Northwest ENERGY STAR Homes Program

Market Progress Evaluation Report #6

PREPARED BY

ECONorthwest

REPORT #E09-210
JUNE 23, 2009

NORTHWEST
ENERGY
EFFICIENCY
ALLIANCE

www.nwalliance.org

529 SW Third Avenue, Suite 600
Portland, Oregon 97204
(tel) 503-827-8416 (fax) 503-827-8437

Northwest ENERGY STAR Homes Program

Sixth Market Progress Evaluation Report

A Report to the Northwest Energy Efficiency Alliance

June 23, 2009

ECONorthwest
ECONOMICS • FINANCE • PLANNING
888 SW Fifth Avenue, Suite 1460
Portland, Oregon 97204
503-222-6060

Acknowledgements

This report was prepared by ECONorthwest's Portland office for the Northwest Energy Efficiency Alliance. Dr. Stephen Grover was the ECONorthwest project manager for this analysis and was 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 John Boroski, Logan Van Ert and Jessica Smith. Itron and Dr. Phil Willems also assisted with this evaluation and report.

Table of Contents

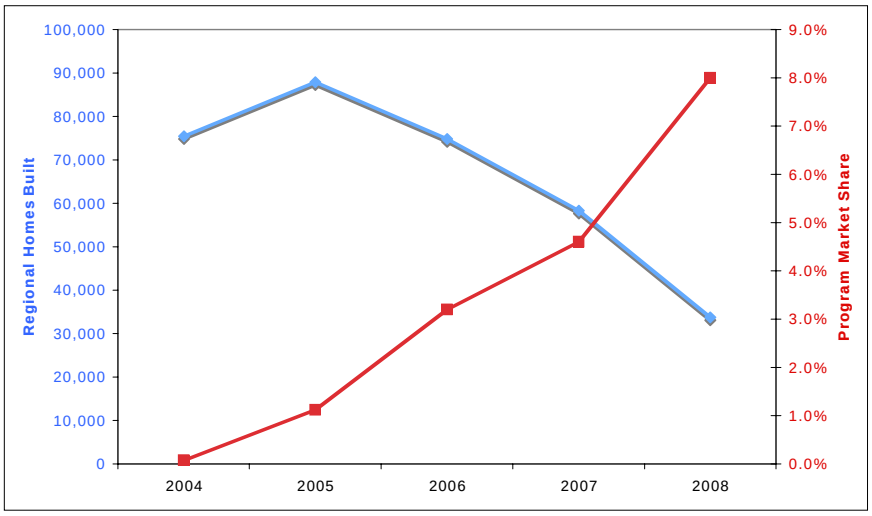
EXECUTIVE SUMMARY

This is the sixth Market Progress Evaluation Report (MPER) of the Northwest ENERGY STAR Homes program. This report presents evaluation findings based on a telephone survey of homebuilders and in-depth interviews with participants of the Lighting Fixtures Pilot Program that was conducted by ICF International during 2007 and 2008, which NEEA managed. The report also includes current data on the new home market in the Northwest and an update on progress towards program goals.

Market Share Attainment

As shown in the following figure, program market share continued to increase in the declining single-family construction market – from 4.6 percent in 2007 to 8 percent in 2008 (the program goal was 9 percent). Market share growth was particularly strong in Oregon, which increased from 5.8 percent to 11 percent. During the first quarter of 2009 (not shown below), overall market share increased further to 14 percent; complete 2009 results will be reported in the next MPER.

Figure ES-1: Regional Single-Family Construction and Program Market Share



Market Progress

In 2008 the program made continued progress towards market transformation in the new homes market. The program was influential in getting the State of Oregon to adopt more stringent energy codes for new home construction effective July 2008. In response to the code change, the program enhanced the prescriptive path for the ENERGY STAR label in Oregon, so new program homes continue to exceed code by 15 percent. Importantly, the enhanced ENERGY STAR prescriptive path became the base energy specification for Earth Advantage homes beginning in July 2008, giving the program a key strategic partner with whom to promote the ENERGY STAR brand into the future. In 2008 the program recruited 326 new builders, which is the same as joined in 2007.

Following are key findings from the builders survey regarding selected program goals:

- **Builders are linking ENERGY STAR homes with home quality/value.** Seventy-two percent of the builders believed the ENERGY STAR label makes homes more marketable, and 51 percent believed that program homes are higher quality overall (a significant increase from the 2007 survey).

- **Builders are using the program label to differentiate themselves.** Two-thirds of program builders actively promote the fact that their homes are ENERGY STAR, even while the economic recession has caused many builders to reduce or eliminate their marketing budgets.

- **Builders are more knowledgeable about duct testing and its benefits.** Builder awareness of duct testing increased from 61 percent to 70 percent between 2007 and 2009. In addition, significantly more builders indicated that they have duct tests performed on at least some of the homes they build (26 percent compared to 18 percent), and few builders are experiencing problems with duct testing.

Importantly, satisfaction with the program is high among participating builders. In particular, participants were very satisfied with the ease of participation, performance testing, and responsiveness of program staff. Fifty-nine percent of the builders said they were either extremely or somewhat satisfied with the program overall.

According to RMLS studies on Seattle and Portland area new home sales, market share for green and energy efficient homes is increasing and is now 15 to 20 percent of the new homes market. In the survey, one-third of ENERGY STAR builders reported getting more program inquiries from homebuyers in the past year. Overall, the program appears to be well positioned to benefit from growing demand for green homes.

Recommendations

To make further progress towards market transformation, the program should continue efforts to partner with the Built Green program on specifications development, builder recruitment and programs marketing. This program has a high participation rate in Washington (35 percent of aware builders) and high awareness levels in other states where the program may expand.

The program should also promote RMLS findings that show green/efficient homes sell for a price premium. Compared to 2007, significantly fewer builders in 2009 agreed that ENERGY STAR homes sell for a higher price. Builders (and realtors) need to become aware of emerging research that shows green homes can command price premiums.

Lastly, to the extent possible, the program should enhance financial assistance to program builders that increasingly cannot afford higher construction costs and brand marketing. Thus the program should consider increasing cooperative advertising funding, advocate for utility incentives, and also foster alliances between program builders and key equipment suppliers to potentially defray construction costs**.**

1. INTRODUCTION

1.1 EVALUATION OVERVIEW

This report is the second of three Market Progress Evaluation Reports (MPERs) of the Northwest Energy Efficiency Alliance's (NEEA's) Northwest ENERGY STAR Homes program for the 2007-2009 funding period, and the sixth MPER since the program started.[1] The Northwest ENERGY STAR Homes program promotes the construction and sale of new homes built to the Northwest ENERGY STAR Homes specification, which was designed specifically for the states of Washington, Oregon, Idaho, and Montana. Homes built to this specification are at least 15 percent more energy efficient than Washington and Oregon State energy codes. These ENERGY STAR homes also include high efficiency lighting, windows, appliances, water heaters, insulation, and heating and cooling equipment. As a result, these new homes are designed to save an average of 1,000 to 1,500 kWh per year for gas-heated homes and 3,700 kWh annually for electrically heated homes. Appendix B provides more detailed information about the program's design and past evaluation activities that have been conducted.

This evaluation report presents the findings of an evaluation conducted on NEEA's Northwest ENERGY STAR Homes program for the period through December 31, 2008. In January 2007 Fluid Market Strategies (Fluid) became the program management contractor (PMC) in charge of implementing the program. NEEA/Fluid implemented the following key program initiatives in 2008:

- The PMC conducted a consumer marketing campaign to increase awareness and understanding of ENERGY STAR homes among regional homebuyers. While previous marketing efforts had primarily focused on recruiting new ENERGY STAR builders, several program evaluations revealed that homebuyer awareness and demand was perceived to be lacking. Key features of the consumer marketing campaign include:
    - Program spending of $178,000, which leveraged over $600,000 from other market actors
    - Updated brand messaging and visuals, based on staff's review of industry reports and trends and builders' views on emerging customer preferences
    - Over 14 million program impressions delivered across four states in 39 cooperative media campaigns[2]

[1] Four MPERs were completed during the 2004-2006 funding period.

[2] Impressions refers to the estimated number of people who are expected to see a promotional article, hear something on the radio, watch something on television, see particular billboards, read something on a web page, etc. In this case, the content that consumers see or hear includes the ENERGY STAR logo, ENERGY STAR name, and specific program messages.

- Regional delivery of public service announcements (PSAs) via television and radio

The effects of this marketing campaign will be researched in the next MPER, which will include a telephone survey of regional homebuyers. A listing of detailed market campaign activities is provided in Appendix F.

- The PMC launched the Northwest ENERGY STAR Homes Partners Program, and 18 suppliers that contribute to ENERGY STAR homes joined the program.[3] In this first year, the main goal was to recruit new partners that can be engaged in the future to provide significant marketing and outreach support. (To date, Partner co-funding of program advertising and trainings has been constrained by the weak economy.) In return for having their company information listed on the program website (at no cost), these companies also promote the ENERGY STAR Homes program on their own websites. In the future, program partners may be required to pay a fee to join this cross-marketing initiative.

- The PMC delivered pilot trainings on ENERGY STAR homes to 38 home appraisers in Washington. Going forward, appraisers will receive the same training as realtors ("Selling ENERGY STAR Homes") so they also understand the energy-saving components of the homes and how they increase homeowner value. Like realtors, they will receive three continuing education credits for attending the class. The program plans to increase its outreach to appraisers in 2009.

In addition to these initiatives, NEEA made strong progress towards market transformation in Oregon. First, the program was influential in getting the State of Oregon to adopt more stringent energy codes (essentially matching ENERGY STAR) for new home construction effective July 2008. In response to the code change, the program enhanced the prescriptive path that qualifies a home for the ENERGY STAR label in Oregon, so that new program homes continue to exceed code by 15 percent. More detailed information about the revised Oregon prescriptive path is provided in Appendix C. Furthermore, the enhanced ENERGY STAR prescriptive path became the base energy specification for Earth Advantage homes beginning in July 2008. This gives the program a popular strategic partner with whom to promote the ENERGY STAR brand into the future.

1.2 MARKET PROGRESS INDICATORS

Progress indicators identified at the outset of the program reflect the focus of the program on all facets of the residential new construction market and are designed to address key market barriers and opportunities (see Appendix B for more details).

[3] See http://www.northwestenergystar.com/partners/index.html for a current list of Partners.

