.

#	Rating from 1 (Very Dissatisfied) to 5 (Very Satisfied)	CH5
88	Refused	SAT2BH
99	Don't Know	SAT2BH

ASK If CH4 < 5, ELSE SKIP to SAT2BH

CH5. Why do you say that?

77	Record Verbatim	SAT2BH
88	Refused	SAT2BH
99	Don't Know	SAT2BH

SAT2BH. On the same 1 to 5 scale, how satisfied are you with the quality and completeness of information provided by your contractor about energy savings opportunities?

#	Rating from 1 (Very Dissatisfied) to 5 (Very Satisfied)	CH6
88	Refused	CH6
99	Don't Know	CH6

CH6. How did you find the contractor you used?

1	Energy Trust list of qualified contractors	CH7
2	Yellow pages	HPC2
3	Friend/family recommended	HPC2
4	Contractor contacted me first	HPC1
77	Other (specify)	HPC2
88	Refused	HPC2
99	Don't Know	HPC2

CH7. How important was this list in selecting a contractor? Please give me a rating from 1 to 5, where 1 means NOT AT ALL important, and 5 means EXREMELY important.

#	Rating from 1 (Not at all Important) to 5 (Very Important)	HPC2
88	Refused	HPC2
99	Don't Know	HPC2

HPC1. Did the contractor that installed your new Heat Pump tell you about the Home Energy Solutions cash incentive program?

1	Yes	HPC2
2	No	HPC2
88	Refused	HPC2
99	Don't know	HPC2

HPC2. How influential was your contractor in your decision to purchase an energy efficient Heat Pump? Would you say your contractor was…(READ)

1	Very Influential	HPC17
2	Somewhat influential	HPC17
3	Not at all influential	HPC17
88	Refused	HPC17
99	Don't Know	HPC17

HPC17. Did the contractor that installed your heat pump recommend other energy saving measures for your home?

1	Yes	HPC17a
2	No	HP2
88	Refused	HP2
99	Don't Know	HP2

HPC17a. What measures did the contractor recommend?

77	SPECIFY	HP2
88	Refused	HP2
99	Don't Know	HP2

END CONTRACTOR BATTERY

HP2. Did the new Heat Pump that was installed through the program replace an old Heat Pump, an Electric Forced Air Furnace, or something else?

1	Heat Pump		HP3
2	Electric Forced Air Furnace		HP3
3	Other		HP2a
88	Refused		HP3
99	Don't Know		HP3

HP2a. What type of system was removed and replaced with the new Heat Pump?

1	Gas Furnace		HP3
2	Electric Furnace		HP3
4	Electric Strip Heat		HP3
5	Space Heating – Electric		HP3
6	Heat Pump		HP3
7	NONE		HP3
77	Other (Specify)		HP3
88	Refused		HP3
99	Don't Know		HP3

HP3. How old was the system that was replaced when you installed the new heat pump?

#	Number of Years	HP4
88	Refused	HP3A
99	Don't Know	HP3A

HP3A. Was it…?

1	<5 years old		HP4
2	5 - 10 years old		HP4
3	10 – 15 years old		HP4
4	15 – 20 years old		HP4
5	>20 years old		HP4
88	Refused		HP4
99	Don't Know		HP4

HP4. Could your old system have been fixed, or was it beyond repair?

1	Could have been fixed		HP5
2	Was beyond repair		HP10
88	Refused		HP5
99	Don't Know		HP5

HP5. What was your main reason for installing a new Heat Pump? (DO NOT READ)

1	Previous system really old	HP10
2	Previous system was broken/emergency replacement	HP10
3	Save energy	HP10
4	Remodeling home	HP10
5	Did not have air conditioner/heater before	HP10
6	Increased Comfort	HP10
7	Reduce global warming	HP10

8	Promote energy Independence	HP10
77	Other (specify)	HP10
88	Refused	HP10
99	Don't Know	HP10

HP10. Before you began shopping for a new Heat Pump, were you aware of the differences in performance and energy consumption between a standard and a high efficiency Heat Pump?

1	Yes	HP20
2	No	HP20
88	Refused	HP20
99	Don't know	HP20

HP20. Did you become aware of the cash incentive before or after you made the decision to purchase a high efficiency heat pump?

1	Before	FA1
2	After	FA1
3	Same time	FA1
88	Refused	FA1
99	Don't know	FA1

ASK IF HP2=2

FA1. How influential was the program in your decision to convert from a forced air furnace to a heat pump? Please rate the program influence on a scale from 1 to 5 where 1 is not influential at all and 5 is very influential?

#	Rating from 1 to 5	FA3
88	Refused	FA3
99	Don't know	FA3

ASK IF HP2=2

FA3. How likely is it that you would have converted from a forced air furnace to a heat pump if the cash incentive did not exist? Would you say it is …

1	Very likely you would have converted in the absence of the program	HP30
2	Somewhat likely	HP30F
3	Not at all likely	HP30F
88	Refused	HP30F
99	Don't know	HP30F

ASK IF FA3 in (2, 3, 88, 99) ELSE SKIP to HP30

HP30F. Which of the following four statements best describes the actions you would have taken had the cash incentive NOT existed:

1	We would not have bought anything	HP45
2	We would have bought a new forced air furnace instead of a heat pump	HP45
3	We would have bought a standard efficiency Heat Pump	HP45
4	We would have bought an energy efficient Heat Pump	HP32
88	Refused	HP45
99	Don't know	HP45

HP30. Which of the following three statements best describes the actions you would have taken had the cash incentive NOT existed:

1	We would not have bought a Heat Pump	HP45
2	We would have bought a standard efficiency Heat Pump	HP45
3	We would have bought an energy efficient Heat Pump	HP32
88	Refused	HP45
99	Don't know	HP45

ASK IF HP30 = 3 or HP30F=4, ELSE SKIP to HP45

HP32. If the cash incentive had not existed, would you have bought the SAME Heat Pump that you purchased through the program, or would you have selected a Heat Pump that was less expensive and less efficient, although still an energy efficient unit?

1	We would bought the same Heat Pump as we did through the program	HP35
2	We would have bought a less expensive/less efficient unit	HP35
88	Refused	HP35
99	Don't know	HP35

HP35. If the cash incentive was not available, would you have bought the energy efficient Heat Pump…(READ)

1	At the same time	HP45
2	Within a year	HP45
3	More than a year later	HP40
88	Refused	HP45
99	Don't know	HP45

IF HP35 = 3

HP40. How many years would you have waited before buying an energy efficient Heat Pump if the cash incentive had not existed?

#	Number of Years	HP45
88	Refused	HP45
99	Don't know	HP45

HP45. We'd like to get a sense of what influenced you to purchase your heat pump. How influential was the cash incentive in your decision to purchase an energy efficient Heat Pump? Would you say the cash incentive was…

1	Very influential	HPTX
2	Somewhat influential	HPTX
3	Not at all influential	HPTX
88	Refused	HPTX
99	Don't Know	HPTX

ASK IF PA8=1

HPTX. Did you take advantage of the Oregon Tax Credit for the Heat Pump you installed?

1	Yes, Applied for Tax Credit	HPTXI
2	No, Did not Apply for Tax Credit	HPTXa
88	Refused	ECM1
99	Don't know	ECM1

HPTXa. Why not? (IF NECESSARY: Why didn't you take advantage of the Oregon Tax Credit for the heat pump you purchased?)

77	RECORD VERBATIM	ECM1
88	Refused	ECM1
99	Don't Know	ECM1

HPTXI. How likely is it that you would have purchased the same exact Heat Pump had you not received a Tax Credit from the State of Oregon? Would you say…

1	Very likely	ECM1
2	Somewhat likely	ECM1
3	Not at all likely	ECM1
88	Refused	ECM1
99	Don't Know	ECM1

Gas Furnace/Gas Furnace with ECM Blower

ASK ECM1 IF GF1=1, ELSE SKIP TO WINDOW BATTERY

We'd like to ask some questions about the Gas Furnace that you installed.

ECM1. Does your new Gas Furnace have an Electrically Commutated Motor, also known as an ECM Blower?

1	Yes	ECM2
2	No	ING3
88	Refused	ING3
99	Don't Know	ING3

ECM2. With the ECM, do you ever just run the fan on your Gas Furnace (without heat) to help increase the air circulation in your home?

1	Yes	ECM3
2	No	ECM4
88	Refused	ECM4
99	Don't Know	ECM4

ECM3. On average, how many hours a day do you run just the fan?

#	Number of hours	ECM4
88	Refused	ECM4
99	Don't Know	ECM4

ECM4. Does your system have an air cleaner?

1	Yes	ING3
2	No	ING3
88	Refused	ING3
99	Don't Know	ING3

ING3. Did you hire a contractor to install your new Gas Furnace or did you install it yourself?

1	Contractor	CG4
2	Self-installed	GF2
88	Refused	GF2
99	Don't Know	GF2

Ask if ING3=1, ELSE SKIP TO GF2

CG4. Please rate your satisfaction with your contractor on 1-5 scale, where 1 means very DISSATISFIED and 5 means very SATISFIED.

#	Rating from 1 (Very Dissatisfied) to 5 (Very Satisfied)	CG5
88	Refused	SAT2BG
99	Don't Know	SAT2BG

ASK If CG4 < 5, ELSE SKIP TO CG6

CG5. Why do you say that?

77	Record Verbatim	SAT2BG
88	Refused	SAT2BG
99	Don't Know	SAT2BG

SAT2BG. On the same 1 to 5 scale, how satisfied are you with the quality and completeness of information provided by your contractor about energy savings opportunities?

#	Rating from 1 (Very Dissatisfied) to 5 (Very Satisfied)	CG6
88	Refused	CG6
99	Don't Know	CG6

END SKIP

CG6. How did you find the contractor you used?

1	Energy Trust list of qualified contractors	CG7
2	Yellow pages	GFC2

3	Friend/family recommended	GFC2
4	Contractor contacted me first	GFC1
77	Other (specify)	GFC2
88	Refused	GFC2
99	Don't Know	GFC2

CG7. How important was this list in selecting a contractor? Please give me a rating from 1 to 5, where 5 means EXREMELY important, and 1 means NOT AT ALL important.

#	Rating from 1 (Not at all Important) to 5 (Very Important)	GFC2
88	Refused	GFC2
99	Don't Know	GFC2

GFC1. Did the contractor that installed your Gas Furnace inform you of the Home Energy Solutions cash incentive program?

1	Yes	GFC2
2	No	GFC2
88	Refused	GFC2
99	Don't Know	GFC2

GFC2. How influential was your contractor in your decision to purchase an energy efficient Gas Furnace? Would you say your contractor was: (READ)

1	Very influential	GFC17
2	Somewhat influential	GFC17
3	Not at all influential	GFC17
88	Refused	GFC17
99	Don't Know	GFC17

GFC17. Did the contractor that installed your gas furnace recommend other energy saving measures for your home?

1	Yes	GFC17a
2	No	GFC18
88	Refused	GFC18
99	Don't Know	GFC18

GFC17a. What measures did the contractor recommend?

77	SPECIFY	GFC18
88	Refused	GFC18
99	Don't Know	GFC18

GFC18. Would you recommend your contractor to others?

1	Yes	GFC18a
2	No	GFC18a
88	Refused	GF2
99	Don't Know	GF2

GFC18a. Why do you say that?

77	Record Verbatim	GF2
88	Refused	GF2
99	Don't Know	GF2

END SKIP
END CONTRACTOR BATTERY

GF2. Did the new Gas Furnace that was installed through the program replace an old gas furnace? (IF NEEDED: As opposed to another type of heating system such as electric forced air furnace or electric heat pump?)

1	Yes	GF3
2	No	GF2a

88	Refused	GF3
99	Don't Know	GF3

GF2a. What type of heating system was removed and replaced with the new Gas Furnace?

1	Gas Furnace	GF3
2	Electric forced air furnace	GF3
3	Electric Heat Pump	GF3
4	Electric Space Heater	GF3
5	None. Did not have heater before	GF3
77	Other (specify)	GF3
88	Refused	GF3
99	Don't Know	GF3

GF3. How old was the system that was replaced by the new Gas Furnace?

#	Number of Years	GF5
88	Refused	GF3A
99	Don't Know	GF3A

GF3A. Was it…?

1	<5 years old		GF5
2	5 - 10 years old		GF5
3	10 - 15 years old		GF5
4	15 - 20 years old		GF5
5	>20 years old		GF5
88	Refused		GF5
99	Don't Know		GF5

GF5. Could your old heating system have been fixed, or was it beyond repair?

1	Could have been fixed		GF6.
2	Was beyond repair		GF09
88	Refused		GF6.
99	Don't Know		GF6

GF6. What was your main reason for installing your new Gas Furnace? (DO NOT READ)

1	Previous system really old	GF09
2	Previous system was broken/emergency replacement	GF09
3	Save energy	GF09
4	Remodeling home	GF09
5	Did not have air conditioner/heater before	GF09
6	Increased Comfort	GF09
7	Reduce global warming	GF09
8	Promote energy Independence	GF09
77	Other (specify)	GF09
88	Refused	GF09
99	Don't Know	GF09

GF09. Before you began shopping for a new Gas Furnace, were you aware of the differences in performance and energy consumption between a standard and a high efficiency Gas Furnace?

1	Yes, was aware of differences before shopping	GF10
2	No, was not aware of differences before shopping	GF10
88	Refused	GF10
99	Don't know	GF10

ASK IF GFE1=1 and ECM1=1

GF10. Before you began shopping for a new Gas Furnace, were you aware of the benefits of an ECM Blower?

1	Yes	GF20
2	No	GF20
88	Refused	GF20
99	Don't know	GF20

GF20. Did you become aware of the cash incentive before or after you decided to purchase an energy efficient Gas Furnace that qualified for the cash incentive?

1	Before	GF30
2	After	GF30
3	Same time	GF30
88	Refused	GF30
99	Don't know	GF30

ASK IF GFE1=1 and ECM1=1, ELSE SKIP TO G31

GF30. Which of the following four statements best describes the actions you would have taken had the cash incentive NOT existed:

1	We would not have bought a Gas Furnace	GF50
2	We would have bought a standard efficiency Gas Furnace	GF50
3	We would have bought an energy efficient Gas Furnace and ECM Blower anyway	GF32
4	We would have bought an energy efficient Gas Furnace, but would not have bought the ECM Blower	GF32
88	Refused	GF50
99	Don't know	GF50

ASK IF (GFE1 not equal to 1) OR (GFE1=1 and ECM1 not equal to 1)

GF31. Which of the following three statements best describes the actions you would have taken had the cash incentive NOT existed:

1	We would not have bought a Gas Furnace	GF50
2	We would have bought a standard efficiency Gas Furnace	GF50
3	We would have bought an energy efficient Gas Furnace anyway	GF32
88	Refused	GF50
99	Don't know	GF50

GF32. If the cash incentive had not existed, would you have bought the SAME Gas Furnace that you purchased through the program, or would you have selected a Gas Furnace that was less expensive and less efficient, although still an energy efficient unit?

1	We would have bought the SAME gas furnace	GF40
2	We would have bought a less expensive/less efficient unit	GF40
88	Refused	GF40
99	Don't know	GF40

ASK IF GF31 = 3 OR GF30 in (3,4)

GF40. If the cash incentive was not available, when would you have bought the energy efficient Gas Furnace:

1	At the same time	GF50
2	Within a year	GF50
3	More than a year	GF45
88	Refused	GF50
99	Don't know	GF50

ASK IF GF40 = 3

GF45. How many years would you have waited before buying an energy efficient Gas Furnace if the cash incentive had not existed?

#	Number of Years	GF50

88	Refused	GF50
99	Don't know	GF50

ASK ALL GAS FURNACE PARTS
GF50. We'd like to get a sense of what influenced you to purchase your Gas Furnace. How influential was the cash incentive in your decision to purchase an energy efficient Gas Furnace? Would you say the cash incentive was:

1	Very Influential	GFTX
2	Somewhat influential	GFTX
3	Not at all influential	GFTX
88	Refused	GFTX
99	Don't Know	GFTX

ASK IF PA8=1, Else skip to INW3
GFTX. Did you take advantage of the Oregon Tax Credit for the Gas Furnace you installed?

1	Yes, Applied for Tax Credit	GFTXI
2	No, Did not Apply for Tax Credit	GFTXa
88	Refused	INW3
99	Don't know	INW3

GFTXa. Why not? (IF NECESSARY: Why didn't you take advantage of the Oregon Tax Credit for the gas furnace you installed?)

77	RECORD VERBATIM	INW3
88	Refused	INW3
99	Don't Know	INW3

GFTXI. How likely is it that you would have purchased the same exact Gas Furnace had you not received a Tax Credit from the State of Oregon?

1	Very likely	GFTXII
2	Somewhat likely	GFTXII
3	Not at all likely	GFTXII
88	Refused	GFTXII
99	Don't Know	GFTXII

GFTXII. Which was more influential in your decision to purchase your Gas Furnace: the Oregon Tax Credit or the cash incentive from Energy Trust?

1	Oregon Tax Credit	INW3
2	Cash incentive	INW3
88	Refused	INW3
99	Don't Know	INW3

Windows

ASK IF WIN1 = 1, ELSE SKIP TO EQUIPMENT CHANGES AND SPILLOVER BATTERY
We'd like to ask some questions about the windows you installed.
INW3. Did you hire a contractor to install your new windows or did you install them yourself?

1	Contractor	CW4
2	Self-installed	Win5
88	Refused	Win5
99	Don't Know	Win5

Ask if INW3=1, ELSE SKIP TO WIN5
CW4. Please rate your satisfaction with your contractor on 1-5 scale, where 1 means very DISSATISFIED and 5 means very SATISFIED.

#	Rating from 1 (Very Dissatisfied) to 5 (Very Satisfied)	CW5

88	Refused	SAT2BW
99	Don't Know	SAT2BW

ASK If SAT4 < 5, ELSE SKIP TO SAT2BW

CW5. Why do you say that?