Short-term and long-term indicators include:

Short-term Indicators

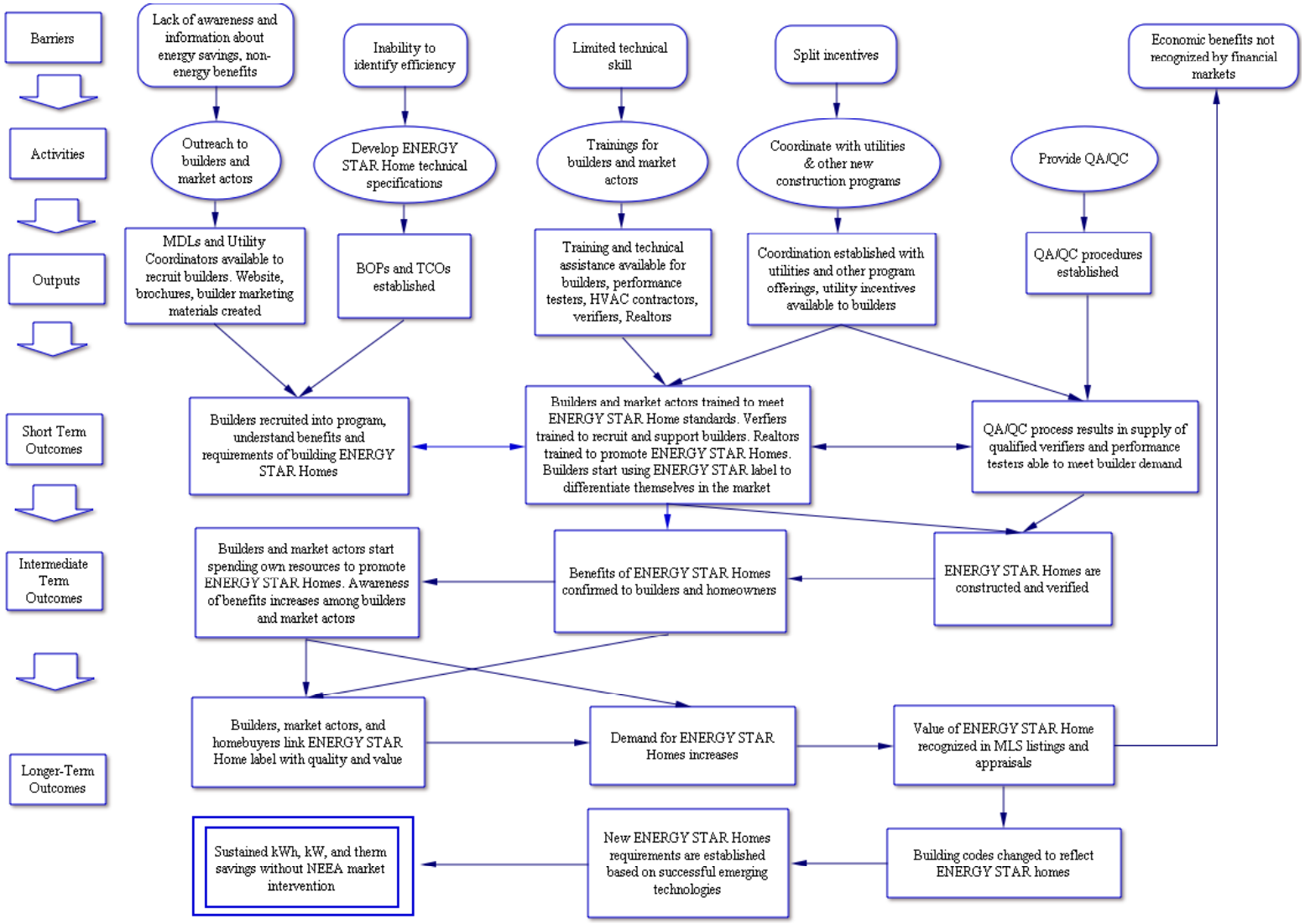
- Builders use the ENERGY STAR label to differentiate themselves in the marketplace;
- Consumers, builders, and other market actors link ENERGY STAR homes and home quality/value;
- Builders are convinced of the long-term cost savings from reductions in call-backs that should result from performance testing and quality assurance practices;
- Increased awareness by builders and subcontractors of key efficiency and quality issues;
- Other market actors and trade allies are spending their own resources marketing ENERGY STAR homes and matching NEEA investments;
- Builders and their subcontractors have expanded knowledge and skills necessary to treat key energy efficiency and quality issues, particularly performance testing of HVAC ducts and equipment; and
- Increasing recognition of the ENERGY STAR label and understanding what it means for new homes.

Long-term Indicators

- Multiple Listing Services include whether a home is certified ENERGY STAR in their listings;
- The value of efficiency upgrades is automatically included in the appraisal process;
- Private sector market actors replace NEEA as providers of program services;
- Residential energy codes are upgraded to incorporate some or all of the current ENERGY STAR requirements; and
- A new level of efficiency for ENERGY STAR is adopted based on successful demonstration of new and emerging technologies.

The short and long term indicators reflect the various activity-outcome linkages in the program logic, which is presented in Figure 1. Measurement and tracking of these indicators in the current and future evaluations provide an indication of the success of the overall program design.

Figure 1: Northwest ENERGY STAR Homes Logic Model



2. EVALUATION METHODOLOGY

This report evaluates the market progress of the Northwest ENERGY STAR Homes program. First, the report presents current market data on new home construction and program progress towards market share goals. A second major component of this report is a quantitative survey of regional homebuilders, which was conducted to understand current building practices and perceptions of the ENERGY STAR program and other homes programs. Finally, in-depth interviews were conducted with participants of the recently completed Lighting Fixtures Pilot Program.

2.1 MARKET CHARACTERIZATION AND PROGRESS

One of the primary tasks of the evaluation is to characterize the current new home construction market in the region. In particular, the objectives of the market characterization are to:

- Characterize the overall market for new homes in the region and the number of homebuilders so that the potential for the ENERGY STAR homes market can be assessed.

- Show current progress toward program goals, including the number of ENERGY STAR homes certified (and initiated) and the number of builders and verifiers participating in the program.

These tasks were addressed by utilizing secondary data sources such as the building industry publication *Construction Monitor* for information on new homes and the number of homebuilders in the region. Current participation data were obtained from the program-tracking database maintained by Fluid.

2.2 BUILDER SURVEY

Much of this evaluation focused on obtaining detailed information from builders via a quantitative survey. The sample included participating and non-participating builders in Idaho, Montana, Oregon, and Washington. In a departure from previous builder surveys, the survey also inquired about awareness of and participation in other "green" and energy efficient homes programs (e.g., Earth Advantage, Built Green) to develop a better understanding of the broad market for these types of homes. The survey collected information on:

- ENERGY STAR and other program awareness among builders

- Reasons for program participation and non-participation

- Current building practices relating to the ENERGY STAR home specifications
- Perceptions of the ENERGY STAR label and other program "brands", and what they signify for homes
- Experience with the Northwest ENERGY STAR Homes program

ECONorthwest and Itron developed the builder survey instrument and Itron fielded the survey. Questions are linked to specific market progress indicators set for the Northwest ENERGY STAR Homes program. Consequently, some survey responses are used to evaluate program progress on key progress metrics over the life of the program.

2.3 IN-DEPTH INTERVIEWS

This MPER also includes information about the Lighting Fixtures Pilot Program that was conducted by ICF International during 2007 and 2008, and which NEEA managed.[4] This program conducted four initiatives that were collectively designed to: increase the number of builder sales representatives that are comfortable selling ENERGY STAR fixtures, increase actual installations of energy efficient lighting fixtures, and increase stocking and promotion of efficient fixtures by showrooms and distributors. For this MPER, phone interviews were conducted with various market actors (e.g., a builder, lighting fixtures sales staff) that were involved in the initiatives to get feedback on their participation experience, potential market effects, and suggestions for future lighting program efforts.

The sample sizes for each interview group are shown in Table 1.[5] All interviews were conducted by phone from December of 2008 to February of 2009.

[4] Participating utilities were Puget Sound Energy, Seattle City Light, Snohomish County PUD and Tacoma Power. Bonneville Power Administration provided program funding.

[5] We also attempted to interview another advocate, however they did not respond to interview requests.

Table 1: In-Depth Interview Samples

Interview Group	Sample Size
Existing Lighting Fixtures "Advocates"	1
Lighting Fixtures Sales Representatives (to Builders)	7
Managers of Sales Representatives	2
Model Home Builder	1
Participating Utilities and NEEA	5
Total	**16**

3. MARKET CHARACTERIZATION

This section provides an overview of the residential construction market for Washington, Oregon, Idaho, and Montana through 2008 using the most current data available. Builder participation, program goals, and ENERGY STAR home construction data are also reviewed and provide context for the evaluation results presented in subsequent chapters.

3.1 RESIDENTIAL NEW CONSTRUCTION MARKET OVERVIEW

The decline in single-family home construction that began in 2006 continued to worsen in 2008. As Table 2 shows, total new housing construction in the program territory decreased by 42 percent in 2008 relative to 2007. Among the states, the greatest decline in 2008 was in Oregon (51 percent).

Table 2: Single Family New Construction by State – Census Data

Year	Washington	Oregon	Idaho	Montana	Total	Change from Prior Year
1998	28,644	16,936	10,277	1,485	57,342	
1999	28,111	16,595	10,497	1,607	56,810	-0.9%
2000	25,471	15,619	9,681	1,565	52,336	-7.9%
2001	26,736	16,323	9,738	1,790	54,587	4.3%
2002	30,239	17,413	10,845	2,050	60,547	10.9%
2003	33,091	17,875	12,601	2,340	65,907	8.9%
2004	36,153	20,728	15,106	3,423	75,410	14.4%
2005	41,407	23,840	19,172	3,459	87,878	16.4%
2006	35,020	20,486	15,627	3,636	74,769	-14.8%
2007	28,485	15,825	10,622	3,357	58,289	-22.0%
2008	17,335	7,793	6,550	2,043	33,721	-42.1%
Change From 2007 to 2008	**-39.1%**	**-50.8%**	**-38.3%**	**-39.1%**		

Source: US Census, Housing Units Authorized by Building Permits Report

Table 3 shows the number of builders that were issued single-family building permits in markets defined by the *Construction Monitor*. According to these data, all five markets had fewer active builders in 2008 compared to 2007. The smallest decrease in builders was in the Puget Sound market (eight percent), while the largest decrease was in the Southern Idaho market (37 percent). While the data do not cover all of the NEEA program territory, they do provide key information about building permits that is not obtainable from other sources.

Table 3: Number of Builders Issued Permits by Region (2008)

Area Name	2007	2008	Percent Change
Inland Empire (Eastern WA, Northern ID)	612	495	-18%
Portland / Vancouver / Salem	1,592	1,030	-35%
Puget Sound	1,890	1,735	-8%
Southern Idaho	1,461	919	-37%
Western Montana	1,027	686	-32%
Total	**6,582**	**4,865**	**-26%**

Source: *Construction Monitor, data through November 2008.*

According to the *Construction Monitor* data, the vast majority of builders that were issued permits (87 percent) were small builders constructing four or fewer homes a year (see Table 4). These builders accounted for 38 percent of the total homes built in 2008. In contrast, there were just 7 large builders (constructing 100 homes or more) in the

program area, which comprised less than one percent of the overall builder population. This small group accounted for 12 percent of the total homes built in 2008. Overall, the distribution of builders, based on construction volume (e.g., small, large), was essentially the same as in 2007, although in 2007 large builders built relatively more homes (25 percent of total homes built).

Table 4: Builders by Region and Volume (2008)

Region	Number of Units Built Annually					
	1-4	5-9	10-24	25-99	100+	Total
Inland Empire	449	25	13	7	1	495
Portland/ Vancouver/ Salem	869	83	50	25	3	1,030
Puget Sound	1,479	142	84	29	1	1,735
Southern Idaho	817	57	38	5	2	919
Western Montana	612	50	20	4	0	686
Total	**4,226**	**357**	**205**	**70**	**7**	**4,865**
Percentage of Grand Total	**87%**	**7%**	**4%**	**1%**	**<1%**	

Source: *Construction Monitor, data through November 2008.*

3.2 PROGRESS ASSESSMENT

As shown in Table 5, 326 new builders contractually agreed to join the program in 2008, which is nearly identical to the 327 who joined in 2007 when the home construction market was somewhat stronger. Builder recruitment was particularly strong in Montana, which added 53 new builders in 2008 compared to 16 builders in 2007; the other states all had modest declines in builder recruitment. Across all four states combined, 21 percent of the total participating builders joined the program during 2008.

Table 5: Participating Builders – New and Cumulative[6]

State	2008 New Participating Builders		Cumulative Total of Participating Builders		
	Small-Volume Builders (<100 homes)	Large-Volume Builders (100+ homes)	Small-Volume Builders (<100 homes)	Large-Volume Builders (100+ homes)	2008 Participating Builders as a Percentage of Cumulative Total
WA	94	0	420	10	22%
OR	119	0	652	2	18%
ID	60	0	354	2	17%
MT	53	0	112	0	47%
Total	**326**	**0**	**1,538**	**14**	**21%**

Source: *ENERGY STAR Database.* Data as of January 21, 2009.