77	Record Verbatim	SAT2BW
88	Refused	SAT2BW
99	Don't Know	SAT2BW

SAT2BW. On the same 1 to 5 scale, how satisfied are you with the quality and completeness of information provided by your contractor about energy savings opportunities?

#	Rating from 1 (Very Dissatisfied) to 5 (Very Satisfied)	SAT3
88	Refused	SAT3
99	Don't Know	SAT3

SAT3. Would you recommend your contractor to others?

1	Yes	CW6
2	No	CW6
88	Refused	CW6
99	Don't Know	CW6

CW6. How did you find the contractor you used?

1	Energy Trust list of qualified contractors	CW7
2	Yellow pages	CW13
3	Friend/family recommended	CW13
4	Contractor contacted me first	CW11
77	Other (specify)	CW13
88	Refused	CW13
99	Don't Know	CW13

CW7. How important was this list in selecting a contractor? Please give me a rating from 1 to 5, where 1 means NOT AT ALL important, and 5 means VERY important.

#	Rating from 1 (Not at all Important) to 5(Very Important)	CW13
88	Refused	CW13
99	Don't Know	CW13

CW11. Did the contractor that installed your windows inform you of the Home Energy Solutions cash incentive program?

1	Yes	CW13
2	No	CW13
88	Refused	CW13
99	Don't Know	CW13

CW13.How influential was your contractor in your decision to purchase program qualifying windows? Would you say your contractor was: (READ)

1	Very Influential	CW17
2	Somewhat influential	CW17
3	Not at all influential	CW17
88	Refused	CW17
99	Don't Know	CW17

CW17. Did the contractor that installed your windows recommend other energy saving measures for your home?

1	Yes	CW17a
2	No	WIN5

88	Refused	WIN5
99	DK	WIN5

CW17a. What measures did the contractor recommend?

77	Record verbatim	WIN5
88	Refused	WIN5
99	DK	WIN5

END Window Contractor Battery

ASK ALL WINDOW PARTS

WIN5. Before purchasing energy efficient windows through the program, did you have single pane or double pane windows?

1	Single pane	Win6
2	Dual pane	Win6
77	Other (specify)	Win6
88	Refused	Win6
99	Don't Know	Win6

WIN6. Thinking about your new windows that were purchased through the program, how energy efficient are they relative to the old ones? Would you say your new windows are… (READ)

1	About as energy efficient as the old ones	Win7
2	Slightly more energy efficient than the old ones	Win7
3	Significantly more energy efficient than the old ones	Win7
4	The most energy efficient ones available	Win7
77	Other (specify)	Win7
88	Refused	Win7
99	Don't Know	Win7

WIN7. What was your main reason for replacing your windows? (DO NOT READ)

1	Windows really old	WK1
2	Windows were broken/emergency replacement	WK1
3	Save energy	WK1
4	Remodeling home	WK1
5	Reduce noise	WK1
6	Moisture buildup in window	WK1
7	Better looking/Design	WK1
8	UV light blocking/Reduces fading	WK1
9	Less drafty/less heat gain in summer/Better sealing	WK1
10	Better quality	WK1
11	Increased Comfort	WK1
12	Reduce global warming	WK1
13	Promote energy Independence	WK1
77	Other (specify)	WK1
88	Refused	WK1
99	Don't Know	WK1

WK1. Are the windows you purchased through the program Energy Star?

1	Yes	WK3
2	No	WK3
88	Refused	WK3
99	Don't Know	WK3

WK3. Are the windows you purchased through the program Argon Gas filled?

1	Yes	WK5

2	No	WK5
88	Refused	WK5
99	Don't Know	WK5

WK5. Do the windows you purchased through the program have Low E glass?

1	Yes	WIN20
2	No	WIN20
88	Refused	WIN20
99	Don't Know	WIN20

WIN20. Did you become aware of the cash incentive before or after you decided to purchase windows that qualified for the cash incentive?

1	Before	Win30
2	After	Win30
3	Same time	Win30
88	Refused	Win30
99	Don't know	Win30

WIN30. If the program did not exist, would you still have purchased new windows?

1	Yes	Win30a
2	No	Win45
88	Refused	Win45
99	Don't know	Win45

ASK IF WK1 = 1, ELSE SKIP TO WIN30b
WIN30a. If the program did not exist, would you have bought high efficiency Windows anyway?

1	Yes	Win30b
2	No	Win30b
88	Refused	Win30b
99	Don't know	Win30b

ASK IF WK3 = 1, ELSE SKIP TO WIN30c
WIN30b. If the program did not exist, would you have bought Argon Gas filled windows anyway?

1	Yes	Win30c
2	No	Win30c
88	Refused	Win30c
99	Don't know	Win30c

ASK IF WK5 = 1, ELSE SKIP TO WIN35
WIN30c. If the program did not exist would you have bought Low E Glass anyway?

1	Yes	Win33
2	No	Win33
88	Refused	Win33
99	Don't know	Win33

WIN33. Thinking about the efficiency of the old windows that were replaced through the program…if the program did not exist would you have bought windows that were…(READ)

1	About as energy efficient as the old ones	WIN35
2	Slightly more energy efficient than the old ones	WIN35
3	Significantly more energy efficient than the old ones	WIN35
4	The most energy efficient windows available	WIN35
77	Other (specify)	WIN35
88	Refused	WIN35
99	Don't Know	WIN35

ASK IF WIN30 =1

WIN35. If the cash incentive was not available, when would you have bought new windows?

1	At the same time	Win45
2	Within a year	Win45
3	More than a year later	Win40
88	Refused	Win45
99	Don't know	Win45

ASK IF WIN35 = 3

WIN40. How many years would you have waited before buying new windows if the cash incentive had not existed?

#	Number of Years	Win45
88	Refused	Win45
99	Don't know	Win45

ASK ALL WINDOWS PARTS

WIN45. We'd like to get a sense of what influenced you to purchase your windows. How influential was the cash incentive in your decision to purchase Energy Star windows? Would you say the cash incentive was…

1	Very Influential	CFL3
2	Somewhat influential	CFL3
3	Not at all influential	CFL3
88	Refused	CFL3
99	Don't know	CFL3

CFL

IF AUD1 = (1 or 2) then Ask CFL3, Else skip to Insulation Battery

We'd like to ask some questions about the CFL bulbs that were installed at the time of your Home Energy Review.

CFL3. Did the CFLs installed during the Home Energy Review replace incandescent bulbs or older CFLs? (ACCEPT MULTIPLE)

1	Incandescent		CFL4
2	CFLs		CFL4
77	Other (specify)		CFL4
88	Refused		CFL4
99	Don't Know		CFL4

CFL4. Did the Home energy Review advisor install all the bulbs that were provided by the program, or were some placed in storage?

1	Yes		CFL4a
2	No		CFL7
88	Refused		CFL7
99	Don't Know		CFL7

CFL4A. How many are in storage? (Ask for best guess if necessary)

#	Number		CFL7
88	Refused		CFL7
99	Don't Know		CFL7

CFL7. Did any of the CFL bulbs provided during the Energy Review burnout or stop working?

1	Yes		CFL7A
2	No		CFL9
88	Refused		CFL9
99	Don't Know		CFL9

CFL7A. How many burned out or stopped working? (Ask for best guess if necessary)

#	Number		CFL9
88	Refused		CFL9
99	Don't Know		CFL9

CFL9. Were any of the CFL bulbs provided during the Energy Review removed for other reasons? (IF NEEDED: reasons other than the bulb burned out or stopped working.)

1	Yes		CFL9A
2	No		CFL11
88	Refused		CFL11
99	Don't Know		CFL11

CFL9A. How many were removed?

#	Number		CFL9B
88	Refused		CFL9B
99	Don't Know		CFL9B

CFL9B. Why where these lamps removed?

1	Quality of light provided		CFL11
2	Aesthetics of lamp in fixture		CFL11
77	Other (specify)		CFL11
88	Refused		CFL11
99	Don't Know		CFL11

ASK IF CFL9=1 or CFL7=1, ELSE SKIP TO CFL13
CFL11. When the CFL bulbs that were installed during the Home Energy Review burned out or were removed, what type of bulbs did you replace them with? (ACCEPT MULTIPLES)

1	Incandescent		CFL12
2	Compact Fluorescent (CFL)		CFL12
3	Other Fluorescent		CFL12
4	Halogen		CFL12
77	Other (Specify)		CFL12
88	Refused		CFL12
99	Don't Know		CFL12

CFL12. How did you dispose of the CFLs?

1	Threw in garbage	CFL13
2	Keeping in storage until I can go to recycling center	CFL13
3	Recycled at store	CFL13
4	Recycled at recycling drive	CFL13
5	Recycled at recycling center	CFL13
77	Other (Specify)	CFL13
88	Refused	CFL13
99	Don't Know	CFL13

CFL13. In the time since the Home Energy Review, have you purchased any additional CFLs for your home? (IF NEEDED: …CFL bulbs that were not installed during the Home Energy Review and were not replacing bulbs installed during the Home Energy Review.)

1	Yes		CFL13A
2	No		CFL15
88	Refused		CFL15
99	Don't Know		CFL15

CFL13A. How many additional CFLs did you purchase for your home?

#	Number		CFL13B
88	Refused		CFL13B
99	Don't Know		CFL13B

CFL13B. What was your main reason for installing CFLs (DO NOT READ)

1	Save energy	CFL13I
2	Save money	CFL13I
3	Reduce global warming	CFL13I
4	Promote energy Independence	CFL13I
77	Other (specify)	CFL13I
88	Refused	CFL13I
99	Don't Know	CFL13I

CFL13I. How influential was your experience with the CLFs that were installed during the Home Energy Review in your decision to purchase these additional CFL bulbs for your home? Would you say…

1	Very Influential	CFL15
2	Somewhat influential	CFL15
3	Not at all influential	CFL15
88	Refused	CFL15
99	Don't Know	CFL15

CFL15. Before your Home Energy Review had you ever purchased any CFLs for your home?

1	Yes	CFL20
2	No	CFL20
88	Refused	CFL20
99	Don't know	CFL20

CFL20. Before your Home Energy Review, did you have specific plans to install CFLs in your home?

1	Yes	CFL25
2	No	CFL25
88	Refused	CFL25
99	Don't know	CFL25

CFL25. If you had not received free CFLs during the Home Energy Review, which of the following three statements best describes the actions you would have taken:

1	We would not have installed CFLs in our home	C1
2	We would have installed fewer CFLs	CFL28
3	We would have installed the same number of CFL's	CFL30
88	Refused	C1
99	Don't know	C1

Ask if CFL25=2

CFL28. If you had not received free CFLs during the Home Energy Review, how many CFLs would you have purchased and installed on your own?

#	Number of CFL's bought in the absence of the program	CFL30
88	Refused	CFL30
99	Don't know	CFL30

IF CFL25 = 2 or 3

CFL30. If you had not participated in the Home Energy Review and received free CFL bulbs, when would you have bought CFLs?

1	At roughly the same time as the Home Energy Review	C1
2	Within a few months of the Home Energy Review	C1
3	Within a year of the Home Energy Review	C1

4	More than a year after the Home Energy Review	C1
88	Refused	C1
99	Don't know	C1

Equipment Changes and Spillover

Thank you for discussing the changes you made in your home through the &PROG Program. Now I would like to discuss other changes that you have made in your home that might have an effect on your energy use.

C1. Other than the equipment we've already discussed, have you added any insulation or new windows to your home since January 2006?

1	Yes	C1A
2	No	C1A
88	Refused	C1A
99	Don't know	C1A

C1A. Other than the equipment we've already discussed, have you installed any new heating, cooling or water heating equipment since January 2006?

1	Yes	C1B
2	No	C1B
88	Refused	C1B
99	Don't know	C1B

C1B. Other than the equipment we've already discussed, have you made any major household appliance purchases, such as a refrigerator, clothes washer or hot tub?

1	Yes	C2
2	No	C2
88	Refused	C2
99	Don't know	C2

If C1=1 then &EQUIP1="insulation or windows"
If C1A=1 then &EQUIP2="heating, cooling, or water heating"
If C1B=1 then &EQUIP3="major household appliances"

ASK if C1=1 or C1A=1 or C1B=1, ELSE SKIP TO CFLSP1

C2 You mentioned that you installed, [&EQUIP1, &EQUIP2, &EQUIP3]. What specific types of equipment did you install?

[PROMPT for "was there anything else?" after each purchase mentioned.]

1	Ceiling Insulation	SPT
2	Wall Insulation	SPT
3	Floor Insulation	SPT
4	Duct Insulation	SPT
5	Windows	SPT
6	Refrigerator	SPT
7	Clothes washer	SPT
8	Clothes Dryer	SPT
9	Dishwasher	SPT
10	Room air conditioner	SPT
11	Central air conditioner	SPT
12	Heat Pump	SPT
13	Central Heating/ Gas Furnace	SPT
14	Central Heating/Electric	SPT
15	Electric Strip Heat	SPT
16	Water heater, gas	SPT
17	Water heater, electric	SPT
18	Evaporative cooler/swamp cooler	SPT

19	Whole house fan	SPT
77	Other (specify)	SPT
88	Refused	CFLSP1 (if ONLY response)
99	Don't know	CFLSP1 (if ONLY response)

For First 3 Mentions ASK SPT through SP6:
SPT. Approximately what month and year did you install &EQUIP1? (PROMPT FOR BEST GUESS)
a. (year)

1	2005	SPTb
2	2006	SPTb
3	2007	SPTb
88	Refused	SPTb
99	Don't know	SPTb

b. (month)

1	January	SP1
2	February	SP1
3	March	SP1
4	April	SP1
5	May	SP1
6	June	SP1
7	July	SP1
8	August	SP1
9	September	SP1
10	October	SP1
11	November	SP1
12	December	SP1
88	Refused	SPT2
99	Don't know	SPT2

SPT2. Can you recall the season?

1	Spring	SP1
2	Summer	SP1
3	Fall	SP1
4	Winter	SP1
88	Refused	SP1
99	Don't know	SP1

ASK IF C2 in (5 to 18), ELSE SKIP to SP3
SP1. Did this &EQUIP1 replace existing equipment, or was it an addition to the equipment used in your home?

1	Replaced existing equipment	ES1
2	An addition to existing equipment	ES1
88	Refused	ES1
99	Don't Know	ES1

ASK IF EQUIP1 equal to 6,7, 8 or 9 in equipment list shown in C2, Else GO TO SP2
ES1. Was your new &EQUIP Energy Star?

1	Yes	SP3
2	No	SP3
88	Refused	SP2
99	Don't Know	SP2

ASK IF EQUIP1 equal to 10 - 18 in equipment list in C2, OR ES1 In (88, 99), ELSE GO TO WK1

SP2. Is the new &EQUIP1 high or standard efficiency?

1	High Efficiency	SP2a
2	Standard efficiency	SP2a
77	Other (Specify)	SP2a
88	Refused	HP2
99	Don't Know	HP2

SP2a. Why do you say that?

77	RECORD VERBATIM	HP2
88	Refused	HP2
99	Don't Know	HP2

ASK IF &EQUIP1=WINDOWS (5 in C2 list) ELSE SKIP TO HP2
WK1. Are the new windows you purchased Energy Star?

1	Yes	WK3
2	No	WK3
88	Refused	WK3
99	Don't Know	WK3

WK3. Are the new windows you purchased Argon Gas filled?

1	Yes	WK5
2	No	WK5
88	Refused	WK5
99	Don't Know	WK5

WK5. Do the new windows you purchased have Low E glass?

1	Yes	SP3
2	No	SP3
88	Refused	SP3
99	Don't Know	SP3

ASK IF &EQUIP1=HEAT PUMP, ELSE SKIP TO SP3
HP2. Did the new Heat Pump replace an old Heat Pump, an Electric Forced Air Furnace, or something else?

1	Heat Pump		SP3
2	Electric Forced Air Furnace		SP3
3	Other		HP2a
88	Refused		SP3
99	Don't Know		SP3

HP2a. What type of system was removed and replaced with the new Heat Pump?

1	Gas Furnace		SP3
2	Electric Furnace		SP3
4	Electric Strip Heat		SP3
5	Space Heating – Electric		SP3
6	Heat Pump		SP3
7	NONE		SP3
77	Other (Specify)		SP3
88	Refused		SP3
99	Don't Know		SP3

If HER=1 then ask SP3, Else skip to SP5
SP3. Did your Home Energy Review include a recommendation for installing a new &EQUIP1

1	Yes	SP4
2	No	SP4

88	Refused	SP4
99	Don't Know	SP4

ASK IF HER=1
SP4. How influential was the Home Energy Review in your decision to purchase &EQUIP1?

1	Very Influential	CN1
2	Somewhat influential	CN1
3	Not at all influential	CN1
88	Refused	CN1
99	Don't know	CN1

ASK IF HES=1, ELSE SKIP TO CN1
SP5. How influential was your experience in the Home Energy Solutions program or information provided through the program in your decision to install &EQUIP1?

1	Very Influential	CN1
2	Somewhat influential	CN1
3	Not at all influential	CN1
88	Refused	CN1
99	Don't Know	CN1

ASK IF (&EQUIP1=HEAT PUMP) and (HP2=2)
CN1. How influential was your experience in the &PROG program or program materials on your decision to convert from a forced air furnace to a heat pump? Would you say…

1	Very Influential	SP6
2	Somewhat influential	SP6
3	Not at all influential	SP6
88	Refused	SP6
99	Don't Know	SP6

SP6. Did you receive a cash incentive for &EQUIP1?

1	Yes0	CFLSP1
2	No	CFLSP1
88	Refused	CFLSP1
99	Don't Know	CFLSP1

IF HER=1 then SKIP to EQ1
CFLSP1. Since January 2006, have you installed any CFLs in your home?

1	Yes		CFLSP2
3	No		EQ1
88	Refused		EQ1
99	Don't Know		EQ1

CFLSP2. How many CFLs did you install?