Overall, 51 percent of the participating builders in the four states have yet to complete an ENERGY STAR home (see Table 6). This is in part due to the large number of builders who joined the program in 2008, and who have not had sufficient time to get fully integrated in the program and complete a project. In addition, the slow housing market (with an abundance of unsold existing homes and increasingly stringent mortgage requirements) has prevented some builders that joined in 2007 from building new homes. Builders who have completed an ENERGY STAR home have mostly built between one and four ENERGY STAR homes.

Table 6: Cumulative Number of Participating Builders by State and Number of Completed ENERGY STAR Homes

State	Number of Total ENERGY STAR Units Completed						
	0	1 to 4	5 to 9	10 to 24	25 to 99	100 or more	Total Number of Builders
WA	233	133	20	17	17	10	430
OR	361	219	35	22	15	2	654
ID	139	158	28	23	6	2	356
MT	55	48	5	3	1	0	112
Total	**788**	**558**	**88**	**65**	**39**	**14**	**1,552**

Source: *ENERGY STAR Database.* Data as of January 21, 2009.

[6] "Participating" builders were identified by program staff. While EPA generally requires that participating builders should have constructed an ENERGY STAR home in the last five quarters, the program has relaxed this requirement due to the significant downturn in the home construction market.

Table 7 shows the cumulative number of completed ENERGY STAR homes by builder volume group, and highlights the importance of getting large builders (builders who have built 100 or more homes) to participate. Builders that have completed at least 100 ENERGY STAR homes (less than one percent of program builders) account for 49 percent of total completed ENERGY STAR homes.

Table 7: Cumulative Number of ENERGY STAR Homes Completed by Builder Volume

Number of ENERGY STAR Homes Completed	Cumulative Completed Homes	Percent of Total
1 to 4	936	10%
5 to 9	586	7%
10 to 24	1,026	11%
25 to 99	1,980	22%
100 or more	4,419	49%
Total	**8,947**	**100%**

Source: *ENERGY STAR Database*. Data as of January 21, 2009.

Table 8 lists the number of ENERGY STAR homes certified and initiated in 2008, by state. "Certified" homes refer to those that have been constructed and certified as ENERGY STAR-compliant by the program. "Initiated" homes are those that have started construction but are not yet completed, and have their status in the ENERGY STAR Northwest Homes Database listed as pending. [7] Based on the 2,681 certified homes completed in 2008, the program was able to achieve an 8 percent market share, which is a significant increase over the 4.6 percent market share for 2007.[8]

The program's overall performance relies heavily on Washington, where about half of all 2008 homes were built. Washington achieved a market share of 7.7 percent in 2008, which is a strong improvement over 2007 when market share was 4.7 percent. Notably, Oregon's market share doubled from 5.8 percent to 11.7 percent between 2007 and 2008. The market shares of Idaho and Montana also increased between 2007 and 2008, although these states continue to lag behind Oregon and Washington.

[7] Homes outside of the Energy Trust of Oregon territory are not required to be registered in the database before completion, though many are. As a result, the actual number of initiated homes may be larger than what is reported in the table.

[8] For 2008 the program's market share goal was 9 percent of the four-state market. In 2007 the goal was 7 percent.

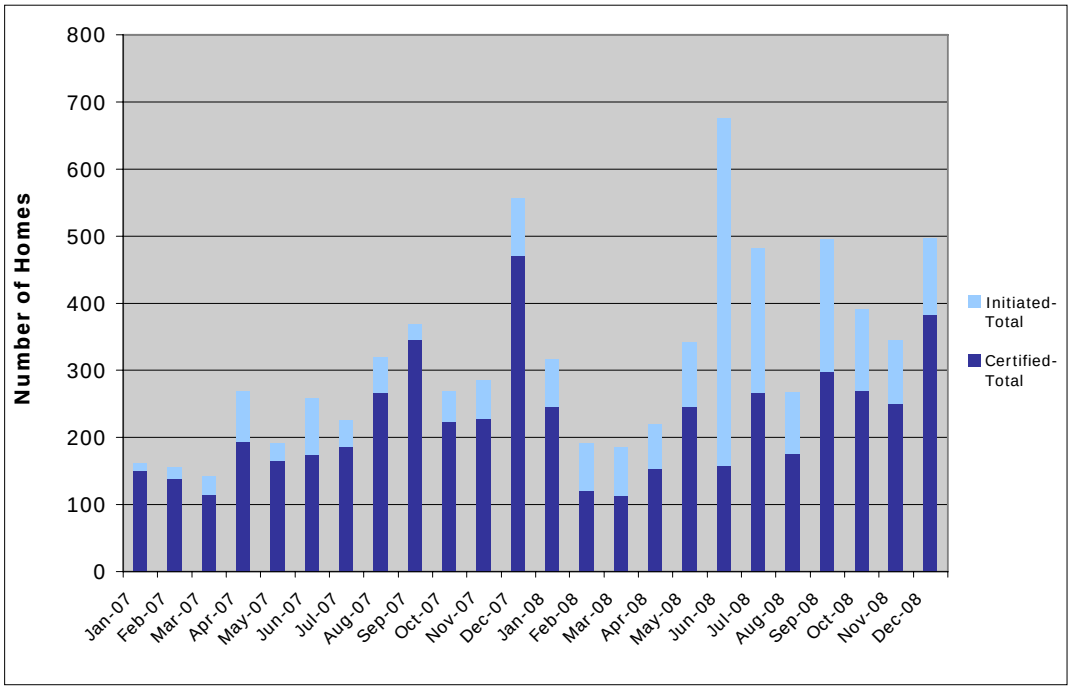
Table 8: 2008 ENERGY STAR Home Construction Status

State	ENERGY STAR Homes Certified	ENERGY STAR Homes Initiated	2008 New Homes	Market Share of ENERGY STAR Certified Homes
WA	1,333	543	17,335	7.7%
OR	908	835	7,793	11.7%
ID	360	246	6,550	5.5%
MT	80	32	2,043	3.9%
Total	**2,681**	**1,656**	**33,721**	**8.0%**

Source: *ENERGY STAR Database*. Data as of January 21, 2009.

Figure 2 shows the monthly totals of homes that were initiated and certified from January 2007 through December 2008. In 2007, the number of certified homes increased gradually through September, and was followed by a large increase in December. Certifications in the first quarter of 2008 then dropped markedly from December 2007 and then began to gradually increase in the last half of the year. Notably, the number of initiated homes spiked dramatically in June 2008, due to the impending July code change in Oregon and due to Idaho's state energy office batch entering homes that had started construction earlier. Monthly program activity by state is provided in Appendix E.

Figure 2. Certified and Initiated Homes (Monthly Totals)



Source: *ENERGY STAR Database*. Data as of January 21, 2009.

Overall, 33 new verifiers joined the program in 2008 compared to 59 in 2007, when the program made a concerted effort to recruit and train new verifiers. Most of the growth in verifiers was in Washington, where new verifiers were added to a growing pool of active verifiers. In Idaho, however, new verifiers represent a greater share of total participating verifiers, reflecting higher turnover in the state and efforts by Idaho Office of Energy Resources to expand the pool of trained verifiers.[9] In addition, 70 new performance testers joined the program in 2008 compared to 82 in 2007. Oregon had the largest increase in new performance testers (29), with Washington not far behind. As with verifiers, roughly half of the program's performance testers in Idaho are fairly new to the program.[10] Table 9 summarizes the number of verifiers and performance testers participating in the program during 2008.

Table 9: 2008 Participating Verifiers and Performance Testers

	Verifiers		Performance Testers	
State	**New 2008**	**Cumulative**	**New 2008**	**Cumulative**
WA	19	91	25	231
OR	1	64	29	243
ID	6	15	11	19
MT	7	31	5	35
Total	**33**	**201**	**70**	**528**

Source: *ENERGY STAR Database*. Data as of February 25, 2009.

[9] In contrast to the other states, in Idaho a small number of verifiers account for a large share of verified homes. Verifiers in smaller markets sometimes struggle to maintain adequate business volumes, and go out of business.

[10] In Idaho verifiers typically do their own performance testing, which explains the relatively low number of performance testers in the state.

4. FINDINGS

4.1 BUILDERS PHONE SURVEY

Methodology and Sample Composition

A total of 184 builder phone surveys were completed during January and February of 2009. The phone survey sample was drawn from the *Construction Monitor* list of builders, and sample quotas were set by state and 2008 builder construction volume to ensure that the sample represented the population of builders. Notably, past evaluations have emphasized large builders in the survey samples, since these builders are important for the long-term success of the program. In 2009, however, there were very few large builders in the regional builder population (7, based on 2008 construction volumes), and only one of them completed a survey.

Selected builder survey results are presented in this section. In most cases, the results are weighted to the actual builder population to reduce potential bias. Some results are reported unweighted, however, such as questions relating to program satisfaction.

In addition to the current builder survey results, results from the previous builder survey conducted for the 2007 MPER 4 Report are presented for some questions to assess if and how builder perceptions have changed over the past two years. The wording for these questions was left unchanged between the 2007 and 2009 surveys so that the results can be directly compared. For tables where differences can be directly compared, results that are statistically different between the two surveys are highlighted.

The final builder phone survey sample by construction volume is shown in Table 10.

Table 10: Builder Survey Sample by Construction Volume

State	Number of Units Built (2008)					
	2-4	**5-9**	**10-24**	**25-99**	**100+**	**Total**
WA	47	17	12	4	0	80
OR	21	6	6	3	0	36
ID	28	6	6	2	1	43
MT	16	5	3	1	0	25
Total	**112**	**34**	**27**	**10**	**1**	**184**

Table 11 reflects the distribution of the 2009 and 2007 survey samples based on several builder characteristics. For the recent survey, participants in the ENERGY STAR Homes program comprised 19 percent of the sample, which is comparable to the 2007 survey. A large share of the builders we talked to (50 percent) stated that at least 75 percent of the homes they construct are "spec" homes that follow a pre-set design, which is similar to the earlier survey. Sixty-seven percent of the builders build homes with an average price

of over $250,000. Compared to 2007, more builders are building homes that cost less than $250,000, due to the weak housing market.

Table 11: Builder Survey Sample Characteristics

	ES Program Participants		Percent Production Homes (Non-Custom Homes)			Average Home Price[11]				
Survey Year	Yes	No	0-24%	25-74%	75%+	< $250K	$250-349K	$350-499K	$500-699K	$700K+
2009	19%	81%	28%	22%	50%	32%	17%	21%	11%	18%
2007	14%	86%	27%	31%	43%	19%		81%		

Q8. Do you currently participate in the ENERGY STAR Homes program? Q5. What percent of your homes are "spec built or have been almost completely built without the customer's direct involvement? Q4. What is the approximate price range of the homes you build?

Home Programs Awareness, Participation and Perceptions

Builders were asked to name any green or energy efficient home programs they are aware of, and were then directly asked about the five programs shown in Table 12 if not already mentioned.[12] As shown in the table, the ENERGY STAR Homes program had the highest overall awareness (65 percent) and the Earth Advantage program, which currently operates only in Oregon, had the lowest level of awareness (22 percent).[13] In Oregon, Earth Advantage had the highest level of awareness (75 percent), while in Washington Built Green was the most widely recognized homes program (79 percent).

In 2007, 69 percent of surveyed builders were aware of the ENERGY STAR label for homes; this is statistically similar to the current level of awareness.

.

[11] The 2007 survey did not tabulate homes using the 2009 price scheme, so that data could be compared to the 2004 survey (when prices were generally lower).

[12] Other programs mentioned by few respondents were: federal tax credit homes, Environments for Living, local utility programs and Super Good Cents.

[13] Some builders with headquarters in Washington are also building Earth Advantage homes in Oregon.