#	Number		CFLSP5
88	Refused		CFLSP5
99	Don't Know		CFLSP5

CFLSP5. How influential was the Home Energy Solutions program and information provided through the program in your decision to install these CFL's?

1	Very Influential	EQ1
2	Somewhat influential	EQ1
3	Not at all influential	EQ1
88	Refused	EQ1

99	Don't Know	EQ1

Home Appliance and Equipment Stock

Now I would like to discuss the equipment you have in your home…
IF HP1=1 then SKIP TO S30. IF GF1=1 or GFE1=1 then skip to EQ5
Eq1. Which of the following best describes your primary heating system? (READ)

1	Gas Furnace		EQ5
2	Electric Furnace		S30
3	Heat Pump		S30
4	Electric Strip Heat		S30
5	Space Heating – Electric		S30
6	NONE		S30
77	Other (Specify)		S30
88	Refused		S30
99	Don't Know		S30

S30. Do you have natural gas service to your home?

1	Yes	Eq5
2	No	Eq11
88	Refused	Eq5
99	Don't Know	Eq5

Eq5. Do you have a gas or electric water heater?

1	Gas Water Heater		Eq7
2	Electric Water Heater		Eq7
88	Refused		Eq7
99	Don't Know		Eq7

Eq7. Do you have a gas or electric stove?

1	Gas Stove		Eq9
2	Electric Stove		Eq9
88	Refused		Eq9
99	Don't Know		Eq9

Eq9. Do you have a gas or electric clothes dryer?

1	Gas Clothes Dryer		Eq11
2	Electric Clothes Dryer		Eq11
3	No Clothes Dryer		Eq11
88	Refused		Eq11
99	Don't Know		Eq11

Ask IF HP1 ne 1, Else skip to EA1
Eq11. Does your home have central air conditioning or room AC?

1	Yes, central		EA2
2	Yes, room		EA2
3	None		EA2
88	Refused		EA2
99	Don't Know		EA2

Environmental Awareness and Decision-Making, etc.

EA2. Which, if any, of the following would you consider barriers that may prevent you from installing or using energy efficient products of services? (ACCEPT MULTIPLES)

1	Concern about reliability		EA3
2	Lack of availability at stores		EA3
3	Uncertainty about performance/technology		EA3
4	Too long of a payback		EA3
5	Difficulty finding reliable installers/contractors		EA3
6	Higher prices for EE products/services		EA3
7	Incentives for EE are too low		EA3
8	Belief that warranties for EE products/services are inadequate		EA3
77	Other (specify)		EA3
88	Refused		EA3
99	Don't Know		EA3

EA3. What are some major influences on your decisions about lifestyle? (ACCEPT MULTIPLES)

1	Media		EA4
2	Friends/Neighbors		EA4
3	Children/Family		EA4
4	Political views		EA4
5	Public figures		EA4
6	Current events		EA4
7	Faith		EA4
8	Environmental changes		EA4
77	Other (specify)		EA4
88	Refused		EA4
99	Don't Know		EA4

EA4. What are your primary sources of information? (Ask for top 3)

1	Newspaper		EA5
2	Radio		EA5
3	Magazines		EA5
4	Television		EA5
5	Websites		EA5
6	Blogs		EA5
7	Friends		EA5
77	Other (specify)		EA5
88	Refused		EA5
99	Don't Know		EA5

EA5. What or whom do you consult before making a major purchase? (ACCEPT MULTIPLES)

1	Consumer reports		EA6
2	Friends/family		EA6
3	Retailer/Salesperson		EA6
4	Web research		EA6
5	Magazines		EA6
6	Blogs		EA6
77	Other (specify)		EA6
88	Refused		EA6
99	Don't Know		EA6

EA6. On a scale of 1 to 5 where 1 indicates 'cost is not a factor at all' and 5 indicates 'cost is a primary factor' please tell me how much cost influences your decision when choosing or not choosing environmentally friendly products or services?

#	Rating from 1 (cost is not a factor) to 5 (cost is a primary factor)	EA7
88	Refused	EA7
99	Don't Know	EA7

EA7. For the next few questions please rate the importance of the following issues to you on a scale of 1 to 5 where 1 indicates 'not at all important' and 5 indicates 'very important'.

EA7a. Global warming

#	Rating from 1 (not important) to 5 (very important)	EA7b
88	Refused	EA7b
99	Don't Know	EA7b

EA7b. Pollution

#	Rating from 1 (not important) to 5 (very important)	EA7c
88	Refused	EA7c
99	Don't Know	EA7c

EA7c. Health effects

#	Rating from 1 (not important) to 5 (very important)	EA7d
88	Refused	EA7d
99	Don't Know	EA7d

EA7d. Reducing dependence on fossil fuels

#	Rating from 1 (not important) to 5 (very important)	EA7e
88	Refused	EA7e
99	Don't Know	EA7e

EA7e. Wise use of land

#	Rating from 1 (not important) to 5 (very important)	EA7f
88	Refused	EA7f
99	Don't Know	EA7f

EA7f. Controlling your energy costs

#	Rating from 1 (not important) to 5 (very important)	EA8
88	Refused	EA8
99	Don't Know	EA8

EA8. When referring to energy produced from wind and sun, which of the following terms would you be most likely to use? (Select one that is most applicable)

1	Clean energy		EA9
2	Green energy		EA9
3	Alternative energy		EA9
4	Renewable energy		EA9
5	Natural energy		EA9
88	Refused		EA9
99	Don't Know		EA9

EA9. Do you currently purchase Green power through your electric utility? (i.e. wind power, fish friendly, etc.)

1	Yes		EA10

2	No		EA10
88	Refused		EA10
99	Don't Know		EA10

EA10. Have you considered using solar power for your home?

1	Yes		EA11
2	No		EA13
88	Refused		EA13
99	Don't Know		EA13

EA11. At what stage would you consider your interest in solar power?

1	Just started		EA12
2	Gathering information		EA12
3	Looking for contractor		EA12
4	Contacted contractor		EA12
5	Currently installing system		EA12
6	System already installed		EA12
88	Refused		EA12
99	Don't Know		EA12

EA12. What would you say are your top reasons for being interested in solar power? (ACCEPT MULTIPLES)

1	Reduce electric bills		EA13
2	Energy independence		EA13
3	Cool technology		EA13
4	Reduce environmental footprint		EA13
5	Reduce global warming		EA13
6	Reliability		EA13
77	Other (specify)		EA13
88	Refused		EA13
99	Don't Know		EA13

EA13. What, if any, would you say are barriers to you using solar power? (ACCEPT MULTIPLES)

1	Availability		DE3
2	Performance uncertainties		DE3
3	Aesthetics		DE3
4	Too long payback/high upfront cost		DE3
5	Installer availability		DE3
6	Incentives too low		DE3
7	Inadequate warrantee		DE3
77	Other (specify)		DE3
88	Refused		DE3
99	Don't Know		DE3

Home Characteristics and Demographics

Before we finish, I have just a few more questions about your household to make sure we're getting a representative sample of Oregon residents.

DE3 In what year was your home built?

#	Year		DE4
88	Refused		DE3A
99	Don't Know		DE3A

DE3A Was it built ….? (READ RANGES)

1	In the last 7 years (i.e., since 2000)		DE4
2	In the 1990's		DE4
3	In the 1980's		DE4
4	In the 1970's		DE4
5	In the 1960's		DE4
6	In the 1950's		DE4
7	In the 1940's		DE4
8	Before 1940		DE4
88	Refused		DE4
99	Don't Know		DE4

DE4 About how large is your home in terms of total square feet?

#	Square Feet		DE5
88	Refused		DE4A
99	Don't Know		DE4A

DE4A Is it …. (READ RANGES)?

1	Less than 500 square feet		DE5
2	Between 500 and 1000 square feet		DE5
3	Between 1000 and 1500 square feet		DE5
4	Between 1500 and 2000 square feet		DE5
5	Between 2000 and 2500 square feet		DE5
6	Between 2500 and 3000 square feet		DE5
7	More than 3,000 square feet		DE5
88	Refused		DE5
99	Don't Know		DE5

DE5 Did you do any remodeling or renovation or additions Since January 2006?

1	Yes		DE6
2	No		DE7
88	Refused		DE7
99	Don't Know		DE7

DE6 Has the square footage of your house changed?

1	Yes, it has increased		DE6A
2	Yes, it has decreased		DE6B
3	No Change		DET
88	Refused		DE7
99	Don't Know		DE7

DE6A. By how much did the square feet in your home increase as a result of the renovations? (PROMPT FOR BEST GUESS)

#	Square Foot Increase		DET
88	Refused		DET
99	Don't Know		DET

DE6B. By how much did the square feet in your home decrease as a result of the renovations? (PROMPT FOR BEST GUESS)

#	Square Foot Decrease		DET
88	Refused		DET
99	Don't Know		DET

DET. Approximately what month and year did you renovate your home? (PROMPT FOR BEST GUESS)

a. (year)

1	2005	DETb
2	2006	DETb
3	2007	DETb
88	Refused	DETb
99	Don't know	DETb

b. (month)

1	January	DE7
2	February	DE7
3	March	DE7
4	April	DE7
5	May	DE7
6	June	DE7
7	July	DE7
8	August	DE7
9	September	DE7
10	October	DE7
11	November	DE7
12	December	DE7
88	Refused	DET2
99	Don't know	DET2

DET2 Can you recall the season?

1	Spring	DE7
2	Summer	DE7
3	Fall	DE7
4	Winter	DE7
88	Refused	DE7
99	Don't know	DE7

DE7 How many people live in your home year-round?

#	Number of people		DE8
88	Refused		DE8
99	Don't Know		DE8

DE8 Did the number of people living year-round in your household change since January 2006?

1	Yes, the number of people increased (Specify by how many)		DEP
2	Yes, the number of people decreased (Specify by how many)		DEP
3	No Change		DE9
88	Refused		DE9
99	Don't Know		DE9

DEP. Approximately what month and year did the number of people in your home change? (PROMPT FOR BEST GUESS)

a. (year)

1	2005	DEPb
2	2006	DEPb
3	2007	DEPb
88	Refused	DEPb
99	Don't know	DEPb

b. (month)

1	January	DE9
2	February	DE9
3	March	DE9
4	April	DE9
5	May	DE9
6	June	DE9
7	July	DE9
8	August	DE9
9	September	DE9
10	October	DE9
11	November	DE9
12	December	DE9
88	Refused	DEP2
99	Don't know	DEP2

DEP2 Can you recall the season?

1	Spring	DE9
2	Summer	DE9
3	Fall	DE9
4	Winter	DE9
88	Refused	DE9
99	Don't know	DE9

Dynamic Substitution table for DE9

DE7 Response	Low Annual Income	Near Low Annual Income
1	$19,110	$25,480
2	$24,990	$33,320
3	$30,870	$41,160
4	$36,750	$49,000
5	$42,630	$56,840
6	$48,510	$64,680
7	$49,613	$66,151
8	$50,715	$67,620
9	$51,818	$69,091
10	$52,920	$70,560

ASK IF DE7 NOT IN (88, 99)
DE9. Which of the following best represents your annual household income in 2006, before taxes? Is it: (READ, USE DYNAMIC SUBSTUTION DATA AND DE7 RESPONSE)

1	Less than [Low Annual Income] per year		Focus
2	[Low Annual Income] to [Near Low Annual Income]		Focus
3	[Near Low Annual Income] or More		Focus
88	Refused		Focus
99	Don't Know		Focus

Focus. Would you be willing to participate in a focus group and receive payment for your time to help Energy Trust better understand Oregonians' perceptions and motivations in regards to energy efficiency and renewable energy?

1	Yes		Gender
2	No		Gender

Gender. RECORD RESPONDENT GENDER

1	Male		End
2	Female		End

END- Thank you for taking the time to complete this important survey! Have a great day/night!

2. NON-PARTICIPANT SURVEY INSTRUMENT

Intro. Hello, this is <INTERVIEWER NAME> calling from Itron on behalf of Energy Trust of Oregon. This is not a sales call. Who would be the best person to talk to about decisions affecting your energy using equipment such as heating, cooling and lighting?

Participation and Measure Verification

S15. Do you own your home or rent?

1	Own		S20
2	Rent		T&T
88	Refused		T&T
99	Don't Know		T&T

S20. What type of home do you live in?

1	Single Family Detached		S25
2	Townhome, condominium		S25
3	Manufactured home		S20a
4	Other (Multifamily, apartment)		T&T
88	Refused		T&T
99	Don't Know		T&T

S20a. Do you live in a standalone manufactured home or a manufactured home park?

1	Standalone home		S25
2	Home park		T&T
88	Refused		T&T
99	Don't Know		T&T

IF S15 = 2,88,99 OR S20 = 4,88,99 THEN T&T

S25. Have you lived at your current residence since January 2006?

1	Yes		S30
2	No		T&T
88	Refused		T&T
99	Don't Know		T&T

S30. Do you have natural gas service to your home?

1	Yes	S40
2	No	S50
88	Refused	S50
99	Don't Know	S50

S40. What is the name of your Gas Utility provider?

1	Northwest Natural Gas (NW Natural)	S50
2	Cascade Natural Gas (CNG)	S50
3	Avista	S50
77	Other (specify)	S50
88	Refused	S50
99	Don't Know	S50

S50. What is the name of your Electric Utility provider?

1	PacifiCorp (also known as Pacific Power, PP&L, and Pacificpower and Light	S55
2	PGE (Portland General Electric)	S55
3	EWEB	S55
77	Other (specify)	S55
88	Refused	S55
99	Don't Know	S55

IF S40 =1,2,3 OR S50= 1,2,3 CONTINUE, else T&T

S55. Do you currently purchase Green power through your electric utility? (i.e. wind power, fish friendly, etc.)Have ySSo you

1	Yes	PA1
2	No	PA1
88	Refused	PA1
99	Don't Know	PA1

Program Awareness

PA1. Have yHave you heard of Energy Trust of Oregon?

1	Yes	PA2
2	No	PA10
88	Refused	PA10
99	Don't Know	PA10

PA2. If YES, what have you heard? (DO NOT READ)

1	Offers energy efficiency programs for residential customers	PA3
2	Offers cash incentives available for installing energy efficient measures	PA3
3	Provides CFLs	PA3
4	Provides home energy analysis / assessment and recommendations	PA3
5	Offers incentive/promotes Solar electric (PV)	PA3
6	Offers incentive/promotes other renewable programs (wind, biopower, etc.)	PA3
76	Don't know what they do, just have heard of the name	PA3
77	Other (specify)	PA3
88	Refused	PA3
99	Don't Know	PA3

PA3. From where or whom did you hear about Energy Trust programs or incentives?

1	Electric utility bill insert	PA7
2	Gas utility bill insert	PA7
3	Electric utility website	PA7
4	Gas utility website	PA7
5	Television	PA7
6	Radio	PA7
7	Magazine	PA7
8	Newspaper article	PA7
9	Newspaper advertisement	PA7
10	Friends/family	PA7
11	Web search	PA7
12	Mass transit	PA7
13	Contractor	PA7
14	Retailer/salesperson	PA7
15	From participating in Home Energy Solutions program	T&T
16	Event (please specify)	PA7
77	Other (specify)	PA7

88	Refused	PA7
99	Don't know	PA7

PA7. Are you aware of any specific programs or services offered by Energy Trust of Oregon available for homeowners such as yourself?

1	Yes	PA9
2	No	PA10
88	Refused	PA10
99	Don't Know	PA10

PA9. What programs are you aware of? (DO NOT READ)

1	Home Energy Solutions Program (home program/residential program)	S60
2	Home Energy Review Program home audit	PA10
3	Rebate/Cash Incentives programs	S60
4	Energy Star products (Energy Efficient products)	PA10
5	Energy Star homes	PA10
6	Energy Star CFL campaign (Change a light change the world, Savings with a Twist, 99 cent twister, and $2 specialty bulb campaign)	PA10
7	Free CFL	PA10
8	SHOW Program (State Home Oil Weatherization Program)	PA10
9	Home Energy Analyzer	PA10
10	Special Financing available through contractors	PA10
11	Solar Hot Water	PA10
12	Solar electric	PA10
77	Other (specify)	PA10
88	Refused	PA10
99	Don't Know	PA10

ASK IF PA9 not in (1,3)
PA10. Have you heard of Energy Trust's residential homeowner program, which provides cash incentives for installing energy efficiency upgrades in your home?

1	Yes	S60
2	No	P8A
88	Refused	P8A
99	Don't Know	P8A

ASK IF PA9 in (1,3) or PA10=1
S60. Have you participated in Energy Trust of Oregon's program for homes since January 2006?

1	Yes	T&T
2	No	PA11
88	Refused	PA11
99	Don't Know	PA11

PA11. What measures are cash incentives available for? (DO NOT READ)

1	Ceiling/Attic Insulation	PA13
2	Floor Insulation	PA13
3	Wall Insulation	PA13
4	Windows	PA13
5	Water Heaters	PA13
6	Duct Insulation	PA13
7	Duct Sealing	PA13
8	Heat Pump Installation	PA13
9	Air Sealing	PA13

10	Solar electric (PV)	PA13
11	Solar hot water (thermal)	PA13
12	Gas Furnace	PA13
13	Direct Vent Gas Heater	PA13
77	Other (specify)	PA13
88	Refused	PA13
99	Don't know	PA13

PA13. Do you know what the requirements are to be eligible for these cash incentives?

1	Yes	PART1
2	No – not aware	PART1
88	Refused	PART1
99	Don't Know	PART1

PART1. How did you first learn about financial incentives available from the Energy Trust's home program? (DO NOT READ, ACCEPT MULTIPLES)

1	Participating in the Home Energy Review audit	T&T
2	Contractor/Trade ally	P8A
3	Utility newsletter	P8A
4	Utility bill insert	P8A
5	Newspaper ad	P8A
6	Word-of-mouth from friend	P8A
7	Television	P8A
8	Radio	P8A
9	Magazine	P8A
10	Trade journal	P8A
11	Manufacturer information/suggestion	P8A
12	Salesperson/in the store	P8A
13	Energy Trust website	P8A
14	Utility website	P8A
15	Customer Service Representative	P8A
16	Trade Show/Event	P8A
77	Other (specify)	P8A
88	Refused	P8A
99	Don't know	P8A

P8A. Are you aware of Oregon tax credits available for the purchase and installation of certain energy saving equipment?

1	Yes	P8C
2	No	PA15
88	Refused	PA15
99	Don't know	PA15

ASK IF P8A=1

P8C. Where did you hear about the Oregon tax credits? (DO NOT READ, ACCEPT MULTIPLES)

1	Energy Trust Website	P8B
2	Contractor	P8B
3	Utility	P8B
4	Newspaper or magazine	P8B
5	Retail sales representative	P8B
6	Manufacturer	P8B
7	Tax form	P8B
8	Friend/family (word-of-mouth)	P8B
9	Northwest Energy Efficiency Alliance (NEEA)	P8B

10	Office of Sustainable Development (OSD)	P8B
11	Oregon Department of Energy	P8B
88	Refused	P8B
99	Don't know	P8B

P8B. What measures are tax credits available for? (DO NOT READ)

1	PV Panels	PA15
2	Dishwashers	PA15
3	Washing machines	PA15
4	Tankless Water Heaters	PA15
5	Duct Insulation	PA15
6	Duct Sealing	PA15
7	High efficiency Heat Pump	PA15
8	High efficiency Gas Furnace	PA15
77	Other (specify)	PA15
88	Refused	PA15
99	Don't know	PA15

IF PA9 = 2 then skip to S70

PA15. Have you heard of the Home Energy Reviews, where an energy advisor comes to your home to identify potential energy saving investments and upgrades?

1	Yes	S70
2	No	PA16
88	Refused	PA16
99	Don't Know	PA16

ASK IF PA9=2 or PA15=1

S70. Have you had an Energy Trust Home Energy Review since January 2006?

1	Yes	T&T
2	No	PA16
88	Refused	PA16
99	Don't Know	PA16

PA16. How would you go about finding more information on the programs offered by Energy Trust for homeowners? (DO NOT READ)

1	Call Utility	PA17
2	Call Energy Trust of Oregon	PA17
3	Call a contractor	PA17
4	Call a retailer	PA17
5	Call a friend	PA17
6	Utility Website	PA17
7	Energy Trust Website	PA17
8	Other Website/Internet Search	PA17
77	Other (specify)	PA17
88	Refused	PA17
99	Don't know	PA17

IF PA1 = 1 or PA10 = 1 or PA15=1 THEN ASK

PA17. Have you ever called the Energy Trust information line to inquire about residential programs?

1	Yes	PA19
2	No	A1
88	Refused	A1
99	Don't know	A1

PA19. Using 1 to 5 scale, where 1 means VERY DISSATISFIED and 5 means VERY SATISFIED, how satisfied were you with the quality and completeness of information provided on how to participate in Energy Trust Programs?

#	1 to 5 Rating	A1
88	Refused	A1
99	Don't know	A1

General EE Knowledge and Awareness

I'd like to ask you some questions about your knowledge of energy efficiency.

A1. Overall, how would you rate your knowledge of the ways you could save energy in your home? On a scale of 1 to 5, with 1 meaning "you are not at all knowledgeable" and 5 meaning "you are very knowledgeable," how knowledgeable are you about ways to save energy in your home?

#	Rating from 1 to 5	ES1
88	Refused	ES1
99	Don't Know	ES1

ES1. Have you ever heard of Energy Star?

1	Yes	ES2
2	No	GE1
88	Refused	GE1
99	Don't Know	GE1

ES2. With 1 indicating 'not at all familiar' and 5 indicating 'very familiar' please tell me how familiar you are with the Energy Star label?

#	Ranging 1 (not at all familiar) to 5 (very familiar)	ES3
88	Refused	ES3
99	Don't Know	ES3

ES3. Is Energy Star a brand that would influence your buying decision?

1	Yes	ES4
2	No	GE1
88	Refused	GE1
99	Don't Know	GE1

ES4. How influential is the Energy Star brand in your buying decision? Would you say…(READ)

1	Very Influential	GE1
2	Somewhat Influential	GE1
3	Not at all influential	GE1
88	Refused	GE1
99	Don't Know	GE1

GE1. Where would you go to seek information about energy efficiency? (DO NOT READ)

1	Call Utility	GSC1
2	Call Energy Trust of Oregon (ETO)	GSC1
3	Call a contractor	GSC1
4	Call a retailer	GSC1
5	Call a friend	GSC1
6	Utility Website	GSC1
7	Energy Trust Website	GSC1
8	Other Website/Internet Search	GSC1
77	Other (specify)	GSC1
88	Refused	GSC1
99	Don't know	GSC1

Gas Furnace Adoption Battery

Next I'd like to discuss any other changes you may have made in your home over the past few years that could affect your home's energy consumption.

GSC1. Have you purchased a new gas furnace for your home since January 2006?

1	Yes	GSP2
2	No	WC1
88	Refused	WC1
99	Don't know	WC1

ASK IF GF=1:

(Only say for additional 1000 completes:) Next I have a few questions regarding the gas furnace you recently purchased.

GSP2. Is the new gas furnace high or standard efficiency?

1	High Efficiency	GSP2a
2	Standard efficiency	GSP2a
88	Refused	GSP3
99	Don't Know	GSP3

GSP2a. Why do you think it is that efficiency?

77	RECOD VERBATIM	GSP2b
88	Refused	GSP2b
99	Don't Know	GSP2b

Ask if GSP2 =1

GSP2b. Did you have to pay extra for your Gas Furnace to get a high efficiency unit?

1	Yes	GSP3
2	No	GSP3
88	Refused	GSP3
99	Don't Know	GSP3

IF GSP2 =1 and If PA1=1 or PA10=1 or PA15=1 then ask

GSP3. How influential was the Energy Trust of Oregon, or any specific Energy Trust programs or program materials on your decision to purchase an energy efficient gas furnace? Would you say…(READ)

1	Very Influential	GF09
2	Somewhat influential	GF09
3	Not at all influential	GF09
88	Refused	GF09
99	Don't know	GF09

GF09. Before you began shopping for a new Gas Furnace, were you aware of the differences in performance and energy consumption between a standard and a high efficiency Gas Furnace?

1	Yes, was aware of differences before shopping	ECM1
2	No, was not aware of differences before shopping	ECM1
88	Refused	ECM1
99	Don't know	ECM1

ECM1. Does your new Gas Furnace have an Electrically Commutated Motor, also known as an ECM Blower?

1	Yes	ECM3
2	No	GF3
88	Refused	GF3
99	Don't Know	GF3

ASK IF ECM1=1

ECM3. How influential was Energy Trust, or any specific Energy Trust programs or program materials on your decision to purchase a gas furnace with an ECM blower? Would you say…(READ)

1	Very Influential	ECM4
2	Somewhat influential	ECM4
3	Not at all influential	ECM4
88	Refused	ECM4
99	Don't Know	ECM4

ASK IF ECM1=1

ECM4. How influential was your gas utility on your decision to purchase a gas furnace with an ECM blower? Would you say…(READ)

1	Very Influential	GF10
2	Somewhat influential	GF10
3	Not at all influential	GF10
88	Refused	GF10
99	Don't Know	GF10

ASK IF ECM1=1

GF10. Before you began shopping for a new Gas Furnace, were you aware of the benefits of an ECM Blower?

1	Yes	GF3
2	No	GF3
88	Refused	GF3
99	Don't know	GF3

GF3. How old was the system that was replaced by the new Gas Furnace?

#	Number of Years	GF2a
88	Refused	GF3a
99	Don't Know	GF3a

GF3A. Was it…?

1	<5 years old		GF2a
2	5 - 10 years old		GF2a
3	10 - 15 years old		GF2a
4	15 - 20 years old		GF2a
5	>20 years old		GF2a
88	Refused		GF2a
99	Don't Know		GF2a

GF2a. What type of heating system was removed and replaced with the new Gas Furnace?

1	Gas Furnace	GF5
2	Electric forced air furnace	GF5
3	Electric Heat Pump	GF5
4	Electric Space Heater	GF5
5	None. Did not have heater before	GF5
77	Other (specify)	GF5
88	Refused	GF5
99	Don't Know	GF5

GF5. Could your old heating system have been fixed, or was it beyond repair?

1	Could have been fixed		GF6
2	Was beyond repair		ING3
88	Refused		GF6
99	Don't Know		GF6

GF6. What was your main reason for installing your new Gas Furnace?

1	Previous system really old	ING3
2	Previous system was broken/emergency replacement	ING3
3	Save energy	ING3
4	Remodeling home	ING3
5	Did not have air conditioner/heater before	ING3
6	Increased Comfort	ING3
7	Reduce Global warming	ING3
8	Promote Energy independence	ING3
77	Other (specify)	ING3
88	Refused	ING3
99	Don't Know	ING3

ING3. Did you hire a contractor to install your new Gas Furnace or did you install it yourself?

1	Contractor	CG6
2	Self-installed	GSP6
88	Refused	GSP6
99	Don't Know	GSP6

CG6. How did you find the contractor you used?

1	Energy Trust list of qualified contractors	GFC1
2	Yellow pages	GFC1
3	Friend/family recommended	GFC1
4	Contractor contacted me first	GFC1
77	Other (specify)	GFC1
88	Refused	GFC1
99	Don't Know	GFC1

ASK IF PA10=1 or PA9 in (1,3)
GFC1. Did the contractor that installed your Gas Furnace inform you of the Home Energy Solutions cash incentive program?

1	Yes	GFC2
2	No	GFC2
88	Refused	GFC2
99	Don't Know	GFC2

GFC2. How influential was your contractor in your decision to purchase an energy efficient Gas Furnace? Would you say your contractor was… (READ)

1	Very influential	GSP6
2	Somewhat influential	GSP6
3	Not at all influential	GSP6
88	Refused	GSP6
99	Don't Know	GSP6

GSP6. Did you receive a cash incentive for your new gas furnace?

1	Yes	GSP20
2	No	GFTX
88	Refused	GFTX
99	Don't Know	GFTX

GSP20. From which company, institution or program did you receive the cash incentives?

77	Record Verbatim	GFTX
88	Refused	GFTX
99	Don't Know	GFTX

ASK IF P8A=1, Else skip to WC1

GFTX. Did you take advantage of the Oregon Tax Credit for the Gas Furnace you installed? (IF respondent states they haven't paid taxes yet, "Do you plan to take advantage of the Oregon Tax Credit?)

1	Yes, Applied for Tax Credit (or plan to apply)	GFTXI
2	No, Did not Apply for Tax Credit (or don't plan to apply)	WC1
88	Refused	WC1
99	Don't know	WC1

GFTXI. How likely is it that you would have purchased the same exact Gas Furnace were you not eligible to receive a Tax Credit from the State of Oregon?

1	Very likely	WC1
2	Somewhat likely	WC1
3	Not at all likely	WC1
88	Refused	WC1
99	Don't Know	WC1

Windows Adoption Battery

WC1. Have you purchased and installed new windows for your home since January 2006?

1	Yes	WK1
2	No	HC1
88	Refused	HC1
99	Don't know	HC1

ASK IF WDW=1:

(Only say for additional 1000 completes:) Next I have a few questions regarding the windows you recently purchased.

WK1. Are the new windows you purchased Energy Star?

1	Yes	WK3
2	No	WK3
88	Refused	WK3
99	Don't Know	WK3

WK3. Are the new windows you purchased Argon Gas filled?

1	Yes	WK5
2	No	WK5
88	Refused	WK5
99	Don't Know	WK5

WK5. Do the new windows you purchased have Low E glass?

1	Yes	WSP3
2	No	WSP3
88	Refused	WSP3
99	Don't Know	WSP3

ASK IF PA1=1 OR PA10=1 or PA15=1

WSp3. How influential was the Energy Trust of Oregon, or any specific Trust programs or program materials on your decision to install High efficiency Windows? Would you say…(READ)

1	Very Influential	WSP4
2	Somewhat influential	WSP4
3	Not at all influential	WSP4
88	Refused	WSP4
99	Don't Know	WSP4

WSP4. How influential was your gas or electric utility on your decision to purchase high efficiency windows? Would you say…(READ)

1	Very Influential	WIN5
2	Somewhat influential	WIN5
3	Not at all influential	WIN5
88	Refused	WIN5
99	Don't Know	WIN5

WIN5. Before purchasing new Windows, did you have primarily single pane or double pane windows?

1	Single pane	WIN6
2	Dual pane	WIN6
77	Other (specify)	WIN6
88	Refused	WIN6
99	Don't Know	WIN6

WIN6. Thinking about your new windows, how energy efficient are they relative to the old ones? Would you say your new windows are… (READ)

1	About as energy efficient as the old ones	WIN7
2	Slightly more energy efficient than the old ones	WIN7
3	Significantly more energy efficient than the old ones	WIN7
4	The most energy efficient ones available	WIN7
77	Other (specify)	WIN7
88	Refused	WIN7
99	Don't Know	WIN7

WIN7. What was your main reason for installing new windows?
(DO NOT READ, ACCEPT MULTIPLES)

1	Windows really old	INW3
2	Windows were broken/emergency replacement	INW3
3	Save energy	INW3
4	Remodeling home	INW3
5	Reduce noise	INW3
6	Moisture buildup in window	INW3
7	Better looking/Design	INW3
8	UV light blocking/Reduces fading	INW3
9	Less drafty/less heat gain in summer/Better sealing	INW3
10	Better quality	INW3
11	Increased Comfort	INW3
12	Reduce Global warming	INW3
13	Promote Energy independence	INW3
77	Other (specify)	INW3
88	Refused	INW3
99	Don't Know	INW3

INW3. Did you hire a contractor to install your new windows or did you install them yourself?

1	Contractor	CW6
2	Self-installed	WSP6
88	Refused	WSP6
99	Don't Know	WSP6

CW6. How did you find the contractor you used?

1	Energy Trust list of qualified contractors	CW11
2	Yellow pages	CW11
3	Friend/family recommended	CW11

4	Contractor contacted me first	CW11
77	Other (specify)	CW11
88	Refused	CW11
99	Don't Know	CW11

ASK IF PA9 IN (1,3) OR PA10=1
ASK IF PA1=1
CW11. Did the contractor that installed your windows inform you of the Home Energy Solutions cash incentive program?

1	Yes	CW13
2	No	CW13
88	Refused	CW13
99	Don't Know	CW13

ASK If WK1=1
CW13.How influential was your contractor in your decision to purchase high efficiency windows? Would you say your contractor was…(READ)

1	Very Influential	WSP6
2	Somewhat influential	WSP6
3	Not at all influential	WSP6
88	Refused	WSP6
99	Don't Know	WSP6

WSP6. Did you receive a cash incentive for your new windows?

1	Yes	WSP20
2	No	HC1
88	Refused	HC1
99	Don't Know	HC1

WSP20. From which company, institution or program did you receive the cash incentives?

77	Record Verbatim	HC1
88	Refused	HC1
99	Don't Know	HC1

Heat Pump Adoption Battery

HC1. Have you purchased a new Heat Pump for your home since January 2006?

1	Yes	HSP2
2	No	IC1
88	Refused	IC1
99	Don't know	IC1

ASK IF HP=1:
(Only say for additional 1000 completes:) Next I have a few questions regarding the heat pump you recently purchased.
HSP2. Is the new Heat Pump high or standard efficiency?

1	High Efficiency	HSP2A
2	Standard efficiency	HSP2A
88	Refused	HSP2B
99	Don't Know	HSP2B

HSP2a. Why do you say that?

77	RECORD VERBATIM	HSP2B
88	Refused	HSP2B
99	Don't Know	HSP2B

HSP2b. What is the energy efficiency rating of your new Heat Pump?

77	Record Verbatim	HSP2c
88	Refused	HSP2c
99	Don't Know	HSP2c

Ask if HSP2 =1

HSP2c. Did you have to pay extra for your Heat Pump to get a high efficiency unit?

1	Yes	HSP3
2	No	HSP3
88	Refused	HSP3
99	Don't Know	HSP3

Ask if HSP2 =1 and If PA1=1 or PA10=1 or PA15=1 then ask

HSP3. How influential was Energy Trust of Oregon, or any specific Trust programs or program materials on your decision to purchase a high efficiency heat pump? Would you say…(READ)

1	Very Influential	HSP4
2	Somewhat influential	HSP4
3	Not at all influential	HSP4
88	Refused	HSP4
99	Don't Know	HSP4

Ask if HSP2 =1

HSP4. How influential was your electric utility on your decision to purchase a high efficiency heat pump? Would you say…(READ)

1	Very Influential	HP2
2	Somewhat influential	HP2
3	Not at all influential	HP2
88	Refused	HP2
99	Don't Know	HP2

HP2. Did the new Heat Pump replace an old Heat Pump, an Electric Forced Air Furnace, or something else?

1	Heat Pump		HP3
2	Electric Forced Air Furnace		HP3N
3	Other		HP2A
88	Refused		HP2A
99	Don't Know		HP2A

HP2a. What type of system was removed and replaced with the new Heat Pump?

1	Gas Furnace		HP3N
2	Electric Furnace		HP3N
4	Electric Strip Heat		HP3N
5	Space Heating – Electric		HP3N
6	Heat Pump		HP3N
7	NONE		HP3N
77	Other (Specify)		HP3N
88	Refused		HP3N
99	Don't Know		HP3N

IF (PA1=1 or PA10=1 or PA15=1) and (HP2=2 OR HP2A=2)

HP3N. How influential was the Energy Trust of Oregon, or any specific Trust programs or program materials on your decision to convert from a forced air furnace to a heat pump? Would you say…(READ)

1	Very Influential	HP3
2	Somewhat influential	HP3

3	Not at all influential	HP3
88	Refused	HP3
99	Don't Know	HP3

If replaced system was not "NONE"

HP3. How old was the system that was replaced when you installed the new heat pump?