Table 12: Program Awareness by State

State	ENERGY STAR Percent Aware (N = 184) Weighted to Builder Population	Earth Advantage Percent Aware (N = 184) Weighted to Builder Population	Built Green Percent Aware (N = 184) Weighted to Builder Population	LEED Percent Aware (N = 184) Weighted to Builder Population	NAHB Green Percent Aware (N = 184) Weighted to Builder Population
Idaho (N = 43)	70%	5%	51%	42%	49%
Montana (N = 25)	68%	0%	35%	46%	64%
Oregon (N = 36)	66%	75%	31%	47%	37%
Washington (N = 80)	60%	15%	79%	49%	61%
Total	**65%**	**22%**	**57%**	**47%**	**54%**

Q8 and Q9. Please tell me the names of any green or energy efficient home building programs you are aware of. Have you ever heard of….?

Twenty-nine percent of the builders that were aware of the ENERGY STAR Homes program had elected to participate, and among the states, builders in Idaho were most inclined to join the program (45 percent of aware builders). In Washington, the Built Green program has a relatively high recruitment rate of 35 percent. Participation in the LEED and NAHB Green Building programs is very low, and is concentrated in Montana and Washington. Table 13 shows the participation patterns for all programs by state.

Table 13: Program Participation by State

State (N's vary by program)	ENERGY STAR Percent Participating (N = 115) Weighted to Builder Population	Earth Advantage Percent Participating (N = 41) Weighted to Builder Population	Built Green Percent Participating (N = 105) Weighted to Builder Population	LEED Percent Participating (N = 86) Weighted to Builder Population	NAHB Green Percent Participating (N = 99) Weighted to Builder Population
Idaho	45%	0%	0%	0%	0%
Montana	31%	0%	0%	8%	13%
Oregon	22%	11%	0%	0%	0%
Washington	21%	8%	35%	13%	4%
Total	**29%**	**10%**	**21%**	**7%**	**4%**

Q10. (If aware of PROGRAM) Do you currently participate in the PROGRAM?

The most commonly mentioned program benefit to green/energy efficient homebuilders was marketing and product differentiation (23 to 47 percent– see Appendix H for detailed results by program). Comparing the 2009 and 2007 responses for the ENERGY STAR Homes program (see Table 14), statistically fewer builders mentioned (general) marketing/product differentiation as a builder benefit in 2009. However, they were more inclined to mention other, more *specific* benefits, such as higher home quality (14 percent), environmental benefits (10 percent) and energy efficiency (10 percent), all of which would presumably confer product differentiation advantages (as evidenced by faster homes sales, which was also mentioned more often). Importantly, in 2009 only 5 percent of ENERGY STAR builders could not name any benefit from program participation (this percentage ranged from 18 to 33 percent for the other programs). That said, 17 percent of builders aware of the ENERGY STAR program still perceive no potential benefits to them.

Table 14: Benefits from ENERGY STAR Homes to Builder

	2009 (N=115)	2007 (N=145)
Benefit	**Weighted to Builder Population**	**Weighted to Builder Population**
Marketing/product differentiation	38%	60%
No benefit	17%	17%
Higher quality	14%	5%
Sells faster	13%	3%
Environmental/sustainability/societal	10%	0%
Energy efficiency	10%	0%
Higher price	5%	1%
Rebate from utility	7%	12%
Reduced callbacks	2%	0%
Cost savings	6%	0%
Program recognition	8%	0%
Consumer demand	5%	0%
Promotion assistance	0%	1%
Other	8%	0%
Don't know	5%	11%

Q21 and Q22. (If aware of PROGRAM) To the best of your knowledge, what do you believe are the primary benefits to the builder, if any, of building ENERGY STAR homes? Is there another important benefit to the builder of building ENERGY STAR homes?
Note: Shading signifies that the responses from the 2007 and 2009 surveys are significantly different at the 90 percent confidence level.

When asked to comment on the veracity of a series of attitudinal statements about ENERGY STAR homes, builders most strongly agreed that the ENERGY STAR label

makes homes more marketable, with 72 percent of the respondents either strongly or somewhat agreeing with this statement (see Table 15). In addition, respondents tended to agree with the statements that ENERGY STAR homes tend to be higher quality overall and enjoy a competitive market advantage compared with standard homes. These results are consistent with the key program benefits listed in Table 14. Builders had mixed opinions on whether ENERGY STAR homes tend to sell for a higher price than standard homes, with 44 percent either strongly or somewhat agreeing and 37 percent somewhat or strongly disagreeing with this statement. This is a significant difference from 2007, and may reflect that homebuyers are less willing to pay "premium" home prices under current economic conditions. As in 2007, builders tended to disagree with the statements that homebuyers ask for ENERGY STAR homes and ENERGY STAR homes sell faster than standard homes. Taken together, these results indicate that builders generally do see value in the ENERGY STAR label, though they don't always view it as something that will help them sell their homes quicker.

Table 15: Attitudes About ENERGY STAR Label in the Marketplace

Statement	Strongly Agree (1)	Somewhat Agree (2)	Neither (3)	Somewhat Disagree (4)	Strongly Disagree (5)	Don't know	Mean - 2009	Mean - 2007
The ENERGY STAR label makes homes more marketable to homebuyers	29%	43%	7%	10%	6%	5%	2.2	2.3
ENERGY STAR certified homes sell for a higher price than other non-green homes	15%	29%	12%	18%	19%	7%	3.0	2.6
Builders of ENERGY STAR certified homes enjoy a competitive advantage in the market	16%	39%	7%	17%	14%	6%	2.7	2.8
ENERGY STAR certified homes tend to be higher quality overall	25%	26%	12%	18%	15%	5%	2.7	3.0
ENERGY STAR certified homes sell faster than other non-green homes	9%	22%	16%	26%	15%	13%	3.2	3.2
Homebuyers ask for ENERGY STAR certified homes	7%	20%	12%	28%	25%	7%	3.5	3.7
Homes built to code are energy efficient enough	14%	41%	3%	17%	26%	0%	3.0	3.1

Q23. Please tell me how much you agree or disagree with each of the following statements.
(Sample Size: 2009 = 115, 2007=144, weighted to builder population).

Note: Shading signifies that the responses from the 2007 and 2009 surveys are significantly different at the 90 percent confidence level

Table 16 shows the average 2008 and 2009 (expected) home construction volumes by program, and reveals that green/energy efficient home construction is not expected to

change markedly as the housing market worsens. Across all the programs, most participating builders expected to build at least one green or energy efficient home in 2009, and two ENERGY STAR and Built Green builders expected to build many more homes (see details in Appendix H). The exception is the LEED program, where four of six program participants did not expect to build any homes in 2009, because the market is too slow and/or won't support the increased prices of these homes. Notably, all Earth Advantage homes constructed in 2009 will also be certified as ENERGY STAR.

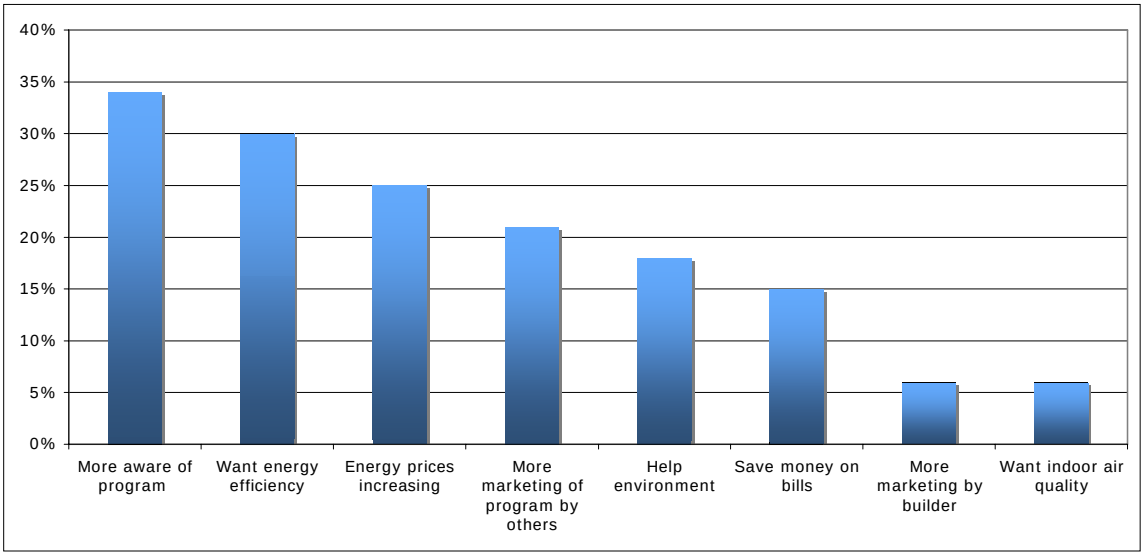
Table 16: 2008 Actual and 2009 Expected Home Construction Volumes

	ENERGY STAR (N=35)	Earth Advantage (N=5)	Built Green (N=23)	LEED (N=6)	NAHB Green (N=4)
Response	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**
2008 Homes – Average	17	24	14	<1	10
2009 Homes – Average	19	29	26	<1	15

Q11 and Q12. How many PROGRAM homes did you build in 2008? How many PROGRAM homes do you plan to build in 2009?

Twelve of the 35 ENERGY STAR program builders reported that they had received more inquiries from homebuyers in the past year than the previous year; half of these builders are located in Idaho. As shown in Figure 3, the primary (expected) reasons for this are increased program promotion and awareness, and a desire to acquire energy efficiency in an environment of rising energy prices.

Figure 3. Reasons for More ENERGY STAR Homes Inquiries (N = 12)



Q16. Why do you think more homebuyers have inquired with you about ENERGY STAR homes in the past year?

Builders were asked to identify the key reasons they do not participate in any green/energy efficient homes programs they are aware of. The two main reasons given for not participating in the ENERGY STAR Homes program were increased home prices and lack of program understanding (both 28 percent). A relatively large share of builders also think they already build to ENERGY STAR standards (17 percent) and do not need the label. Builders in Idaho were most likely to be sensitive to increased home prices, believe they have a good understanding of the program, and along with Montana builders, believe they are already building to program requirements. Lack of program understanding was greatest among builders in Washington.

Increased home price was a consistent participation barrier for all green building programs, with LEED homes being least able to recover the higher costs. Lack of program understanding was greatest for the Built Green program (42 percent) and NAHB Green program (43 percent). Appendix H shows detailed reasons for program non-participation.

Building Practices / Components

When asked to name the most beneficial feature of program homes, ENERGY STAR builders most often mentioned overall insulation (32 percent), followed by construction tightness and high efficiency heating/cooling (both 23 percent). Twenty-one percent of ENERGY STAR builders also recognized that these home components lead to energy bill savings. Appendix H includes more detailed findings on perceived home benefits for all of the programs.

Table 17 shows the percentage of builders that have duct testing performed on their homes. Of the respondents from the 2009 survey, 26 percent stated that they have duct tests performed on at least some of their homes, which is significantly higher than the 2007 survey results (18 percent). In 2009 builders were also less likely to be unaware of duct testing (30 percent compared to 39 percent), and this result is also statistically significant. Lastly, builders that conduct tests on non-ENERGY STAR homes said that on average, 59 percent of these homes are duct tested, which is statistically unchanged from the 2007 results (58 percent).

Table 17: Duct Testing Performed

	2009 (N=184)	2007 (N=200)
Testing Performed	**Weighted to Builder Population**	**Weighted to Builder Population**
Yes	16%	9%
Yes – for ENERGY STAR only	3%	5%
Sometimes	7%	4%
No	44%	43%
Don't know	1%	0%
Not aware of duct testing	30%	39%
Total	**100%**	**100%**

Q36 and Q37. Are you familiar with duct tightness testing and duct sealing for new homes? Do you have duct tests performed on the homes you build?