#	Number of Years	HP4
88	Refused	HP3A
99	Don't Know	HP3A

HP3a. Was it…?

1	<5 years old		HP4
2	5 - 10 years old		HP4
3	10 – 15 years old		HP4
4	15 – 20 years old		HP4
5	>20 years old		HP4
88	Refused		HP4
99	Don't Know		HP4

HP4. Could your old system have been fixed, or was it beyond repair?

1	Could have been fixed		HP5
2	Was beyond repair		HP10
88	Refused		HP5
99	Don't Know		HP5

HP5. What was your main reason for installing a new Heat Pump?

1	Previous system really old	HP10
2	Previous system was broken/emergency replacement	HP10
3	Save energy	HP10
4	Remodeling home	HP10
5	Did not have air conditioner/heater before	HP10
6	Increased Comfort	HP10
77	Other (specify)	HP10
88	Refused	HP10
99	Don't Know	HP10

HP10. Before you began shopping for a new Heat Pump, were you aware of the differences in performance and energy consumption between a standard and a high efficiency Heat Pump?

1	Yes	INH3
2	No	INH3
88	Refused	INH3
99	Don't know	INH3

INH3. Did a contractor install your new Heat Pump or did you install it yourself?

1	Contractor	CH6
2	Self-installed	HSP6
88	Refused	HSP6
99	Don't Know	HSP6

CH6. How did you find the contractor you used?

1	Energy Trust list of qualified contractors	HPC1
2	Yellow pages	HPC1
3	Friend/family recommended	HPC1
4	Contractor contacted me first	HPC1

77	Other (specify)	HPC1
88	Refused	HPC1
99	Don't Know	HPC1

ASK IF PA10=1 or PA9 in (1,3)
ASK IF PA1=1
HPC1. Did the contractor that installed your new Heat Pump tell you about the Home Energy Solutions cash incentive program?

1	Yes	HPC2
2	No	HPC2
88	Refused	HPC2
99	Don't know	HPC2

HPC2. How influential was your contractor in your decision to purchase an energy efficient Heat Pump? Would you say your contractor was…(READ)

1	Very Influential	HSP6
2	Somewhat influential	HSP6
3	Not at all influential	HSP6
88	Refused	HSP6
99	Don't Know	HSP6

HSP6. Did you receive a cash incentive for installing your new Heat Pump?

1	Yes	HSP20
2	No	HPTX
88	Refused	HPTX
99	Don't Know	HPTX

HSP20. From which company, institution or program did you receive the cash incentives?

77	Record Verbatim	HPTX
88	Refused	HPTX
99	Don't Know	HPTX

ASK IF P8A=1
HPTX. Did you take advantage of the Oregon Tax Credit for the Heat Pump you installed? ? (IF respondent states they haven't paid taxes yet, "Do you plan to take advantage of the Oregon Tax Credit?)

1	Yes, Applied for Tax Credit (or plan to apply)	HPTXI
2	No, Did not Apply for Tax Credit (or don't plan to apply)	IC1
88	Refused	IC1
99	Don't know	IC1

HPTXI. How likely is it that you would have purchased the same exact Heat Pump had you not been eligible to receive a Tax Credit from the State of Oregon? Would you say…

1	Very likely	IC1
2	Somewhat likely	IC1
3	Not at all likely	IC1
88	Refused	IC1
99	Don't Know	IC1

Insulation

IC1. Have you added any insulation to your home since January 2006?

1	Yes	IT1
2	No	C1A
88	Refused	C1A
99	Don't know	C1A

ASK IF INS=1:
(Only say for additional 1000 completes:) Next I have a few questions regarding the insulation you recently purchased.
IT1. Which of the following types of insulation did you install in your home… (READ, ACCEPT MULTIPLES)

1	Ceiling Insulation	ISP3
2	Wall Insulation	ISP3
3	Floor Insulation	ISP3
4	Duct Insulation	ISP3
88	Refused	ISP3
99	Don't know	ISP3

If PA1=1 or PA10=1 or PA15=1 then ask
ISP3. How influential was Energy Trust of Oregon, or any specific Trust programs or program materials on your decision to install new insulation? Would you say…(READ)

1	Very Influential	ISP4
2	Somewhat influential	ISP4
3	Not at all influential	ISP4
88	Refused	ISP4
99	Don't Know	ISP4

ISP4. How influential was your electric utility on your decision to purchase new insulation? Would you say…(READ)

1	Very Influential	PRT3
2	Somewhat influential	PRT3
3	Not at all influential	PRT3
88	Refused	PRT3
99	Don't Know	PRT3

PRT3. What was the primary reason you installed Insulation?

1	To save energy	INS3
2	Available cash incentive	INS3
3	To improve comfort	INS3
4	To improve health	INS3
5	Reduce Global warming	INS3
6	Promote Energy independence	INS3
77	Other (specify)	INS3
88	Refused	INS3
99	Don't know	INS3

INS3. Did you hire a contractor to install your new Insulation or did you install it yourself?

1	Contractor	INC6
2	Self-installed	ISP6
88	Refused	ISP6
99	Don't Know	ISP6

INC6. How did you find the contractor you used?

1	Energy Trust list of qualified contractors	INC13
2	Yellow pages	INC13
3	Friend/family recommended	INC13
4	Contractor contacted me first	INC13
77	Other (specify)	INC13
88	Refused	INC13
99	Don't Know	INC13

ASK IF PA10=1 or PA9 in (1,3)
ASK IF PA1=1
INC13. Did the contractor that installed your Insulation inform you of the Home Energy Solutions cash incentive program?

1	Yes	INC15
2	No	INC15
88	Refused	INC15
99	Don't Know	INC15

INC15. How influential was your contractor in your decision to install Insulation? Would you say your contractor was…(READ)

1	Very influential	ISP6
2	Somewhat influential	ISP6
3	Not at all influential	ISP6
88	Refused	
99	Don't know	ISP6

ISP6. Did you receive a cash incentive for your insulation?

1	Yes	ISP20
2	No	C1A
88	Refused	C1A
99	Don't Know	C1A

ISP20. From which company, institution or program did you receive the cash incentives?

77	Record Verbatim	C1A
88	Refused	C1A
99	Don't Know	C1A

Other Changes and Spillover

Next I'd like to discuss any other changes you may have made in your home over the past few years that could affect your home's energy consumption.
C1A. Have you installed any new heating, cooling or water heating equipment since January 2006 that we have not already discussed?

1	Yes	C2
2	No	CFLSP1
88	Refused	CFLSP1
99	Don't know	CFLSP1

ASK if C1=1 or C1A=1, ELSE SKIP TO CFLSP1
C2. What specific types of new heating, cooling or water heating equipment did you install? (PROMPT for "was there anything else?" after each purchase mentioned.)

1	Room air conditioner	SP2
2	Central air conditioner (VERIFY NOT HEAT PUMP)	SP2
3	Central Heating/Electric	SP2
4	Electric Strip Heat	SP2
5	Water heater, gas	SP2
6	Water heater, electric	SP2
7	Evaporative cooler/swamp cooler	SP2
8	Whole house fan	SP2
9	Solar electric (PV)	SP2
10	Solar thermal (Water heat)	SP2
77	OTHER (specify)	SP2
88	Refused	CFLSP1 (if ONLY response)
99	Don't know	CFLSP1 (if ONLY response)

For First 2 Mentions ASK SP2 through SP20:
ASK IF EQUIP1 –NE “WHOLE HOUSE FAN” or “Solar Electric” or “Solar thermal” in equipment list in C2, else Skip to SPILL3
SP2. Is the new &EQUIP1 high or standard efficiency?

1	High Efficiency	SP2a
2	Standard efficiency	SP2a
77	Other (Specify)	SP2a
88	Refused	SPILL3
99	Don’t Know	SPILL3

SP2a. Why do you say that?

77	RECOD VERBATIM	SPILL3
88	Refused	SPILL3
99	Don’t Know	SPILL3

If PA1=1 or PA10=1 or PA15=1 then ask
Spill3. How influential was Energy Trust of Oregon, or any specific Trust programs or program materials on your decision to purchase an energy efficient &EQUIP1? Would you say…(READ)

1	Very Influential	Spill4
2	Somewhat influential	Spill4
3	Not at all influential	Spill4
88	Refused	Spill4
99	Don’t Know	Spill4

Spill4. How influential was your electric utility on your decision to purchase a high efficiency &EQUIP1? Would you say…(READ)

1	Very Influential	SP6
2	Somewhat influential	SP6
3	Not at all influential	SP6
88	Refused	SP6
99	Don’t Know	SP6

SP6. Did you receive a cash incentives for &EQUIP1?

1	Yes	SP20
2	No	CFLSP1
88	Refused	CFLSP1
99	Don’t Know	CFLSP1

SP20. From which company, institution or program did you receive the cash incentives?

77	Verbatim	CFLSP1
88	Refused	CFLSP1
99	Don’t Know	CFLSP1

END EQUIPMENT ADOPTION LOOP

CFL Adoption Battery

CFLSP1. Since January 2006, have you installed any CFLs in your home?

1	Yes		CFLSP2
2	No		CFLSP10
88	Refused		EQ25
99	Don’t Know		EQ25

ASK IF CFL=1:
Next I have a few questions regarding the CFLs you recently purchased.

CFLSP2. How many CFLs did you install?

#	Number		CFLSP3
88	Refused		CFLSP3
99	Don't Know		CFLSP3

CFLSP3. What percent of the bulbs were bought during the 99cent spring or fall promotions?

%	Percentage		CFLSP4
88	Refused		CFLSP4
99	Don't Know		CFLSP4

CFLSP4. Why did you choose install CFLs?

1	Save energy		CFLSP6
2	Save money		CFLSP6
3	Like them better		CFLSP6
4	Reduce Global warming		CFLSP6
5	Promote Energy independence		CFLSP6
77	Other (specify)		CFLSP6
88	Refused		CFLSP6
99	Don't Know		CFLSP6

If PA1=1 or PA10=1 or PA15=1 then ask
CFLSP6. How influential was Energy Trust of Oregon, or any specific Trust programs or program materials on your decision to purchase CFLs? Would you say…(READ)

1	Very Influential	CFLSP7
2	Somewhat influential	CFLSP7
3	Not at all influential	CFLSP7
88	Refused	CFLSP7
99	Don't Know	CFLSP7

CFLSP7. How influential was your electric utility on your decision to purchase CFLs? Would you say…(READ)

1	Very Influential	CFLSP8
2	Somewhat influential	CFLSP8
3	Not at all influential	CFLSP8
88	Refused	CFLSP8
99	Don't Know	CFLSP8

CFLSP8. Are there still lights in your house that don't have CFLs?

1	Yes		CFLSP9
2	No		EQ25
88	Refused		EQ25
99	Don't Know		EQ25

CFLSP9. What is keeping you from replacing them?

1	They are specialty bulbs		EQ25
2	CFL's don't fit		EQ25
3	Quality of light		EQ25
4	Three way		EQ25
5	Dimmable switches		EQ25
6	Cost		EQ25
77	Other (specify)		EQ25
88	Refused		EQ25
99	Don't Know		EQ25

CFLSP10. Why haven't you chosen to purchase CFLs?

1	Didn't need bulbs		EQ25
2	Don't like them		CFLSP11
3	Don't know what they are		EQ25
4	They have mercury in them		EQ25
77	Other (specify)		EQ25
88	Refused		EQ25
99	Don't Know		EQ25

CFLSP11. Why don't you like them?

1	Poor light		EQ25
2	Expensive		EQ25
3	Flicker		EQ25
4	No 'instant on'		EQ25
5	Burnout faster		EQ25
6	Color		EQ25
7	Quality		EQ25
8	Non-dimmable		EQ25
77	Other (specify)		EQ25
88	Refused		EQ25
99	Don't Know		EQ25

Home Appliance and Equipment Stock

ASK ALL
Now I would like to discuss the equipment you have in your home…
SKIP TO EQ3 IF INSTALLED
HEAT PUMP (HC1=1) or
GAS FURNACE (GFC1=1)
OR CENTRAL HEATING/ELECTRIC (C2=3)
OR STRIP HEAT (C2=4)
SKIP TO EQ1 IF S30=2
EQ25. Do you have gas heating or electric heating in your home?

1	Gas Heating		EQ3
2	Electric Heating		EQ1
77	Other (specify)		EQ1
88	Refused		EQ1
99	Don't Know		EQ1

Eq1. Which of the following best describes your primary heating system? (READ)

1	Electric Furnace		EQ3
2	Heat Pump		EQ3
3	Electric Strip Heat		EQ3
4	Space Heating – Electric		EQ3
5	NONE		EQ3
77	Other (Specify)		EQ3
88	Refused		EQ3
99	Don't Know		EQ3

EQ3. How old is your current heating system?

#	Number of Years	EQ11
88	Refused	EQ3A
99	Don't Know	EQ3A

EQ3A. Is it…?

1	<5 years old		EQ11
2	5 - 10 years old		EQ11
3	10 - 15 years old		EQ11
4	15 - 20 years old		EQ11
5	>20 years old		EQ11
88	Refused		EQ11
99	Don't Know		EQ11

SKIP TO AC3 IF INSTALLED
HEAT PUMP (HC1=1)
OR CENTRAL AIR CONDITIONING (C2=2) or
OR ROOM AC (C2 = 1)
OR EVAPORATIVE COOLER (C2=7)
OR if EQ1 = 2

Eq11. Does your home have air conditioning?

1	Yes		AC1
2	No		DE3
88	Refused		DE3
99	Don't Know		DE3

AC1. What type of air conditioning system do you have? (READ)

1	Central Air Conditioning (Split or Packaged System- Verify NOT HEAT PUMP)		AC3
2	Heat Pump		AC3
3	Evaporative Cooler		AC3
4	Room Air Conditioner		AC3
88	Refused		AC3
99	Don't Know		AC3

AC3. How old is your current air conditioning system?

#	Number of Years	EA1
88	Refused	AC3A
99	Don't Know	AC3A

AC3A. Is it…?

1	<5 years old		EA2
2	5 - 10 years old		EA2
3	10 - 15 years old		EA2
4	15 - 20 years old		EA2
5	>20 years old		EA2
88	Refused		EA2
99	Don't Know		EA2

Environmental Awareness and Decision-Making, etc.

EA2. Which, if any, of the following would you consider barriers that may prevent you from installing or using energy efficient products or services? (ACCEPT MULTIPLES)

1	Concern about reliability		EA3
2	Lack of availability at stores		EA3
3	Uncertainty about performance/technology		EA3
4	Too long of a payback		EA3

5	Difficulty finding reliable installers/contractors		EA3
6	Higher prices for EE products/services		EA3
7	Incentives for EE are too low		EA3
8	Belief that warranties for EE products/services are inadequate		EA3
77	Other (specify)		EA3
88	Refused		EA3
99	Don't Know		EA3

EA3. What are some major influences on your decisions about lifestyle? (ACCEPT MULTIPLES)

1	Media		EA4
2	Friends/Neighbors		EA4
3	Children/Family		EA4
4	Political views		EA4
5	Public figures		EA4
6	Current events		EA4
7	Faith		EA4
8	Environmental changes		EA4
77	Other (specify)		EA4
88	Refused		EA4
99	Don't Know		EA4

EA4. What are your primary sources of information? (Ask for top 3)

1	Newspaper		EA5
2	Radio		EA5
3	Magazines		EA5
4	Television		EA5
5	Websites		EA5
6	Blogs		EA5
7	Friends		EA5
77	Other (specify)		EA5
88	Refused		EA5
99	Don't Know		EA5

EA5. What or whom do you consult before making a major purchase? (ACCEPT MULTIPLES)

1	Consumer reports		EA6
2	Friends/family		EA6
3	Retailer/Salesperson		EA6
4	Web research		EA6
5	Magazines		EA6
6	Blogs		EA6
77	Other (specify)		EA6
88	Refused		EA6
99	Don't Know		EA6

EA6. On a scale of 1 to 5 where 1 indicates 'cost is not a factor at all' and 5 indicates 'cost is a primary factor' please tell me how much cost influences your decision when choosing or not choosing environmentally friendly products or services?

#	Rating from 1 (cost is not a factor) to 5 (cost is a primary factor)	EA7
88	Refused	EA7
99	Don't Know	EA7

EA7. For the next few questions please rate the importance of the following issues to you on a scale of 1 to 5 where 1 indicates 'not at all important' and 5 indicates 'very important'.

EA7a. Global warming

#	Rating from 1 (not important) to 5 (very important)	EA7b
88	Refused	EA7b
99	Don't Know	EA7b

EA7b. Pollution

#	Rating from 1 (not important) to 5 (very important)	EA7c
88	Refused	EA7c
99	Don't Know	EA7c

EA7c. Health effects

#	Rating from 1 (not important) to 5 (very important)	EA7d
88	Refused	EA7d
99	Don't Know	EA7d

EA7d. Reducing dependence on fossil fuels

#	Rating from 1 (not important) to 5 (very important)	EA7e
88	Refused	EA7e
99	Don't Know	EA7e

EA7e. Wise use of land

#	Rating from 1 (not important) to 5 (very important)	EA7f
88	Refused	EA7f
99	Don't Know	EA7f

EA7f. Controlling your energy costs

#	Rating from 1 (not important) to 5 (very important)	EA8
88	Refused	EA8
99	Don't Know	EA8

EA8. When referring to energy produced from wind and sun, which of the following terms would you be most likely to use? (Select one that is most applicable)

1	Clean energy		EA9
2	Green energy		EA9
3	Alternative energy		EA9
4	Renewable energy		EA9
5	Natural energy		EA9
88	Refused		EA9
99	Don't Know		EA9

EA9. Do you think you could significantly reduce your household energy consumption (>25%) with only minor changes to your lifestyle? Would you say it is…(READ)

1	Not likely		EA10
2	Somewhat likely		EA10
3	Very likely		EA10
88	Refused		EA10
99	Don't Know		EA10

EA10. What do you think you can do to reduce your energy use at home?

1	Turn off lights		EA11

2	Install EE equipment		EA11
3	Other (specify)		EA11
88	Refused		EA11
99	Don't Know		EA11

EA11. What, if any, actions are you doing or equipment have you installed to reduce your energy use at home? (ACCEPT MULTIPLES)

1	Turn off lights		EA12
2	Install EE equipment (list type)		EA12
3	Other (specify)		EA12
88	Refused		EA12
99	Don't Know		EA12

EA12. Do you plan on participating in an Energy Trust program over the next year?

1	Yes	DE3
2	No	DE3
88	Refused	DE3
99	Don't Know	DE3

Home Characteristics and Demographics

Before we finish, I have just a few more questions about your household to make sure we're getting a representative sample of Oregon residents.

DE3 In what year was your home built?

#	Year		DE4
88	Refused		DE3A
99	Don't Know		DE3A

DE3A Was it built …. (READ RANGE)?

1	In the last 7 years (i.e., since 2000)		DE4
2	In the 1990's		DE4
3	In the 1980's		DE4
4	In the 1970's		DE4
5	In the 1960's		DE4
6	In the 1950's		DE4
7	In the 1940's		DE4
8	Before 1940		DE4
88	Refused		DE4
99	Don't Know		DE4

DE4. About how large is your home in terms of total square feet?

#	Square Feet		DE5
88	Refused		DE4A
99	Don't Know		DE4A

DE4A Is it …. (READ RANGE)?

1	Less than 500 square feet		DE5
2	Between 500 and 1000 square feet		DE5
3	Between 1000 and 1500 square feet		DE5
4	Between 1500 and 2000 square feet		DE5
5	Between 2000 and 2500 square feet		DE5
6	Between 2500 and 3000 square feet		DE5
7	More than 3,000 square feet		DE5
88	Refused		DE5

99	Don't Know		DE5

DE5. Have you done any remodeling or renovation or additions Since January 2006?

1	Yes		DE6
2	No		INP1
88	Refused		INP1
99	Don't Know		INP1

DE6. Has the square footage of your house changed?

1	Yes, it has increased		DE6A
2	Yes, it has decreased		DE6B
3	No Change		INP1
88	Refused		INP1
99	Don't Know		INP1

DE6A. By how much did the square feet in your home increase as a result of the renovations? (PROMPT FOR BEST GUESS)

#	Square Foot Increase		INP1
88	Refused		INP1
99	Don't Know		INP1

DE6B. By how much did the square feet in your home decrease as a result of the renovations? (PROMPT FOR BEST GUESS)

#	Square Foot Decrease		INP1
88	Refused		INP1
99	Don't Know		INP1

INP1. Which of the following types of insulation does your home have?… (READ, ACCEPT MULTIPLES)

1	Ceiling Insulation	WNP1
2	Duct Insulation	WNP1
3	Wall Insulation	WNP1
4	Floor Insulation	WNP1
88	Refused	WNP1
99	Don't know	WNP1

WNP1. Are the windows in your home primarily single pane or double pane?

1	Single pane	WNP2
2	Double pane	WNP2
77	Other (specify)	WNP2
88	Refused	WNP2
99	Don't Know	WNP2

WNP2. Thinking about all the windows in your home, would you say most of them are…

1	Less than 5 years old	DE7
2	Between 5 and 10 years old	DE7
3	Between 10 and 20 years old	DE7
4	More than 20 years old	DE7
88	Refused	DE7
99	Don't know	DE7

DE7. How many people live in your home year-round?

#	Number of people		DE8
88	Refused		DE8

99	Don't Know		DE8

DE8. Did the number of people living year-round in your household change since January 2006?

1	Yes, the number of people increased (Specify by how many)		DE9
2	Yes, the number of people decreased (Specify by how many)		DE9
3	No Change		DE9
88	Refused		DE9
99	Don't Know		DE9

Dynamic Substitution table for DE9

DE7 Response	Low Annual Income	Near Low Annual Income
1	$19,110	$25,480
2	$24,990	$33,320
3	$30,870	$41,160
4	$36,750	$49,000
5	$42,630	$56,840
6	$48,510	$64,680
7	$49,613	$66,151
8	$50,715	$67,620
9	$51,818	$69,091
10	$52,920	$70,560

ASK IF DE7 NOT IN (88, 99)
DE9. Which of the following best represents your annual household income in 2006, before taxes? Is it: (READ, USE DYNAMIC SUBSTUTION DATA AND DE7 RESPONSE)

1	Less than [Low Annual Income] per year		Focus
2	[Low Annual Income] to [Near Low Annual Income]		Focus
3	[Near Low Annual Income] or More		Focus
88	Refused		Focus
99	Don't Know		Focus

Focus. Would you be willing to participate in a focus group and receive payment for your time to help Energy Trust better understand Oregonians' perceptions and motivations in regards to energy efficiency and renewable energy?

1	Yes		Gender
2	No		Gender

Gender. RECORD RESPONDENT GENDER

1	Male		End
2	Female		End

Note: For respondents that purchase heat pumps, add recruiting language to send them a mailer and collect information on the efficiency and size of new heat pump.
END- Thank you for taking the time to complete this important survey! Have a great day/night!

3. VENDOR SURVEY INSTRUMENT

S1. Hello, my name is _____ and I am calling from Itron. May I speak with [READ CONTACT NAME]?
IF CONTACT IS NOT AVAILABLE, ASK FOR BEST TIME TO CALL BACK.
CALL BACK DATE/TIME: _____
IF NO CONTACT NAME PROVIDED, ASK TO SPEAK WITH PERSON WHO KNOWS THE MOST ABOUT THE COMPANY'S WORK INSTALLING: [IF INS=1 then: INSULATION, IF DUCT=1 then: DUCT SEAL, IF

WIND=1 then: WINDOWS, IF GASFURN=1 then: FURNACES, IF HEATP=1 then: HEAT PUMPS] THROUGH ENERGY TRUST'S HOME ENERGY SOLUTIONS PROGRAM. (IF NEEDED: THE HOME ENERGY SOLUTIONS PROGRAM IS RUN BY ENERGY TRUST OF OREGON AND PROVIDES REBATES FOR INSTALLING ENERGY EFFICIENT PRODUCTS SUCH AS INSULATION, WINDOWS, FURNACES AND HEAT PUMPS.)
This study is being conducted on behalf of Energy Trust of Oregon.
We are conducting a study on energy efficient equipment for residential homes and we'd like to interview you concerning your contracting experience with high efficiency equipment and energy conservation services. We estimate the interview will take about ten minutes. All responses you provide will be confidential.

P5. Are you familiar with Energy Trust of Oregon's programs for existing homes, the Home Energy Solutions Program, where residential customers can receive cash rebates for installing energy efficient products in their homes?

1	Yes		P20
2	No		T&T
88	Refused		T&T
99	Don't Know		T&T

For the rest of the survey I will refer to this Energy Trust program as the Home Energy Solutions program.
P20. Our records indicate that your company installed [Insulation, Duct Sealing, Efficient Windows, Heat Pumps, Gas Furnaces] for customers in single-family homes that were rebated through the Home Energy Solutions Program. Is this correct?

1	Insulation		P22
2	Duct Seal		P25
3	Efficient Windows		P25
4	Gas Furnace		P25
5	Heat Pump		P25
88	Refused		P25
99	Don't Know		P25

Ask if P20=1
P22. Does your company install envelope insulation, duct insulation, or both?

1	Envelope insulation only		P25
2	Duct insulation only		P25
3	Both		P25
88	Refused		P25
99	Don't Know		P25

P25. What was the primary equipment you installed or service you provided in the last year that received Energy Trust incentives?

1	Gas furnace		ES1
2	Heat pump		ES1
3	Insulation (envelope)		ES1
4	Duct sealing and duct insulation		ES1
5	Windows		ES1
77	Other (specify)		ES1
88	Refused		ES1
99	Don't Know		ES1

ASK IF HPES=1, ELSE SKIP TO F1
ES1. On a scale of 1 to 5 where 1 indicates very dissatisfied and 5 indicates very satisfied, how satisfied are you overall with the Home Performance with Energy Star program?

#	Rating 1 to 5		ES2
88	Refused		ES2

99	Don't Know		ES2

ES2. On the same 1 to 5 scale where 1 is very dissatisfied and 5 is very satisfied, how satisfied are you with the accreditation process?

#	Rating 1 to 5		ES2A
88	Refused		ES3
99	Don't Know		ES3

Ask if ES2 = (1, 2, 3)
ES2A. What factors have lead to your dissatisfaction with the accreditation process?

77	RECORD VERBATIM		ES3
88	Refused		ES3
99	Don't Know		ES3

ES3. What improvements or additions would you suggest for the Home Performance with Energy Star program?

77	RECORD VERBATIM		ES4
88	Refused		ES4
99	Don't Know		ES4

ES4. What are the selling points of Home Performance with Energy Star that you stress?

77	RECORD VERBATIM		ES5
88	Refused		ES5
99	Don't Know		ES5

ES5. What marketing materials do you use for Home Performance?

77	RECORD VERBATIM		ES5A
88	Refused		ES5A
99	Don't Know		ES5A

ES5A. What suggestions, if any, do you have for improving the marketing materials?

77	RECORD VERBATIM		ES6
88	Refused		ES6
99	Don't Know		ES6

ES6. Are there any challenges that you are encountering in selling Home Performance with Energy Star? (DO NOT READ, if answer yes or no probe for specific challenges)

1	Price		F1
2	Conveying the value of service		F1
77	Other (specify)		F1
88	Refused		F1
99	Don't Know		F1

IF P20 cannot verify any measures then T&T

Firmographics and Business Profile

Next, I'd like to ask a little about your company
F1. Within the residential sector, roughly what percent of your company's business is in single-family homes, multi-family buildings and manufactured homes? (PROMPT FOR BEST GUESSS NOTE: SHOULD ADD TO 100 PERCENT)

F1A	Percent Single Family Homes		F5
F1B	Percent Multi-Family Dwellings		F5
F1C	Percent Manufactured Homes		F5
88	Refused		F5
99	Don't Know		F5

F5. Within the residential sector, what percent of your company's business is in existing homes versus new construction? (NOTE: SHOULD ADD TO 100 PERCENT)

F5A	Percent Existing Homes		F10
F5B	Percent New Construction		F10
88	Refused		F10
99	Don't Know		F10

F10. Approximately how many employees work for your company at this location?

#	Number of Employees		F11
88	Refused		F11
99	Don't Know		F11

F11. Approximately how many employees work for your company in all of Oregon?

#	Number of Employees		F20
88	Refused		F20
99	Don't Know		F20

F20. How would you describe your own position?

1	Proprietor/CEO	F30
2	Director of Sales	F30
3	Manager	F30
4	Contractor	F30
5	Engineer	F30
6	Designer	F30
77	Other (SPECIFY)	F30
88	Refused	F30
99	Don't Know	F30

F30. About what percentage of the revenues from all your company's jobs in Oregon over the last year came from jobs in which you participated in Energy Trust programs? (READ IF NECESSARY)

1	0%		F35
2	1%-24%		F35
3	25%-49%		F35
4	50%-74%		F35
5	75%-100%		F35
88	Refused		F35
99	Don't Know		F35

F35. Are you familiar with the Oregon Department of Energy's Business and Residential Energy Tax Credits (BETC and RETC)?

1	Yes		F40
2	No		M4
88	Refused		M4
99	Don't Know		M4

F40. When doing work that could qualify for the Oregon Residential Energy Tax Credit (RETC) how often do you provide your customers with information about the RETC?

1	Always		M4
2	Often		M4
3	Sometimes		M4
4	Never		M4
5	No jobs eligible for RETC		M4
88	Refused		M4

99	Don't Know		M4

For the remainder of this survey we would like to discuss the work you have done over the last few years in existing single family homes.

Marketing

M4. How long have you been working with Energy Trust of Oregon?

1	Less than 6 months		M5
2	6-12 months		M5
3	1-2 years		M5
4	3-5 years		M5
5	More than 5 years		M5
88	Refused		M5
99	Don't Know		M5

M5. Are you on the Home Energy Solutions List of Trade Ally Contractors with Energy Trust of Oregon?

1	Yes		M7
2	No		M20
88	Refused		M20
99	Don't Know		M20

M7. About how long would you say you have been on the Trade Ally list? (ask for best guess if necessary)

#	Number of years		M10
88	Refused		M10
99	Don't Know		M10

M10. How has being on the List of Trade Ally Contractors impacted your sales of energy efficient equipment to owners of existing single-family homes? Have you seen an…(READ)

1	Increase in sales		M15
2	Significant increase in sales		M12
3	Decrease in sales		M12
4	Significant decrease in sales		M12
5	No change		M15
88	Refused		M15
99	Don't Know		M15

ASK IF M10=(2, 3, 4)

M12. Why do think this is the case?

77	RECORD VERBATIM		M15
88	Refused		M15
99	Don't Know		M15

M15. Looking forward to projects over the next year, do you anticipate any change in the proportion of your projects involving Energy Trust?

1	Expect to increase proportion of projects		M20
2	Expect to decrease proportion of projects		M20
3	Don't expect a change in proportion		M20
88	Refused		M20
99	Don't Know		M20

M20. Next, we'd like to talk to you about your customers that have received rebates through the Home Energy Solutions program. I'm going to refer to them as "HES customers" in the following question sequences.

1	Continue		M25

M25. What are the three most common ways that your HES customers find you?

77	RECORD VERBATIM		M30
88	Refused		M30
99	Don't Know		M30

ASK ONLY IF M5=1

M30. Which of the following best describes how many of your HES customers found your name on the List of Trade Ally Contractors? Would you say…(READ)

1	Most of your HES customers found you through the Trade Ally List	M35
2	Some of your HES customers	M35
3	Only a few of your HES customers	M35
88	Refused	M35
99	Don't Know	M35

M35. Which of the following best describes how many of your HES customers were already aware of the HES rebate when they first began discussing their project with you? Would you say…(READ)

1	Most of your HES customers		M40
2	Some of your HES customers		M40
3	Only a few of your HES customers		M40
88	Refused		M40
99	Don't Know		M40

M40. Which of the following best describes how many of your HES customers became aware of the HES program and rebate only after you informed them? (READ)

1	Most of your HES customers		M50
2	Some of your HES customers		M50
3	Only a few of your HES customers		M50
88	Refused		M50
99	Don't Know		M50

M50. Does your company promote energy saving equipment more often now than before the HES incentive offers were available?

1	Yes		M55
2	No		M55
88	Refused		M55
99	Don't Know		M55

M55. Does your company actively promote the HES incentive offers as part of its regular marketing activities?

1	Yes		M60
2	No		M60
88	Refused		M60
99	Don't Know		M60

M60. Has your company participated in the CO-OP marketing offered by Energy Trust of Oregon, where Energy Trust helps pay for marketing that promotes the Home Energy Solutions Program?

1	Yes		M65
2	No		M80
88	Refused		M80
99	Don't Know		M80

ASK IF M60 = YES, ELSE SKIP TO M80

M65. How useful to your business was your company's participation in CO-OP marketing? Would you say…(READ)

1	Very Useful		M70
2	Somewhat Useful		M70
3	Marginally Useful		M70
4	Not At All Useful		M70
88	Refused		M75
99	Don't Know		M75

M70. Why do you say that?

77	RECORD VERBATIM		M75
88	Refused		M75
99	Don't Know		M75

M75. Do you plan on participating in CO-OP marketing opportunities again in the future?

1	Yes		M115
2	No		M75a
88	Refused		M115
99	Don't Know		M115

ASK IF M75=NO, ELSE SKIP TO M90

M75a. Why not?

77	RECORD VERBATIM		M115
88	Refused		M115
99	Don't Know		M115

M80. Why has your company not chosen to participate in the CO-OP marketing offered by Energy Trust?

77	RECORD VERBATIM		M115
88	Refused		M115
99	Don't Know		M115

M115. Over the last year have you or your staff participated in the trade ally training offered by Energy Trust?

1	Yes		M115a
2	No		M120
88	Refused		M120
99	Don't Know		M120

M115a. On a scale of 1 to 5 where 1 is not at all useful and 5 is very useful, how useful did you find the Energy Trust training?

#	Rating 1 to 5		M120
88	Refused		M120
99	Don't Know		M120

M120. What are the top two types of training might you be interested in? (DO NOT READ)

1	Sales and marketing training	M125
2	Small business management training	M125
3	Technical training on program equipment and compliance	M125
4	Technical training on energy efficiency	M125
5	General training on Energy Trust programs	M125
6	Training in other Energy Trust programs (specify)	M125
77	Other (specify)	M125
88	Refused	M125
99	Don't Know	M125

M125. Have you used any marketing materials or program literature provided by Energy Trust?

1	Yes		M125a
2	No		M130
88	Refused		M130
99	Don't Know		M130

M125a. What marketing materials or program literature have you used?

77	RECORD VERBATIM		M125b
88	Refused		M125b
99	Don't Know		M125b

M125b. What, if any, recommendations do you have to improve or change the marketing materials and program literature?

77	RECORD VERBATIM		M130
88	Refused		M130
99	Don't Know		M130

M130. How often do you visit the Energy Trust website?

1	Never	M135
2	Once	M130a
3	1-3 times a month	M130a
4	1-2 times a week	M130a
5	3-4 times a week	M130a
6	5 or more times a week	M130a
88	Refused	M135
99	Don't Know	M135

M130a. On a scale of 1 to 5, where 1 indicates not at all helpful, and 5 indicates very helpful, how helpful do you find the Trade Ally web pages to be?

#	Rating 1 to 5		M130b
88	Refused		M130b
99	Don't Know		M130b

M130b. What improvements, if any, could we make to the Trade Ally web pages to make them more valuable to you?