Note: Shading signifies that the responses from the 2007 and 2009 surveys are significantly different at the 90 percent confidence level

Builder perceptions about the benefits of duct testing are shown in Table 18. The most commonly cited benefit was that duct testing provides verification that the HVAC is installed correctly (36 percent), although this percentage decreased significantly from the 2007 survey (61 percent). At the same time, no respondents in 2009 said that duct testing provides no benefits, and 2009 builders were significantly more inclined to mention higher customer satisfaction (10 percent) and improved marketing (12 percent) - which are contingent on proper installation - as builder benefits. This suggests that builders are increasingly associating proper duct function with increased value to homebuyers.

The majority of builders that do duct testing (83 percent) had experienced no problems. This was also the case in the 2007 survey.

Table 18: Builder Benefits from Duct Testing

	2009 (N=48)	2007 (N=44)
Reason	**Weighted to Builder Population**	**Weighted to Builder Population**
Verification HVAC correct	36%	61%
Verification that ducts don't leak	34%	36%
Reduced callbacks	16%	24%
No benefit	0%	21%
Catch problems before customer	5%	14%
Marketing benefit	12%	0%
Beneficial to customer satisfaction	10%	0%
Other	11%	0%
Don't know	16%	11%

Q41. What do you view as the benefits to the builder, if any, of duct testing and sealing?

Note: Shading signifies that the responses from the 2007 and 2009 surveys are significantly different at the 90 percent confidence level

The most common reason for not doing ducts tests was the (high) cost of testing, which was mentioned significantly more often than in 2007 (49 percent compared to 30 percent, see Table 19). In 2009 no builders stated that duct testing is exclusively a contractor decision, which is significantly less than the 12 percent that said this in 2007. This suggests that builders are increasingly assuming responsibility for the overall performance of home HVAC systems. Notably, 10 percent of the respondents said they do not install ducts at all, which is significantly higher than the percentage that said this in 2007 (zero). Relatively few builders said they lack certified testers in their area or their contractors do not perform duct tests (4 percent each).

Table 19: Reasons For Not Having Ducts Tested

	2009 (N=82)	2007 (N=88)
Reason	**Weighted to Builder Population**	**Weighted to Builder Population**
Too expensive	49%	30%
Not required	27%	23%
Ducts not present	10%	0%
HVAC / contractor decision	0%	12%
Customers don't consider valuable	9%	10%
Not worth hassle	9%	9%
Time consuming	0%	6%
No certified testers in my area	4%	0%
Contractors don't provide service	4%	0%
Other	9%	7%
Don't know	4%	6%

Q42. (Of those aware of duct testing) Why don't you have the ducts tested in the homes you build?

Note: Shading signifies that the responses from the 2007 and 2009 surveys are significantly different at the 90 percent confidence level

Overall, 56 percent of the builders said they currently locate ducts inside conditioned spaces, and as shown in Table 20, this percentage is greatest in Montana (80 percent) and lowest in Oregon (39 percent). Among the builders that do *not* currently locate ducts in conditioned spaces, or do not know, 18 percent plan to do this in the future (detailed results by state not shown).

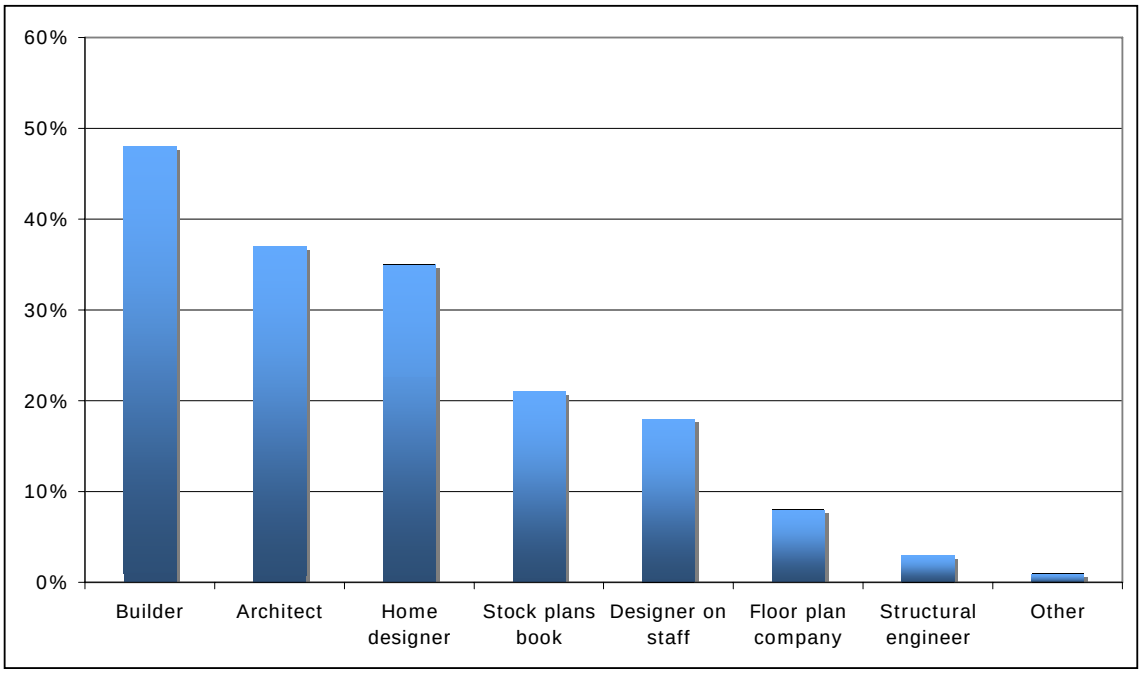
Table 20: Ducts Inside Conditioned Spaces, by State

	Idaho (N=43)	Montana (N=25)	Oregon (N=36)	Washington (N=80)	Total (N= 184)
Response	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**
Yes	57%	80%	39%	55%	56%
No	41%	12%	53%	28%	33%
Don't Know	2%	8%	8%	18%	11%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Q44. Do you currently locate ducts inside conditioned spaces?

Figure 4 illustrates the types of design professionals that the builders are using to design and change their home layouts. The most frequently used designers are the builders themselves (48 percent), architects (37 percent) and other home designers (35 percent). The majority of builders change their designs each year or more frequently (74 percent), while another five percent only build custom homes with unique designs (see Appendix H for detailed results).

Figure 4. Home Designers Utilized (N = 184)



Q46. When designing the layout of your homes, which of the following professionals do you typically work with?

Builder Attitudes and Marketing Practices

Builders that participate in green/energy efficient homes programs were asked if they promote the fact that the homes they build are program-certified. As shown in Table 21, 66 percent of ENERGY STAR builders stated that they do promote the fact that their homes are ENERGY STAR. This percentage is not statistically different than the percentage that said this in 2007 (79 percent).

Table 21: Promotion of Program Homes

	ENERGY STAR (N=35)	Earth Advantage (N=5)	Built Green (N=23)	LEED (N=6)	NAHB Green (N=4)
Response	**Unweighted**	**Unweighted**	**Unweighted**	**Unweighted**	**Unweighted**
Yes	66%	60%	65%	33%	25%
No	34%	40%	35%	50%	75%
Don't know	0%	0%	0%	17%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Q48. Do you actively promote the fact that your homes are PROGRAM homes?

Table 22 shows which home benefits builders promote to homebuyers. ENERGY STAR builders were most likely to promote energy savings (83 percent), followed by overall home construction (22 percent) and better air quality (17 percent).

Table 22: Home Benefits Promoted

	ENERGY STAR (N=23)	Earth Advantage (N=3)	Built Green (N=15)	LEED (N=2)	NAHB Green (N=1)
Benefit	**Unweighted**	**Unweighted**	**Unweighted**	**Unweighted**	**Unweighted**
Energy savings	83%	100%	33%	50%	0%
Overall home construction	22%	33%	33%	100%	100%
Better air quality	17%	67%	27%	50%	0%
Sustainable/recycled materials	13%	67%	33%	50%	0%
Increased comfort	9%	33%	13%	0%	0%
Environmental stewardship	9%	33%	13%	0%	0%
Water conservation	4%	33%	27%	0%	0%
Third party certification	4%	33%	13%	50%	0%
No specific benefit, just label	17%	0%	13%	0%	0%
Other	4%	0%	20%	50%	0%

Q49. What specific benefits, if any, do you promote about your PROGRAM homes?

Of the builders that promote the fact that their homes are ENERGY STAR, only 30 percent are exclusively using their own resources, which is significantly less than those surveyed in 2007 (55 percent). According to the PMC, this is due to the economic recession, which is causing many building companies to reduce overall marketing expenditures and also seek advertising partners. In this regard, the program's consumer marketing campaign was initiated at an opportune time, and leveraged significant funding from program builders in 2008.

Table 23: Resources Used to Promote ENERGY STAR Homes

	2009 (N=23)	2007 (N=22)
Funding Source	**Unweighted**	**Unweighted**
No one else	30%	55%
Receive co-op marketing funds from program	30%	14%
Share expenses with utility or other agency	26%	36%
Other	9%	5%
Don't know	4%	0%

Q50. From whom do you receive financial assistance for marketing ENERGY STAR components of your homes to homebuyers?

Note: Shading signifies that the responses from the 2007 and 2009 surveys are significantly different at the 90 percent confidence level

ENERGY STAR builders were asked if they agreed or disagreed with a series of statements about the program label, and the results are tabulated in Table 24. Builders most strongly agreed with the statements *homebuyers link the ENERGY STAR label with home comfort,* and *the certification process does not delay home construction,* with 65 percent or more of respondents either strongly or somewhat agreeing with these statements. Respondents also generally agreed that *homebuyers link the ENERGY STAR label with home value,* although the overall mean score was significantly higher than the 2007 mean score.

Regarding customer understanding of the ENERGY STAR homes, respondents tended to agree with the statement *customers understand the benefits of the ENERGY STAR label,* though they disagreed with the statement *customers understand the value of duct testing and duct sealing.*

Table 24: Participant Attitudes About ENERGY STAR Label

Statement	Strongly Agree (1)	Somewhat Agree (2)	Neither (3)	Somewhat Disagree (4)	Strongly Disagree (5)	Don't know	Mean - 2009	Mean - 2007
The certification process for ENERGY STAR homes does not delay home construction	40%	31%	3%	17%	6%	3%	2.2	2.2
Homebuyers link the ENERGY STAR label with home value	26%	34%	11%	17%	11%	0%	2.5	1.8
Homebuyers link the ENERGY STAR label with home comfort	34%	31%	11%	11%	11%	0%	2.3	1.9
Homebuyers understand the benefits of the ENERGY STAR label	20%	43%	9%	20%	9%	0%	2.5	2.3
Homebuyers understand the value of duct testing and duct sealing	6%	34%	6%	23%	26%	6%	3.3	3.6

Q52. Please tell me how much you agree or disagree with each of the following statements.
(Sample Size: 2009 = 35, 2007=28, unweighted).

Note: Shading signifies that the responses from the 2007 and 2009 surveys are significantly different at the 90 percent confidence level

Table 25 shows the mean scores for these same statements as they pertain to the other green and energy efficient homes programs. Overall, the ENERGY STAR builders gave more positive program feedback than the Earth Advantage and LEED builders, while Built Green builders tended to give similarly positive ratings. Notably, NAHB Green builders were most likely to perceive that homebuyers link their homes with value and comfort, although the certification process is more cumbersome. That said, it is difficult to draw strong conclusions about these findings due to the low sample sizes.