77	RECORD VERBATIM		M135
88	Refused		M135
99	Don't Know		M135

M135. How has your relationship with Energy Trust changed since last year? On a scale of 1 to 5, where 1 indicates it has gotten a lot worse, 3 indicates no change, and 5 indicates it has improved a lot.

#	Rating 1 to 5		M135a
88	Refused		M140
99	Don't Know		M140

Ask if M135 in (1, 2, 4, 5)

M135a. Can you describe the reasons leading to the change in the relationship?

77	RECORD VERBATIM		M140
88	Refused		M140
99	Don't Know		M140

M140. On a scale of 1 to 5, with 1 being very unsatisfied and 5 being very satisfied, how satisfied were you with Program staff in the following categories?

M141. Overall satisfaction

#	Rating 1 to 5		M141a
88	Refused		M142
99	Don't Know		M142

Ask if M141 <=2, else go on to M142.
M141a. What factors lead to your dissatisfaction?

77	RECORD VERBATIM		M142
88	Refused		M142
99	Don't Know		M142

M142. Interactions with staff

#	Rating 1 to 5		M142a
88	Refused		M143
99	Don't Know		M143

Ask if M142 <=2, else go on to M143.
M142a. What factors lead to your dissatisfaction?

77	RECORD VERBATIM		M143
88	Refused		M143
99	Don't Know		M143

M143. Response times

#	Rating 1 to 5		M143a
88	Refused		M144
99	Don't Know		M144

Ask if M143 <=2, else go on to M144.
M143a. What factors lead to your dissatisfaction?

77	RECORD VERBATIM		M144
88	Refused		M144
99	Don't Know		M144

M144. Requests for assistance

#	Rating 1 to 5		M144a
88	Refused		IN10
99	Don't Know		IN10

Ask if M145 <=2, else go on to IN5.
M144a. What factors lead to your dissatisfaction?

77	RECORD VERBATIM		IN10
88	Refused		IN10
99	Don't Know		IN10

Envelope Insulation

ASK IF P22 =1 or 3, ELSE SKIP TO DIN1
Now, I'd like to ask you a few questions about the envelope (Wall, ceiling, floor) insulation work you've done in existing single-family homes.
IN10. Roughly how many insulation jobs did your company complete in existing single family homes over the past year?

#	Number		IN15
88	Refused		IN15
99	Don't Know		IN15

IN15. Approximately what percent of the jobs your company completed over the past year involved insulation in more than one of the following areas – Ceiling, Wall, and Floor?

%	Percent		IN16
88	Refused		IN16

99	Don't Know		IN16

IN16. Approximately what percentage of insulation jobs completed over the past year included installing floor insulation?

%	Percent		IN17
88	Refused		IN17
99	Don't Know		IN17

IN17. What, if any, are the challenges associated with selling floor insulation? (DON'T READ)

1	No challenges		IN18
2	Most floors already have some insulation		IN18
3	Cost		IN18
4	Physically difficult		IN18
5	Savings hard to quantify/sell		IN18
6	Customers feel savings are unreliable		IN18
7	Customers don't want/need it		IN18
77	Other (specify)		IN18
88	Refused		IN18
99	Don't Know		IN18

IN18. What, if any, are the challenges associated with selling wall insulation? (DON'T READ)

1	No challenges		IN19
2	Most walls already have some insulation		IN19
3	Cost		IN19
4	Physically difficult		IN19
5	Savings hard to quantify/sell		IN19
6	Customers feel savings are unreliable		IN19
7	Customers don't want/need it		IN19
77	Other (specify)		IN19
88	Refused		IN19
99	Don't Know		IN19

IN19. What, if any, are the challenges associated with selling ceiling insulation? (DON'T READ)

1	No challenges		IN20
2	Most floors already have some insulation		IN20
3	Cost		IN20
4	Physically difficult		IN20
5	Savings hard to quantify/sell		IN20
6	Customers feel savings are unreliable		IN20
7	Customers don't want/need it		IN20
77	Other (specify)		IN20
88	Refused		IN20
99	Don't Know		IN20

IN20. How many insulation jobs would you say your company completed over the past year that were rebated through the Home Energy Solutions Program?

#	Number		IN80
88	Refused		IN80
99	Don't Know		IN80

IN80. How often do you refer or recommend to your insulation customers that they consider installing other products, such as windows, in conjunction with insulation to qualify for greater program rebates and save energy?

1	Never		IN81

2	Sometimes		IN81
3	Often		IN81
4	Always		IN81
88	Refused		IN81
99	Don't Know		IN81

IN81. How often do you get referrals from other contractors to complete insulations jobs so that customers will be eligible for additional rebates for products such as windows, for example?

1	Never		IN85
2	Sometimes		IN85
3	Often		IN85
4	Always		IN85
88	Refused		IN85
99	Don't Know		IN85

IN85. Considering all aspects of the Home Energy Solutions Program including equipment rebates, the Contractor Trade Ally List, and program literature, how effective do you think the Home Energy Solutions Program has been in increasing your company's insulation business in existing single-family homes? Would you say…(READ)

1	Very Effective		IN90
2	Somewhat Effective		IN90
3	Not at all Effective		IN90
88	Refused		IN90
99	Don't Know		IN90

IN90. Thinking only about insulation customers that went on to receive a Home Energy Solutions rebate, which of following best describes the degree of influence the Home Energy Solutions program had on customers' decisions to install insulation? Would you say… (READ, SINGLE CHOICE)

1	Most customers were Very Influenced by the program	IN95
2	Most were Somewhat Influenced	IN95
3	Most were Not At All Influenced	IN95
88	Refused	IN95
99	Don't Know	IN95

IN95. Again, for those customers that received a Home Energy Solutions rebate—if the rebate had not been available, which of the following best describes what most of your company's customers would have installed…(READ)

1	Most would have installed the exact same insulation anyway	IN100
2	Most would have installed less insulation, or installed the same amount but in fewer areas	IN100
3	Most would have elected not to install insulation	IN100
88	Refused	IN100
99	Don't Know	IN100

IN100. For which of the following types of insulation has the Home Energy Solutions program been most successful with respect to increasing your business in existing single family homes? (READ)

1	Wall Insulation	DIN1
2	Ceiling Insulation	DIN1
3	Floor Insulation	DIN1
4	None (Don't READ)	DIN1
88	Refused	DIN1
99	Don't Know	DIN1

Duct Insulation

ASK P22 =2 or 3, ELSE SKIP TO DSE1

Now, I'd like to ask you a few questions about the duct insulation work you've done in existing single-family homes.

DIN1. Roughly how many duct insulation jobs did your company complete over the past year?

#	Number		DIN2
88	Refused		DIN2
99	Don't Know		DIN2

DIN2. Roughly what percent of those jobs were in existing single family homes vs. new construction?

%	Existing		DIN3
%	New construction		DIN3
88	Refused		DIN3
99	Don't Know		DIN3

DIN3. What, if any, are the challenges in selling a duct insulation job?

1	No challenges		DIN20
2	Most homes already have duct insulation		DIN20
3	Cost		DIN20
4	Physically difficult		DIN20
5	Savings hard to quantify/sell		DIN20
6	Customers feel savings are unreliable		DIN20
7	Customers don't want/need it		DIN20
77	Other (specify)		DIN20
88	Refused		DIN20
99	Don't Know		DIN20

DIN20. How many duct insulation jobs would you say your company completed over the past year that were rebated through the Home Energy Solutions Program?

#	Number		DIN65
88	Refused		DIN65
99	Don't Know		DIN65

These next questions are about the ways both customers and contractors may be responding to the Home Energy Solutions program…

DIN65. The Home Energy Solutions program offers incentives for Efficient Windows if they are installed in conjunction with another program qualifying product, such as duct insulation. Have you received any referrals from other contractors to complete duct insulation jobs so that customers would be eligible for Efficient Windows rebates?

1	Yes		DIN70
2	No		DIN75
88	Refused		DIN75
99	Don't Know		DIN75

DIN70. Roughly what percent of the duct insulation jobs you completed in existing single-family homes over the past year were a result of this type of referral?

%	Percent		DIN75
88	Refused		DIN75
99	Don't Know		DIN75

DIN75. Have you referred or recommended to any of your duct insulation customers that they consider installing other products, such as windows, in conjunction with insulation to qualify for greater program rebates and save energy?

1	Yes		DIN80
2	No		DIN85
88	Refused		DIN85
99	Don't Know		DIN85

DIN80. How often do you make this kind of recommendation to your customers?

1	Never		DIN85
2	Sometimes		DIN85
3	Often		DIN85
4	Always		DIN85
88	Refused		DIN85
99	Don't Know		DIN85

DIN85. Considering all aspects of the Home Energy Solutions Program including equipment rebates, the Contractor Trade Ally List, and program literature, how effective do you think the Home Energy Solutions Program has been in increasing your company's duct insulation business in existing single-family homes? Would you say…(READ)

1	Very Effective		DIN90
2	Somewhat Effective		DIN90
3	Not at all Effective		DIN90
88	Refused		DIN90
99	Don't Know		DIN90

DIN90. Thinking only about duct insulation customers that went on to receive a Home Energy Solutions rebate, which of following best describes the degree of influence the Home Energy Solutions program had on customers' decisions to install duct insulation? Would you say… (READ, SINGLE CHOICE)

1	Most customers were Very Influenced by the program	DIN95
2	Most were Somewhat Influenced	DIN95
3	Most were Not At All Influenced	DIN95
88	Refused	DIN95
99	Don't Know	DIN95

DIN95. Again, for those customers that received a Home Energy Solutions rebate—if the rebate had not been available, which of the following best describes what most of your company's customers would have installed…(READ)

1	Most would have installed the exact same duct insulation anyway	DIN105
2	Most would have installed less duct insulation, or installed the same amount but in fewer areas	DIN105
3	Most would have elected not to install duct insulation	DIN105
88	Refused	DIN105
99	Don't Know	DIN105

Ask only if F35=1, else skip to DSE1.

DIN105. As you may already know, Duct Insulation qualifies for both a Home Energy Solutions rebate and an Oregon Tax Credit. Which program is more influential in customers' decision to install Duct Insulation, would you say…(READ)

1	The Home Energy Solutions Rebate is more Influential than the Tax Credit	DSE1
2	The Tax Credit is more Influential than the Home Energy Solutions Rebate	DSE1
3	Both programs are equally Influential	DSE1
4	Neither program is Influential	DSE1
88	Refused	DSE1
99	Don't Know	DSE1

Duct Seal

ASK IF DUCT=1 OR P20 =2, ELSE SKIP TO WN1

Now, I'd like to ask you a few questions about the duct seal work you've done in existing single-family homes.

DSE1. Roughly how many duct seal jobs did your company complete over the past year?

#	Number		DSE2
88	Refused		DSE2
99	Don't Know		DSE2

DSE2. Roughly what percent of those jobs were in existing single family homes vs. new construction?

%	Existing		DSE3
%	New construction		DSE3
88	Refused		DSE3
99	Don't Know		DSE3

DSE3. What, if any, are the challenges in selling a duct seal job?

1	No challenges		DSE20
2	Most homes already have duct sealing		DSE20
3	Cost		DSE20
4	Physically difficult		DSE20
5	Savings hard to quantify/sell		DSE20
6	Customers feel savings are unreliable		DSE20
7	Customers don't want/need it		DSE20
77	Other (specify)		DSE20
88	Refused		DSE20
99	Don't Know		DSE20

DSE20. How many duct seal jobs would you say your company completed over the past year that were rebated through the Home Energy Solutions Program?

#	Number		DSE65
88	Refused		DSE65
99	Don't Know		DSE65

These next questions are about the ways both customers and contractors may be responding to the Home Energy Solutions program…

DSE65. The Home Energy Solutions program offers incentives for Efficient Windows if they are installed in conjunction with another program qualifying product, such as duct seals. Have you received any referrals from other contractors to complete duct seal jobs so that customers would be eligible for Efficient Windows rebates?

1	Yes		DSE70
2	No		DSE75
88	Refused		DSE75
99	Don't Know		DSE75

DSE70. Roughly what percent of the duct seal jobs you completed in existing single-family homes over the past year were a result of this type of referral?

%	Percent		DSE75
88	Refused		DSE75
99	Don't Know		DSE75

DSE75. Have you referred or recommended to any of your duct seal customers that they consider installing other products, such as windows, in conjunction with duct sealing to qualify for greater program rebates and save energy?

1	Yes		DSE80
2	No		DSE85

88	Refused		DSE85
99	Don't Know		DSE85

DSE80. How often do you make this kind of recommendation to your customers?

1	Never		DSE85
2	Sometimes		DSE85
3	Often		DSE85
4	Always		DSE85
88	Refused		DSE85
99	Don't Know		DSE85

DSE85. Considering all aspects of the Home Energy Solutions Program including equipment rebates, the Contractor Trade Ally List, and program literature, how effective do you think the Home Energy Solutions Program has been in increasing your company's duct seal business in existing single-family homes? Would you say…(READ)

1	Very Effective		DSE90
2	Somewhat Effective		DSE90
3	Not at all Effective		DSE90
88	Refused		DSE90
99	Don't Know		DSE90

DSE90. Thinking only about duct seal customers that went on to receive a Home Energy Solutions rebate, which of following best describes the degree of influence the Home Energy Solutions program had on customers' decisions to install duct sealing? Would you say… (READ, SINGLE CHOICE)

1	Most customers were Very Influenced by the program	DSE95
2	Most were Somewhat Influenced	DSE95
3	Most were Not At All Influenced	DSE95
88	Refused	DSE95
99	Don't Know	DSE95

DSE95. Again, for those customers that received a Home Energy Solutions rebate—if the rebate had not been available, which of the following best describes what most of your company's customers would have installed…(READ)

1	Most would have installed the exact same duct sealing anyway	DSE105
2	Most would have installed less duct seals, or installed the same amount but in fewer areas	DSE105
3	Most would have elected not to install duct seals	DSE105
88	Refused	DSE105
99	Don't Know	DSE105

Ask only if F35=1, else skip to WN1.

DSE105. As you may already know, Duct Sealing qualifies for both a Home Energy Solutions rebate and an Oregon Tax Credit. Which program is more influential in customers' decision to install Duct Sealing, would you say…(READ)

1	The Home Energy Solutions Rebate is more Influential than the Tax Credit	WN1
2	The Tax Credit is more Influential than the Home Energy Solutions Rebate	WN1
3	Both programs are equally Influential	WN1
4	Neither program is Influential	WN1
88	Refused	WN1
99	Don't Know	WN1

Windows

ASK IF WIND=1 OR IF P20 =3, ELSE SKIP TO GF10

Next I'd like to talk with you about your company's window installation work done in existing single-family homes.
WN1. What percent of windows that you installed over the last year go into the following types of housing? (NOTE: SHOULD ADD TO 100 PERCENT)

1	Single family	WN2
2	Multifamily	WN2
77	Other (specify)	WN2
88	Refused	WN2
99	Don't Know	WN2

WN2. What percent of window installations over the last year have been in new homes and what percent in existing homes? (NOTE: SHOULD ADD TO 100 PERCENT)

%	New homes	WN5
%	Existing homes	WN5
88	Refused	WN5
99	Don't Know	WN5

WN5. Over the past year, approximately what percent of your company's revenue at this location came from window installation jobs in existing single-family homes?

%	Percent		WN10
88	Refused		WN10
99	Don't Know		WN10

WN10. Roughly how many window installation jobs did your company complete in existing single-family homes over the past year?

#	Number		WN15
88	Refused		WN15
99	Don't Know		WN15

WN15. Approximately how many window installation jobs did your company complete over the past year that were rebated through the Home Energy Solutions program?

1	Yes		WN25
2	No		WN25
88	Refused		WN25
99	Don't Know		WN25

WN25. What percentage of the residential windows that you installed in the last year had U values in the following ranges: (READ, NOTE: SHOULD ADD TO 100 PERCENT)

%	0.36 U value or more	WN30
%	0.31-0.35 U value	WN30
%	0.30 U value or less	WN30
88	Refused	WN30
99	Don't Know	WN30

WN30. What is the availability of windows with a U value of 0.30 or less?

1	Not available	WN80
2	Difficult to get	WN80
3	Some models available	WN80
4	Easily available	WN80
88	Refused	WN80

99	Don't Know	WN80

WN80. What is the efficiency level of the windows that you typically market to customers?

1	0.36 U value or more	WN85
2	0.31-0.35 U value	WN85
3	0.30 U value or less	WN85
77	Other (specify)	WN85
88	Refused	WN85
99	Don't Know	WN85

WN85. How often do you recommend to any of your windows customers that they consider installing other energy saving products so that they could receive the Home Energy Solutions Efficient Windows rebate and potentially other Incentive Offers? Would you say…(READ)

1	Often		WN90
2	Sometimes		WN90
3	Rarely		WN90
4	Never		WN90
88	Refused		WN90
99	Don't Know		WN90

WN90. Which products do you typically recommend customers install in order to qualify for the Home Energy Solutions Efficiency Window rebate? (DO NOT READ)

1	Insulation		WN95
2	Water Heater		WN95
3	Gas Furnace		WN95
4	Heat Pump		WN95
77	Other (specify)		WN95
88	Refused		WN95
99	Don't Know		WN95

WN95. What percent of your rebated windows customers do you think choose to install additional products primarily to take advantage of the Incentive Offers?

%	Percent		WN100
88	Refused		WN100
99	Don't Know		WN100

WN100. How often do you receive referrals from other contractors to complete window installation jobs for customers already installing other products that qualify for Incentive Offers, because they would be eligible for Efficient Windows rebates?

1	Often		WN150
2	Sometimes		WN150
3	Rarely		WN150
4	Never		WN150
88	Refused		WN150
99	Don't Know		WN150

The next few questions are about how customers perceive the Energy Trust Incentive Offers and how important the Incentive Offers are in their decision to install energy saving products….