Table 25: Participant Attitudes About Other Home Program Labels

Statement	ENERGY STAR - Mean (N = 35)	Earth Advantage - Mean (N = 5)	Built Green - Mean (N = 23)	LEED - Mean (N = 6)	NAHB Green - Mean (N = 4)
The certification process for PROGRAM homes does not delay home construction	2.2	3.0	2.7	3.8	3.5
Homebuyers link the PROGRAM label with home value	2.5	3.5	2.3	3.2	1.8
Homebuyers link the PROGRAM label with home comfort	2.3	3.5	2.8	4.2	2.3
Homebuyers understand the benefits of the PROGRAM label	2.5	4.0	2.7	3.6	2.3
Homebuyers understand the value of duct testing and duct sealing	3.3	4.5	3.7	3.3	3.8

Q52. Please tell me how much you agree or disagree with each of the following statements.

ENERGY STAR builders were also asked to rate their satisfaction with different aspects of the program, as shown in Table 26. Overall, the results are similar to the 2007 survey results. Respondents were quite satisfied with the program generally, with 59 percent indicating that they are either somewhat or extremely satisfied with the program overall, and only 3 percent indicating that they are dissatisfied. Respondents also indicated that they were satisfied with other aspects of the program, such as ease of participation, performance testing, and the responsiveness of program staff. Respondents were more neutral about the amount of paperwork required to participate, with 41 percent indicating that they are neither satisfied nor dissatisfied with this component. Respondents also tended to be more split on the quality of the marketing materials and the amount of co-op advertising provided by the program.

Program aspects that builders were most dissatisfied with were the amount of co-op advertising support (38 percent) and the certification and verification process (29 percent). Among the states, Washington builders were most satisfied with the certification process (mean score of 4.2) while Montana builders were least satisfied with the home certification/verification processes (mean score of 2.3).

Table 26: Participant Satisfaction with ENERGY STAR Program Aspects

Program component	Extremely Dissatisfied (1)	Somewhat Dissatisfied (2)	Neither (3)	Somewhat Satisfied (4)	Extremely Satisfied (5)	Don't know	Mean - 2009	Mean - 2007
The program overall	0%	3%	38%	32%	27%	0%	3.8	4.0
Ease of participation	3%	6%	27%	32%	32%	0%	3.9	4.0
Performance (duct) testing	4%	8%	19%	30%	41%	0%	4.0	4.0
Certification and verification process	13%	16%	16%	28%	25%	3%	3.4	3.8
Responsiveness of program staff	6%	6%	19%	38%	28%	3%	3.8	3.7
Cost of participation	3%	6%	33%	39%	15%	3%	3.6	3.6
Amount of paperwork required to participate	6%	9%	41%	28%	16%	0%	3.4	3.4
Quality of marketing support materials	0%	15%	42%	30%	9%	3%	3.3	3.4
Amount of co-op advertising support	7%	31%	38%	24%	0%	0%	2.8	2.9

Q 51. I am going to ask you to rate your satisfaction with each of the following aspects of the ENERGY STAR homes program… (Sample Size: 2009 = 35, 2007=28, unweighted).

Note: Shading signifies that the responses from the 2007 and 2009 surveys are significantly different at the 90 percent confidence level

Table 27 shows the mean scores for these same aspects for the other green and energy efficient homes programs. Across all the programs, the various elements generally follow the same pattern as the ENERGY STAR Homes program regarding higher and lower rated elements (e.g., cost of participation received middle scores, and the amount of advertising support received lower scores). The ENERGY STAR program received better ratings for the overall program, except for Earth Advantage, which also rated strongly on the certification process. Similarly, ease of participation rated relatively higher for ENERGY STAR, while the NAHB Green program also rates highly. All of the other programs except for LEED are also perceived to have responsive program staff.

Table 27: Participant Satisfaction with Other Home Program Aspects

Program component	ENERGY STAR - Mean (N = 35)	Earth Advantage - Mean (N = 5)	Built Green - Mean (N = 23)	LEED - Mean (N = 6)	NAHB Green - Mean (N =4)
The program overall	3.8	4.0	3.4	3.5	3.3
Ease of participation	3.9	3.0	3.7	3.2	4.0
Performance (duct) testing	4.0	3.7	3.2	4.0	3.0
Certification and verification process	3.4	4.0	3.2	3.0	3.5
Responsiveness of program staff	3.8	4.5	4.0	3.0	4.0
Cost of participation	3.6	3.3	3.7	2.8	3.0
Amount of paperwork required to participate	3.4	3.0	3.1	2.8	2.0
Quality of marketing support materials	3.3	3.5	3.3	2.7	2.0
Amount of co-op advertising support	2.8	2.7	2.6	2.3	1.0

Q 51. I am going to ask you to rate your satisfaction with each of the following aspects of the PROGRAM…

ENERGY STAR builders were also asked what aspects of the program they like the most and least. As shown in Table 28, homes marketability and brand name recognition (i.e., product differentiation) were two of the most valued aspects (26 and 11 percent, respectively).

Table 28: Most Liked Aspects of the ENERGY STAR Program

	2009 (N=35)
Aspect	**Unweighted**
Marketing/marketability	26%
Energy efficiency	14%
Brand name recognition	11%
Duct testing	6%
Sustainability/environmental/societal benefits	9%
Rebates	6%
Verification of energy efficient measures	9%
Flexibility/ease of program	3%
Other	9%
Don't know	9%

Q53. What single aspect of the ENERGY STAR program do you like the most?

As shown in Table 29, the two specific program aspects that were least liked by ENERGY STAR builders were the certification/testing process (14 percent) and program paperwork (11 percent). Overall, no program aspect emerged as a major deficiency.

Table 29: Least Liked Aspects of the ENERGY STAR Program

	2009 (N=35)
Aspect	**Unweighted**
Certification/testing process	14%
None	11%
Paperwork	11%
Cost	9%
Marketing	6%
Other	31%
Don't know	17%

Q54. What single aspect of the ENERGY STAR program do you like the least?

Lastly, ENERGY STAR builders were asked if they had any recommendations for the program. As shown in Table 30, the most common recommendation was to improve program name recognition and marketing (20 percent combined).

Table 30: Recommendations for the ENERGY STAR Program

	2009 (N=35)
Change	**Unweighted**
None	26%
Improve branding/name recognition	14%
Simplify program/paperwork	11%
Program flexibility	9%
Improve marketing	6%
Reduce costs	6%
Provide more training	6%
Standardize program	6%
Other	26%
Don't know	6%

Q55. What changes, if any, would you recommend for the ENERGY STAR program?

4.2 LIGHTING FIXTURES PILOT PROGRAM INTERVIEWS

The Lighting Fixtures Pilot Program conducted four initiatives in the Puget Sound region that were collectively designed to: increase the number of builder sales representatives that are comfortable selling ENERGY STAR fixtures, increase actual installations of energy efficient lighting fixtures, and increase stocking and promotion of efficient fixtures by showrooms and distributors. (Appendix G shows the stocking inventory of three key Puget Sound lighting showrooms, and shows that less than 3 percent of display space is allocated to ENERGY STAR fixtures.[14]) Following are brief descriptions of the initiatives:[15]

- The Existing Advocates initiative selected three lighting professionals (at two companies) that already promote energy efficient fixtures to receive customized assistance so they are empowered to do outreach to a broader audience (e.g., more builders, industry events) and provide significant technical support.

- The Model Home Demonstration worked with a builder that is a strong ENERGY STAR supporter to install EPA's Advanced Lighting Package (ALP) in four model homes. The homes were opened to homebuyers, realtors, and builders in late summer of 2008, and were still open in spring 2009. All of the fixtures in these homes are ENERGY STAR and are designed to show a range of functional and aesthetic applications. ICF also worked with the builder and utilities to promote the homes through a major regional media event.

- The Builder Rep Outreach initiative provided technical and marketing training to lighting showroom staff that work primarily with builders. The goals of this training were to increase salesperson understanding and advocacy of fixtures so that builders select efficient fixtures more often. Training was conducted at five lighting showrooms across three companies.

- The Showroom Training initiative provided technical and marketing training to in-store staff that work primarily with residential homeowners. The goals of this training were to increase salesperson understanding and advocacy of fixtures so that homeowners select efficient fixtures more often. Training was conducted at four showrooms between two companies.

A key goal of the Pilot was to demonstrate and document how to conduct the different initiatives, so that the utilities can replicate or expand upon these activities going forward. (At the time of the interviews, EPA-approved case studies were still being developed, although the final program report was completed.)

---

[14] These data were collected by KEMA, which is conducting a separate lighting industry evaluation.

[15] More detailed information on the Pilot program (e.g., participant selection) is available at: http://www.nwalliance.org/news_media/newsletter/nl_26_features_item_175.asp (bottom of the page).

Following are the findings from interviews conducted with various program participants.

Existing Advocates

One lighting fixtures "advocate" was interviewed, and the interview objectives were: to understand the nature of the program assistance he received, learn if program participation has affected the advocate's sales approach or the local market, and to solicit suggestions for changes to future lighting fixtures program initiatives. [16]

The advocate received help planning, developing and conducting an all-day fixtures training session for builders at his showroom, which was well attended by 15 to 20 builders (higher than expected). According to the advocate, builders at the training were very engaged and asked lots of good questions; this was the best part of his program participation. Unfortunately his company never received a copy of the builder sign-in sheet, and thus he is not easily able to contact builders that are not current clients.

According to the advocate, company sales staff that also attended the training were already proactive in contacting builders, however the training has increased their technical fixtures expertise just as builders are becoming more cognizant of equipment options in an evolving home market. The company has not made any specific stocking or marketing changes since the training, however, and it is hard to know if builders are adopting fixtures at a higher or lower rate due to the stagnant homes market.

As homebuyers can get similar energy savings for less cost with screw-in CFLs, they typically prefer screw-ins to reduce risk (e.g., if it turns out they don't like the light quality), according to the advocate. For builders and homebuyers that *are* already accepting of fluorescent technologies, a stronger case has to be developed regarding *why* fixtures should be installed and not bulbs. In the training he heard a "good" answer for the first time - that fixtures are tested as they are actually used as sconces, bath bars, etc., and thus the testing results are more reliable than for bulbs (which are tested in generic open sockets). While this message is compelling, he also suspects that homebuyers do not consider marginally different light-life ratings.

Builder Sales Representatives

In-depth interviews were conducted with seven builder sales representatives that received the ENERGY STAR lighting fixtures sales training in late March 2008. Four representatives worked for Seattle Lighting and three worked for Crescent Lighting.[17] The objectives of the interviews were to learn how lighting supplier sales staff interact

[16] We also attempted to interview another advocate, however they did not respond to interview requests.

[17] Alexander Lighting was also included in our sampling scheme, but the representatives at the company either did not recall attending the training or were not reachable.

with builders, to understand builders' barriers to installing efficient lighting fixtures and to get feedback on the quality of the training received through the Pilot Program.

Five representatives said their builders are not predisposed to install energy efficient fixtures, while the other two said some builders install efficient fixtures in up to 50 percent of applications. Most interviewees noted that builders use energy efficient lighting for two main reasons: they are required to (e.g., in outside areas of the house or seldom used areas like closets) and/or to save money via local utility rebates. While some builders also want to be labeled as "green", there is still a strong tendency to retain historic practices (e.g., same home designs, fixtures options).

The sales representatives were asked to identify the features of energy efficient lighting that are most appealing to builders. All seven respondents identified rebates as a key selling point. Other commonly mentioned features were energy savings, improving light quality and appearance, and the longevity of efficient lighting. Regarding builders' perceived drawbacks, four representatives said bulb appearance is a limiting factor, and two of them also said the inability to dim the lights is a major issue. Two respondents also mentioned the limited stocking of efficient lighting as a barrier to installations.

The respondents were then asked if builders understand the technical aspects of energy efficient lighting. All four Seattle Lighting representatives said some builders understand the technical features, while two believed that most of their clients understand these features. Among the Crescent Lighting representatives, one said that builders only have partial comprehension; another said the builder's knowledge is a direct function of the salesperson's knowledge, and the last respondent believed that builders are fairly savvy regarding lighting features.

Three representatives said the training increased their understanding of the technical aspects and benefits of energy efficient fixtures, and six said the training gave them tools to more effectively sell energy efficient fixtures. On a scale from 1 to 10 (highest), three respondents gave ratings of 8 or higher, and the other four gave ratings of 6 and 7.

When asked to estimate the market share of energy efficient fixture sales to builders *prior* to the training, six respondents reported 10 percent or less, while one reported 25 percent. When asked what this percent was currently, 6 of 7 respondents gave percentages that were significantly higher than their pre-training response. Three of the six respondents, however, stated that the increase was due to changing business conditions, technological advancements and more stringent energy efficiency requirements (i.e., not the training).

Managers of Builder Sales Representatives

Interviews were conducted with managers at two lighting companies that sponsored training for the builder sales representatives. The purpose of the interviews was to understand how the managers interact with different market actors, learn about builders' fixtures perceptions, get feedback on the quality and effects of the training, and learn if fixtures stocking and/or sales have increased after the training.

One manager works with 30 builder representatives at 14 stores (in three affiliated companies), and strongly encourages staff to advocate fixtures to specific builders, based on his perceptions of which builders are likely to install efficient equipment in particular projects. This manager interacts often with utilities regarding lighting program design, sales reporting, builder informational breakfasts, and supplying specific builders. The other manager works with 10 representatives at two stores and also works directly with builders. This manager only advocates efficient fixtures if he thinks a builder is receptive and would realize benefits, based on preliminary conversations. Communications with utilities are sporadic and are conducted by staff with specific program questions.

One manager believes that most builders do not understand technical fixtures issues, nor do they care about technical issues (lighting is only one percent of total home cost) or long-term customer acceptance. Rather, they only care that the lights turn on quickly and look good initially, because this is what homebuyers focus on. As the ENERGY STAR brand is ubiquitous in the region now, buyers focus on cost and light quality; energy savings ranks third. The other manager thinks builders understand that efficient fixtures reduce energy bills, but still believe that all fixtures are not dimmable and the color temperature "is wrong." The ENERGY STAR label is valued, because it implies rigorous testing and is usually linked to rebates.

Regarding the training for sales staff, the first manager said it was very informative, but also that his staff responds most strongly to utility sales incentives and not technical knowledge (which they have also acquired through trainings by utilities, ECOS and himself). Fixtures stocking and sales have increased slowly over time, and are driven by local building codes and utility incentives. The second manager said his staff are more aware of the local utility programs and homebuyer energy costs after the training, and are promoting cost savings more now (to builders). Although this small company carries no stock, orders for efficient fixtures are slowly increasing.

Model Home Demonstration

According to the model home builder's marketing spokesperson, designated "sustainability" staff at the company urged participation in the Pilot to secure expert help installing efficient lighting in two new communities, to help distinguish the builder from regional competitors. While the company had decided to position itself as a green building leader and adopted efficient fixtures into its standard specification two years ago, it had never installed ENERGY STAR products specifically.

Homes visitation has been far below expectations, as the homes opened just as the market slowed down significantly. Reactions from seriously interested homebuyers, however, have generally been positive. They comment that the fixtures turn on quickly, are attractive, and offer many functional and aesthetic choices. While some buyers inquire about the higher installation costs, they also seem to understand that they will have lower operating costs, after being told by staff. Some buyers tell staff they intend to buy the builder's homes when economic conditions improve.

Overall, the builder has had a positive experience with the Pilot. ICF consulted with all major company departments regarding required changes, helped with the bidding process, and provided informative training to sales staff. Company staff that were wary of the technology before are comfortable working with fixtures now, and the spokesperson thinks it would have been a mistake to try to buy and install the fixtures without guidance.

In retrospect, the spokesperson suggested that ICF could have developed professional marketing collateral for the builder, instead of helping the builder to do this themselves (the result was only "satisfactory"). A generic, high-quality marketing piece would have been helpful (also a FAQ guide for sales staff), acknowledging that this might be difficult when builders can install ALPs that vary from 60 to 100 percent of fixtures.

The builder had no formal participation goals except to further educate the home-buying populace about efficient lighting, and expected that only "special buyers" (i.e., about 20 percent) would take notice of the ALP (which has in fact occurred). Going forward, the builder will continue installing the ALP in new developments. Until the market improves and buyers are willing to spend more, however, only 60 percent of the fixtures will be the ALP (mostly formal lighting and fewer cans).

Utilities and NEEA

Four utility representatives and NEEA staff were interviewed to: determine if the Pilot goals (i.e., increased salesperson knowledge, fixtures sales and promotions) were or are likely to be achieved; identify the activities the utilities valued most; and learn what follow up activities the utilities may undertake.

Regarding the Advocates initiative, the representatives thought the Pilot succeeded in *starting* a process of professional development and market actor integration. Going forward, however, they are unsure how to utilize the advocates and develop new ones.

According to the representatives, the trainings for showroom and builder sales staff were generally well attended, included compelling content, and were delivered by an engaging speaker. They believe the attendees are probably more educated and engaged now due to several factors: repeated trainings, more builder inquiries, increased green building, and increasing product availability and performance. Sales staff may require regular training "reminders", however, as they often change sales practices with economic conditions.

For the Model Home initiative, the representatives were pleased that a significant builder participated with enthusiasm, and that ICF took a comprehensive approach to educate the builder's staff. This was the most "novel" initiative conducted, and had a high interest level across the utilities. Challenges with this initiative were: unforeseen local events that competed for media attention, too few media placements and "boring" messaging, (some) non-functioning lights, and (some) inappropriate fluorescent placement and sizing.

Overall, the utility representatives said they worked together effectively, and that ICF did well implementing the project plan. Three representatives expect showroom stocking and promotion of fixtures to increase, while one had already noticed more window signage, fixture hangtags and distinguishing between stocked brands. Two representatives also expect builder adoptions to increase (as long as incentives are still offered), while one thinks builders will still only install 2 to 3 efficient fixtures per home. Regarding the utilities' understanding of fixtures sales channels, two representatives said this had increased, one said these were already understood, and one said these market relationships change and will always require utility tracking.

On the negative side, the representatives noted that there was lots of replication of past fixtures initiatives. While the new trainings were of high quality, increasing fixtures stocking/sales could in fact be due to past training efforts and slowly growing homebuyer and builder acceptance. The most significant deficiency, however, was the final report, which was generally thought to be poorly written and shed little new light on overcoming well-known market barriers. In particular, two representatives said that the report lacks details that would enable the utilities to know precisely *how* and *why* to take future actions (e.g., how to identify an advocate's weaknesses, which model home builders to recruit).

Going forward, one utility will simply continue its current showroom fixtures rebates, while another utility is considering expanding its showroom rebate program to general retail stores (e.g., Home Depot). Another utility is considering utilizing the Pilot advocates as lighting instructors, developing more model homes, and/or doing a comprehensive fixture change-out in a regionally significant existing home.

5. CONCLUSIONS AND RECOMMENDATIONS

Based on the findings presented in this MPER, the following conclusions can be drawn about the short-term market progress indicators established for the ENERGY STAR Homes program.

1. ***Market Indicator****: Builders use the ENERGY STAR label to differentiate themselves in the marketplace*

Evaluation Finding: Two-thirds of program builders said they actively promote the fact that their homes are ENERGY STAR. In 2009, 38 percent of builders that are aware of the program explicitly identified product differentiation as a benefit of the ENERGY STAR label, compared with 60 percent citing this in 2007. In 2009, however, builders were more likely to mention other *specific* brand benefits (e.g., higher home quality, energy efficiency) that would presumably confer marketing advantages to builders.

2. ***Market Indicator****: Consumers, builders, and other market actors link ENERGY STAR homes and home quality/value.*

Evaluation Finding: Seventy-two percent of the builders we surveyed agreed with the statement that the ENERGY STAR label makes homes more marketable, 51 percent agreed that ENERGY STAR homes are higher quality overall (significantly higher than in 2007) and 55 percent agreed that program homes enjoy a competitive advantage in the market.

3. ***Market Indicator****: Builders are convinced of the long-term cost savings from reductions in callbacks that should result from performance testing and quality assurance practices;*

Evaluation Finding: In the phone survey, there was not a significant difference among builders that mentioned reduced callbacks as a benefit (16 percent in 2009, 24 percent in 2007). The benefit of knowing that the HVAC installation is done correctly, however, was mentioned by 38 percent of the builders. While this is significantly less than the 61 percent observed in the 2007 survey, 2009 builders were significantly more inclined to mention higher customer satisfaction and improved marketing - which are contingent on proper installation - as builder benefits. This suggests that program builders are increasingly associating proper duct function with increased value to homebuyers. In 2009, 40 percent of builders agreed that customers understand the benefits of duct testing, compared to 18 percent that said this in 2007. Importantly, in 2009 no builders stated that there are no benefits from duct testing.

4. ***Market Indicator****: Increased awareness by builders and subcontractors of key efficiency and quality issues;*

Evaluation Finding: Builder awareness of duct testing increased significantly between 2007 and 2009, from 61 percent to 70 percent. In addition, significantly more builders indicated that they have duct tests performed on at least some of the homes they build (26

percent compared to 18 percent in 2007). While awareness has increased and builders acknowledge benefits from duct testing, tight/insulated ducts were mentioned by only one builder in 2009 as being a key beneficial feature of green or energy efficient homes. Instead, ENERGY STAR builders most often mentioned overall insulation (32 percent), high efficiency HVAC (23 percent) and construction tightness (23 percent) as key home features.

5. ***Market Indicator****: Other market actors and trade allies are spending their own resources marketing ENERGY STAR Homes and matching NEEA investments;*

Evaluation Finding: Each program dollar spent on the 2008 Consumer Marketing Campaign leveraged more than 3 dollars from program partners (utilities, builders, and building supply companies). Notably, 30 percent of the ENERGY STAR builders we surveyed in 2009 stated that they use only their own resources to promote their program homes. This is a significant decrease from 2007 when 55 percent said this, and likely reflects constrained advertising budgets during the economic downturn.

6. ***Market Indicator****: Builders and their subcontractors have expanded knowledge and skills necessary to treat key energy efficiency and quality issues, particularly performance testing of HVAC ducts and equipment.*

Evaluation Finding: For builders that have duct tests performed, 83 percent reported no problems with the tests in the 2009 builder survey. This is statistically unchanged from the 2007 builder survey, but is a significant improvement from 2004 when only 52 percent of builders reported having no problems with duct testing. This shows that performance testers are applying their training correctly and that program builders are benefiting from growing experience among performance testers.

7. ***Market Indicator****: Increasing recognition of the ENERGY STAR label and understanding what it means for new homes.*

Evaluation Finding: Builder awareness of the ENERGY STAR label for homes remained high and statistically unchanged from 2007 to 2009 (69 and 65 percent, respectively). Participating builders most often promote energy savings (83 percent), overall construction (22 percent), and air quality (17 percent) benefits.

Following are additional conclusions that can be drawn from the evaluation research:

- **In 2008 the program achieved an 8 percent market share, compared to 4.6 percent in 2006.** According to RMLS studies on Seattle and Portland area new home sales, overall market share for green and energy efficient homes is increasing and is now 15 to 20 percent of the new homes market. In addition, one-third of ENERGY STAR builders reported getting more program inquiries in the past year. As the ENERGY STAR program recruited the same number of new builders in 2008 as 2007 (326), the program appears to be well positioned to benefit from growing demand for green homes.

- **Builder satisfaction with the ENERGY STAR Homes program is high.** Participants were very satisfied with the ease of participation, performance testing, and responsiveness of program staff. Fifty-nine percent of the builders said they were either extremely or somewhat satisfied with the program overall.