WN150. Considering all aspects of the Incentive Offers including equipment rebates, the Contractor Trade Ally List, and program literature, how effective do you think the Incentive Offers have been in increasing your company's sales of high efficiency windows? Would you say they have been…(READ)

1	Very Influential		WN155
2	Somewhat Influential		WN155

3	Not at all Influential		WN155
88	Refused		WN155
99	Don't Know		WN155

WN155. Which of following best describes the degree of influence the Incentive Offers had on customers' decisions to install high efficiency windows? Would you say… (READ, SINGLE CHOICE. IF NEEDED: 'High Efficiency' windows refers to windows with a U-Value of .30 or lower.)

1	Most customers were Very Influenced by the program		WN160
2	Most were Somewhat Influenced		WN160
3	Most were Not At All Influenced		WN160
88	Refused		WN160
99	Don't Know		WN160

WN160. For those customers that received Incentive Offers—if the Incentive Offers had not been available, which of the following best describes what most of those customers would have installed… (READ, IF NEEDED: 'Standard Efficiency' windows refers to windows with a U-Value greater than .35.)

1	Most would have installed the exact same windows anyway	GF10
2	Most would have installed other high efficiency windows, i.e. Energy Star	GF10
3	Most would have installed less efficient (standard efficiency or code) windows	GF10
4	Most would have elected not to install windows	GF10
88	Refused	GF10
99	Don't Know	GF10

Gas Furnace

ASK IF GASFURN=1 OR IF P20 =4, ELSE SKIP TO HP5

Next, I'd like to discuss your company's residential gas furnace sales and installations in existing single family homes.

GF10. Approximately how many Gas Furnace installations in existing single-family homes did your company complete over the past year?

#	Number		GF15
88	Refused		GF15
99	Don't Know		GF15

GF15. Over the last year what percentage of your total gas furnace sales were in the following efficiency categories? (READ, NOTE: SHOULD ADD TO 100 PERCENT)

%	80%-89% efficient furnace		GF20
%	90%-94% efficient furnace		GF20
%	95% or more efficient furnaces		GF20
77	Other (specify)		GF20
88	Refused		GF20
99	Don't Know		GF20

GF20. Over the last year, what percentage of your installed furnaces had an ECM blower?

%	Percentage		GF21
88	Refused		GF20a
99	Don't Know		GF20a

GF20a. What percentage range would you guess? (READ)

1	0%		GF21
2	1%-25%		GF21
3	26%-50%		GF21

4	51%-75%		GF21
5	76%-100%		GF21
88	Refused		GF21
99	Don't Know		GF21

GF21. Over the last year, what percentage of gas furnace installations had an Air cleaner?

%	Percentage		GF22
88	Refused		GF21a
99	Don't Know		GF21a

GF21a. What percentage range would you guess? (READ)

1	0%		GF22
2	1%-25%		GF22
3	26%-50%		GF22
4	51%-75%		GF22
5	76%-100%		GF22
88	Refused		GF22
99	Don't Know		GF22

GF22. Over the last year, what percentage of furnace installations had central AC?

%	Percentage		GF23
88	Refused		GF22a
99	Don't Know		GF22a

GF22a. What percentage range would you guess? (READ)

1	0%		GF23
2	1%-25%		GF23
3	26%-50%		GF23
4	51%-75%		GF23
5	76%-100%		GF23
88	Refused		GF23
99	Don't Know		GF23

GF23. What percentage of furnace installations have programmable thermostats?

%	Percentage		GF24
88	Refused		GF23a
99	Don't Know		GF23a

GF23a. What percentage range would you guess? (READ)

1	0%		GF24
2	1%-25%		GF24
3	26%-50%		GF24
4	51%-75%		GF24
5	76%-100%		GF24
88	Refused		GF24
99	Don't Know		GF24

GF24. How often are systems with air cleaners also bundled with ECMs?

1	Always		GF25
2	Most		GF25
3	Some		GF25
4	A few		GF25
5	Depends		GF25

6	Never		GF25
88	Refused		GF25
99	Don't Know		GF25

GF25. Approximately how many gas furnace installation jobs did your company complete over the past year that were rebated through the Home Energy Solutions?

#	Number		GF65
88	Refused		GF65
99	Don't Know		GF65

As you may already know, Northwest Natural Gas Company offers an additional cash incentive to customers during the spring and fall of $300 toward a furnace with an AFUE of .9 or higher. For this next sequence of Gas Furnace questions, please consider the Home Energy Solutions program, the Oregon Tax Credit and the Northwest Natural rebate ALL to be part of the "Energy Trust Incentive Programs" or sometimes, "Incentive Offers".

GF65. Do you participate in Northwest Natural's gas furnace incentive program?

1	Yes		GF70
2	No		GF70
88	Refused		GF70
99	Don't Know		GF70

GF70. Have you referred or recommended to any of your gas furnace customers that they install other products qualifying for Incentive Offers in order to take advantage of additional rebates and save energy?

1	Yes		GF71
2	No		GF72
88	Refused		GF72
99	Don't Know		GF72

GF71. How often do customers go ahead and install additional products to take advantage of greater Incentive Offers? Would you say…(READ)

1	Often		GF72
2	Sometimes		GF72
3	Rarely		GF72
4	Never		GF72
88	Refused		GF72
99	Don't Know		GF72

These next questions are about trends in the industry and in your company's marketing practices and inventory…

GF72. What is the efficiency of your standard gas furnace that you market to customers?

1	80%-89% efficiency		GF73
2	90% or higher		GF73
3	It varies		GF73
77	Other (specify)		GF73
88	Refused		GF73
99	Don't Know		GF73

GF73. How influential have the Incentive Offers been on the efficiency level of the standard furnace that you offer? Would you say…(READ)

1	Very Influential		GF74
2	Somewhat Influential		GF74
3	Not at all Influential		GF80
88	Refused		GF80
99	Don't Know		GF80

ASK IF F35=1 and GF65=1
ASK IF GF73 is not in (3, 88, 99)
GF74. Which of the three Incentive Offers had the most influence on your company's marketing of high efficiency furnaces? Would you say… (READ)

1	The Home Energy Solutions program		GF80
2	The Oregon Tax Credit		GF80
3	The Northwest Natural cash incentive, or		GF80
4	All three have been equally influential		GF80
5	None are influential (DO NOT READ)		GF80
88	Refused		GF80
99	Don't Know		GF80

GF80. What is the cost differential (of equipment and installation) between a standard furnace (80% efficient) and a condensing furnace (>90% efficient)?

$	Cost differential		GF84
88	Refused		GF80a
99	Don't Know		GF80a

GF80a. What would be your best guess for the range of the cost differential? (READ)

1	Less than $200		GF84
2	$200-$500		GF84
3	$501-$750		GF84
4	$751-$1,000		GF84
5	Over $1,000		GF84
88	Refused		GF84
99	Don't Know		GF84

GF84. How much does an ECM typically add to the price of a furnace?

$	Price		GF86
88	Refused		GF84a
99	Don't Know		GF84a

GF84a. What would be your best guess for the additional cost? (READ)

1	Less than $200		GF86
2	$200-$500		GF86
3	$501-$750		GF86
4	$751-$1,000		GF86
5	Over $1,000		GF86
88	Refused		GF86
99	Don't Know		GF86

GF86. How have the prices for gas furnaces with an AFUE rating of .90 or higher changed over the past year? Would you say …(READ)

1	They have gone up by more than 10 percent		GF87
2	They have declined by more than 10 percent, or		GF87
3	They have not changed by 10 percent over the past year		GF87
88	Refused		GF87
99	Don't Know		GF87

GF87. What is the availability of gas furnaces with an AFUE rating of .95?

1	Not available		GF115
2	Difficult to find		GF115
3	Available in some models		GF115
4	Easily available		GF115
77	Other (specify)		GF115
88	Refused		GF115
99	Don't Know		GF115

The next few questions are about how customers perceive the Oregon Energy Efficiency Incentive Offers and how the Offers might affect customers' gas furnace selections…

GF115. Considering all aspects of the Incentive Offers including equipment rebates, the Contractor Trade Ally List, and program literature, how influential do you think these incentive offers have been in increasing sales of gas furnaces with AFUE of .90 or greater? Would you say… (READ)

1	Very Influential		GF120
2	Somewhat Influential		GF120
3	Not at all Influential		GF120
88	Refused		GF120
99	Don't Know		GF120

GF120. Consider customers that received Incentive Offers, which of following best describes the degree of influence the Incentive Offers had on customers' decisions to install gas furnaces with AFUE of .90 or greater? Would you say… (READ, SINGLE CHOICE)

1	Most customers were Very Influenced by the Incentive Offers	GF125
2	Most were Somewhat Influenced	GF125
3	Most were Not At All Influenced	GF125
88	Refused	GF125
99	Don't Know	GF125

GF125. Again, for those customers that received Incentive Offers—if the Incentive Offers had not been available, which of the following best describes what most of your company's customers would have installed…(READ)

1	Most would have selected the exact same gas furnace	GF130
2	Most would have selected a furnace with a marginally lower AFUE rating	GF130
3	Most would have selected a less efficient gas furnace	GF130
4	Most would have elected not to install a gas furnace at all	GF130
88	Refused	GF130
99	Don't Know	GF130

ASK IF F35=1, ELSE SKIP TO HP5.

GF130. Which of the three Incentive Offers has the most influence on a customer's decision to purchase a gas furnace with an AFUE of .90 or greater? Would you say… (READ)

1	The Home Energy Solutions program		HP5
2	The Tax Credit		HP5
3	The Northwest Natural cash incentive, or		HP5
4	All three are equally influential		HP5
5	None are influential (DO NOT READ)		HP5
88	Refused		HP5
99	Don't Know		HP5

Heat Pump

ASK IF HEATP=1 OR IF P20 =5, ELSE SKIP TO O10

Next, I'd like to discuss your company's residential Heat Pump installation work done in existing single family homes.

HP5. Over the last year, what percentage of your total heat pump sales were in the following efficiency categories? (READ, NOTE: SHOULD ADD TO 100 PERCENT)

%	HSPF code to 8.1		HP10
%	HSPF 8.2-8.4		HP10
%	HSPF 8.5-8.9		HP10
%	HSPF 9.0-9.4		HP10
%	HSPF 9.5 or better		HP10
88	Refused		HP10
99	Don't Know		HP10

HP10. Approximately how many Heat Pump installations in existing single-family homes did your company complete over the past year?

#	Number		HP15
88	Refused		HP15
99	Don't Know		HP15

HP15. Approximately what percent of these heat pump installations were conversions from forced air furnace to heat pump?

%	Percent		HP16
88	Refused		HP16
99	Don't Know		HP16

HP16. What percentage of heat pump installations have programmable thermostats?

%	Percent		HP20
88	Refused		HP16a
99	Don't Know		HP16a

HP16a. What would be your best guess of the percentage range? (READ)

1	0%		HP20
2	1%-25%		HP20
3	26%-50%		HP20
4	51%-75%		HP20
5	76%-100%		HP20
88	Refused		HP20
99	Don't Know		HP20

HP20. What is the cost differential (equipment and installation) between a code (7.8 HSPF) heat pump and a heat pump with an 8.5 HSPF?

1	Less than $100		HP21
2	$100-$200		HP21
3	$201-$300		HP21
4	$301-$400		HP21
5	$401-$500		HP21
6	$501-$600		HP21
7	Over $600		HP21
88	Refused		HP21
99	Don't Know		HP21

HP21. On what percentage of your jobs do you do commissioning?

1	0%		HP22
2	1-24%		HP22

3	25%-49%		HP22
4	50%-74%		HP22
5	75%-100%		HP22
88	Refused		HP22
99	Don't Know		HP22

HP22. What are the reasons for not using commissioning? (SELECT ALL THAT APPLY)

1	Takes too much time		HP25
2	Do not trust results		HP25
3	Too expensive		HP25
4	No customer demand		HP25
5	Do not need commissioning, standard diagnostics adequate		HP25
77	Other (specify)		HP25
88	Refused		HP25
99	Don't Know		HP25

HP25. Approximately how many heat pump installation jobs did your company complete over the past year that were rebated through the Home Energy Solutions program?

#	Number		HP75
88	Refused		HP75
99	Don't Know		HP75

This next set of questions is about trends in your company's marketing practices…

HP75. What is the HSPF of the heat pump that you typically market to customers?

1	HSPF code to 8.1		HP100
2	HSPF 8.2-8.4		HP100
3	HSPF 8.5-8.9		HP100
5	HSPF 9.0-9.4		HP100
6	HSPF 9.5 or better		HP100
88	Refused		HP100
99	Don't Know		HP100

HP100. How influential have the Incentive Offers been on your company's marketing of high efficiency heat pumps? Would you say…(READ)

1	Very Influential		HP101
2	Somewhat Influential		HP101
3	Not at all Influential		HP101
88	Refused		HP101
99	Don't Know		HP101

HP101. How have the prices for heat pumps with an HSPF rating of 8.5 or higher changed over the past year? Would you say …(READ)

1	They have gone up by more than 10 percent		HP105
2	They have declined by more than 10 percent, or		HP105
3	They have not changed by 10 percent over the past year		HP105
88	Refused		HP105
99	Don't Know		HP105

Next, I'd like to ask you about how the Home Energy Solutions and Oregon Tax Credit programs may influence the recommendations you make to customers and how influential these Incentive Offers are on customers' decisions regarding installing energy saving equipment.

HP105. How often do you suggest to your heat pump customers that they install other products qualifying for the Incentive Offers in order to take advantage of additional rebates and save energy? Would you say…(READ)

1	Often		HP110
2	Sometimes		HP110
3	Rarely		HP110
4	Never		HP115
88	Refused		HP115
99	Don't Know		HP115

HP110. How often do customers take this advice and install additional products to take advantage of greater Incentive Offers? Would you say…(READ)

1	Often		HP115
2	Sometimes		HP115
3	Rarely		HP115
4	Never		HP115
88	Refused		HP115
99	Don't Know		HP115

HP115. How often do you use the Incentive Offers as a sales tool to encourage interested customers to convert from a forced air furnace to a heat pump? Would you say…(READ)

1	Often		HP120
2	Sometimes		HP120
3	Rarely		HP120
4	Never		HP120
88	Refused		HP120
99	Don't Know		HP120

HP120. How influential are the Incentive Offers in encouraging customers to convert from a forced air furnace to a heat pump? Would you say…(READ)

1	Very Influential		HP125
2	Somewhat Influential		HP125
3	Not at all Influential		HP125
88	Refused		HP125
99	Don't Know		HP125

HP125. Considering all aspects of the Incentive Offers including equipment rebates, the Contractor Trade Ally List, and program literature, how influential do you think the Incentive Offers have been in increasing sales of high efficiency heat pumps in existing single family homes? Would you say …(READ)

1	Very Influential		HP130
2	Somewhat Influential		HP130
3	Not at all Influential		HP130
88	Refused		HP130
99	Don't Know		HP130

HP130. Considering only customers that received a Home Energy Solutions rebate and possibly a tax credit, which of following best describes the degree of influence these Incentive Offers had on your customers' selection of a high efficiency Heat Pump? Would you say…(READ, SINGLE CHOICE)

1	Most customers were Very Influenced by the Incentive Offers	HP135
2	Most were Somewhat Influenced	HP135
3	Most were Not At All Influenced	HP135

88	Refused	HP135
99	Don't Know	HP135

HP135. Again, for those customers that received Incentive Offers—if the Incentive Offers had not been available, which of the following best describes what most of your company's customers would have installed…(READ)

1	Most would have selected the exact same heat pump	HP140
2	Most would have selected a heat pump with marginally lower efficiency ratings	HP140
3	Most would have selected a less efficient heat pump	HP140
4	Most would have elected to install a different heating and cooling system	HP140
88	Refused	HP140
99	Don't Know	HP140

ASK IF F35=1, ELSE SKIP TO O10.

HP140. In general, which Incentive Offer would you say is more important to customers in their decision to install a high efficiency heat pump? Would you say…(READ)

1	The Home Energy Solutions Program is more important to customers than the Tax Credit	O10
2	The Tax Credit is more important than the Home Energy Solutions program	O10
3	Both programs are equally important	O10
4	Neither program is important	O10
88	Refused	O10
99	Don't Know	O10

Overall Influence

ASK IF P20 IN (3, 4, 5) ELSE SKIP TO O30

O10. Please consider the factors that influence customers to purchase select high efficiency equipment instead of standard efficiency equipment. I will read a list of factors to you, please rank each one on a scale from 1 to 5 where 1 is not important at all and 5 is very important. How important is…

O10a	Saving Money on Energy Bills	O30
O10b	Saving Energy for the Environment	O30
O10c	Improving Comfort in the Home	O30
O10d	Improving Health through a better Home Environment	O30
O10e	Receiving the Oregon Energy Efficiency Incentive Offers	O30
O10f	The installation contractors (Your) recommendation	O30
O10g	Endorsement by Energy Trust of Oregon	O30
O10h	Sustainability	O30
O10i	Energy independence	O30
88	Refused	O30
99	Don't Know	O30

ASK IF P20 IN (1, 2) ONLY, ELSE SKIP TO END.

O30. Please consider the factors that influence customers to purchase insulation qualifying for the Home Energy Solutions program. I will read a list of factors to you, please rank each one on a scale from 1 to 5 where 1 is not important at all and 5 is very important. How important is…

O30a	Saving Money on Energy Bills	End.
O30b	Saving Energy for the Environment	End.
O30c	Improving Comfort in the Home	End.
O30d	Improving Health through a better Home Environment	End.
O30e	Receiving the Oregon Energy Efficiency Incentive Offers	End.
O30f	The installation contractors (Your) recommendation	End.
O30g	Endorsement by Energy Trust of Oregon	End.
O30h	Sustainability	End.
O30i	Energy independence	End.

88	Refused	End.
99	Don’t Know	End.

END. Those are all the questions I have for you today. On behalf of Energy Trust of Oregon I thank you very much for your time and help with this important survey.