- **Higher home prices and lack of program understanding were the most common reasons given by builders for not participating in the ENERGY STAR Homes program.** Each of these barriers was cited by 28 percent of nonparticipating builders. Builders in Idaho were most likely to be sensitive to increased home prices (43 percent), believe they have a good understanding of the program, and along with Montana builders, believe they are already building to program requirements. Lack of program understanding was greatest among Washington builders (43 percent).

- **The main value of the Fixtures Pilot was hiring a knowledgeable, credible and engaging implementer who provided useful training information to participants.** That said, much (but not all) of the training information had been presented previously by other parties.

- **The Pilot did not complete a successful "handoff" via a thorough report and final meetings to allow utilities and industry advocates to build upon Pilot activities.** While the report documented what was done at a general level, it is not very useful as a teaching tool according to the participating utilities.

- **The Model Home concept was the most compelling Pilots initiative.** When the market improves, there is strong potential for the utilities, lighting showrooms and builders to collaborate again on a similar project for new or existing homes to further promote efficient fixtures to builders and homebuyers.

Based on the evaluation findings, we make the following program recommendations:

- **Continue efforts to partner with the Built Green program on specifications development, builder recruitment and programs marketing.**[18] In the phone survey more builders were aware of Built Green than ENERGY STAR in Washington, where Built Green also has a high participation rate (35 percent). Awareness of Built Green is also growing in other areas (where the program may soon operate). The ENERGY STAR program would do well to stay aligned with this popular program going forward.

- **Foster alliances between program builders and key equipment suppliers, and continue to advocate for utility incentives to defray construction costs.** Increased building costs remain a key barrier to program participation, and thus

[18] ENERGY STAR is part of the base specification for 4 and 5 star Built Green homes in some areas.

anything the program can do to reduce incremental costs will help to attract builders.

- **Promote RMLS findings that show green/efficient homes sell for a price premium to builders.**[19] Compared to 2007, significantly fewer builders in 2009 agreed that ENERGY STAR homes sell for a higher price. Builders (and realtors) need to become aware of emerging research that shows green homes can command price premiums.

- **Provide more financial assistance to program builders, who are dedicating less of their own resources to marketing.** Notably, surveyed program builders were most dissatisfied with the amount of co-op advertising support they receive, among various program aspects.

- **Conduct further research on duct testing costs.** An increasingly large share of surveyed builders (49 percent in 2009) said high costs are the main barrier to duct testing. This could reflect builders simply being more cost conscious or an absolute increase in these costs.

[19] This price premium ranges from 6 to 29 percent based on King County home sales data.

APPENDIX A: GLOSSARY

Advanced Lighting Package (ALP). EPA designation that applies to lighting packages, in new home construction, that consist of a minimum of 60 percent ENERGY STAR qualified hard-wired fixtures.

Annual Fuel Utilization Efficiency (AFUE). A numeric efficiency rating for furnaces. An AFUE rating of 0.90 or higher for gas furnaces and 0.80 for propane heating is needed to qualify for the ENERGY STAR Homes program.

Air Changes per Hour (ACH). Refers to the number of times air is circulated within a home within an hour. Minimum levels are established to help combat mold due to tight building envelopes required for efficient homes.

Builder Option Package (BOP). A specified list of measures and building practices that builders can follow to build an ENERGY STAR-qualifying home.

Building Outreach Specialist (BOS). A representative of the program that recruits builders and provides technical assistance. BOS's work in Oregon only and report to the Energy Trust of Oregon.

Compact fluorescent light (CFL). A type of lightbulb that is more energy efficient than a regular incandescent bulb and has a longer equipment life. A CFL often has a distinctive twisted design.

CFL fixture. A lighting fixture where only CFL lamps can be used. These fixtures usually require pin-based CFL lamps so that the bulb cannot be swapped out for incandescent bulbs.

Conservation Services Group (CSG). One of the companies implementing the ENERGY STAR Homes program in Oregon.

Duct Test. General term referring to either a duct blaster test (where only the ductwork is tested for leaks) or a blower door test (where the whole house is tested for leaks).

Earth Advantage. A sustainable buildings program originally created by Portland General Electric.

Energy Factor (EF). An EF value shows the efficiency of water heaters. For gas water heaters, an EF of 0.60 or better is required, while electric water heaters require an EF of 0.93 or better.

Energy Trust of Oregon (ETO). Energy Trust of Oregon implements energy efficiency programs in Oregon using public benefits funds collected from several utilities. Energy Trust of Oregon also helps sponsor and implement NEEA's ENERGY STAR Homes program within Oregon.

Fluid Market Strategies (Fluid). Fluid is the company that has been hired by NEEA to implement the ENERGY STAR Homes program for NEEA.

HVAC. Refers to heating, ventilation, and air conditioning systems and is used as a generic term for heating and cooling equipment.

Heat Pump. A type of air conditioner that will also provide heat during the winter.

Heat Recovery Ventilator (HRV). An HRV provides an efficient method for bringing in fresh air into a building while removing stale air. The HRV will preheat the incoming air in the winter and cool the incoming air in the summer.

Home Performance Specialist. The job title used for verifiers in Idaho.

Heating Seasonal Performance Factor (HSPF). A measure of efficiency for heat pumps. The ENERGY STAR Homes program requires an HSPF of 8.0 or better to qualify for the program.

Market Development Lead (MDL). A program representative that serves one or more of the program's submarkets (e.g., Puget Sound, eastern Idaho). MDLs work closely with builders, existing and new verifier companies, and utilities to help promote the program, answer technical questions, and forge local relationships among key market actors.

Market Progress Evaluation Report (MPER). MPER is the acronym used by NEEA for all its evaluation reports.

NCAT. National Center for Appropriate Technology is located in Montana and promotes energy efficiency and appropriate uses of technology for low income communities. Also serves as the SCO for the ENERGY STAR Homes program in Montana.

NEEA. The Northwest Energy Efficiency Alliance is the agency sponsoring the ENERGY STAR Homes program. See the website www.nwalliance.org for more detailed information.

Performance Testing. A more general term used for duct testing and could involve a duct blaster and/or a blower door test.

Quality assurance (QA) specialist. A quality assurance specialist works for the State Certifying Organization to monitor and verify the work completed by the verifiers.

RESNET. A national non-profit organization devoted to creating consistent national standards for energy efficiency ratings. RESNET developed the Home Energy Rating System (HERS) rating for homes.

State Certifying Organization (SCO). An SCO is the agency that provides the final certification for an ENERGY STAR Home.

State Energy Office (SEO). An SEO is the state government office in charge of energy issues for the state (such as the Oregon Department of Energy). In the case of Oregon and Idaho, the SEO is also the SCO for ENERGY STAR homes within the state.

Seasonal Energy Efficiency Rating (SEER). A numeric rating system for air conditioner and heat pump efficiency. A SEER rating of 13 is required by the ENERGY STAR Homes program.

Technical Compliance Option (TCO). A TCO are additional specifications within a BOP that allow for different equipment to be installed and still meet the ENERGY STAR Homes specification requirements.

Verifier. A verifier provides third-party verification that the requirements for an ENERGY STAR home are being met.

APPENDIX B: PROGRAM DESCRIPTION AND PAST EVALUATION ACTIVITIES

The Northwest ENERGY STAR Homes program officially began in May 2004 with a goal of achieving a 20 percent market share for ENERGY STAR homes within the residential new construction market by the end of 2009. In 2006, the program revised its goal to reflect the longer than anticipated ramp-up time, and now hopes to achieve a 14 percent market share by the end of 2009. The program markets the benefits of building homes to ENERGY STAR standards to builders. The ENERGY STAR brand serves as a mechanism to differentiate builders and the homes they build and also provides consumers with an easy way to identify energy efficient homes. Certification, labeling, and marketing efforts are designed to increase the market share of ENERGY STAR new homes while simultaneously protecting the ENERGY STAR brand.

While it has been successful in other parts of the country, the national program model for ENERGY STAR homes was not a good fit for the Northwest region. This can be attributed to a number of factors, the most significant of which include the success of robust energy codes in Oregon and Washington, past focus on (electric heat) Super Good Cents branding for new construction, and the lack of an energy-rating infrastructure that has traditionally been used in other parts of the country.

In order to make the ENERGY STAR Homes program work in the Northwest, the EPA worked with NEEA and its stakeholders to develop a tailored specification that includes a package of prescribed conservation measures and is designed to be fuel-neutral. As the current codes in Washington and Oregon already meet the national ENERGY STAR standard, it was necessary to develop new and more stringent ENERGY STAR requirements for the region if significant efficiency gains were to be achieved in the new homes market. (The detailed prescriptive specifications for the various ENERGY STAR Home options are provided in Appendix B.)

In addition to the prescriptive measure requirements, there are several program elements that are designed to assist builders and contractors with the ENERGY STAR requirements. These program elements include:

- Infrastructure development and market actor training and education, particularly for HVAC contractors and performance testers;
- A quality assurance process, which requires that:
- Every central HVAC system be performance tested (unless the State Certification Office (SCO) determines that only a sample of HVAC systems needs to be tested);
- Every home be inspected by a certified verifier for compliance with ENERGY STAR Northwest program specifications (unless the SCO determines that only a sample of homes needs to be inspected); and

- Every home be certified by a third-party contractor operating under an independent ENERGY STAR Northwest quality assurance process.

- Marketing, outreach, promotion, and consumer education focused on branding and labeling, quality and value, and other co-branding and cross-promotion opportunities. This is done through press releases, articles, and newsletters that advertise the program and provide information on the benefits of ENERGY STAR homes. The program also provides marketing materials to builders so that they can promote the fact that their homes are ENERGY STAR rated. In addition, the program has developed the program website www.northwestenergystar.com as an additional information resource for builders and potential new homebuyers.

    - Coordination and incorporation of multiple program efforts by utilities and others, specifically including technical standards and financial incentives.

    - Promotion and support for "plus" packages that increase energy efficiency or other attributes such as green or healthy buildings (beyond base program requirements) that will further support builder differentiation through efficiency.

Market Barriers and Market Opportunities

There are a number of barriers to increasing the efficiency of energy use in new homes, including:

Lack of Awareness and Information. Builders, consumers, and other market actors are often unaware of the magnitude and potential value of energy savings that can result from improved construction practices. Similarly, there is a lack of awareness and appreciation of the non-energy benefits such as improved indoor air quality and lower maintenance costs that result from more efficient construction.

Inability to Identify Efficiency. Many builders claim to be building efficient homes, but consumers cannot always differentiate between accurate and false efficiency claims. In addition, the presence of multiple individual utility and other local programs promoting energy efficiency and green building practices may add to market confusion regarding what constitutes an energy efficient home.

Split Incentives. For new homes, builders and contractors make energy efficiency design and investment decisions but do not ultimately pay the energy bills. Many builders doubt they will be able to increase the home sales price in order to cover the initial costs of the energy efficiency improvements.

Limited Technical Skill. Many builders and subcontractors have an inadequate understanding of the nature of key efficiency losses in the home, such as through HVAC ducts or building air leakage. These are critical elements for capturing the energy efficiency potential in new homes and yet there are few contractors currently trained and certified to deliver results. Building the infrastructure necessary to support a viable contractor pool that can provide heating and cooling system commissioning and duct testing and sealing is a major challenge for this program.

Economic Benefits Not Recognized by Financial Markets. Appraisers do not value energy efficiency improvements or benefits when making their valuations. As a result, homebuyers who stay in their new homes only a few years are unable to recoup the extra cost of efficiency investments through bill savings alone. Similarly, most mortgage lenders do not distinguish between efficient and inefficient homes when deciding whether a consumer can afford a mortgage or when developing mortgage products that reflect lower risk of default from homes that are more efficient and therefore have lower energy bills.[20]

Despite the market barriers, the current new construction market offers a number of opportunities for market transformation. Market opportunities addressed by the program include:

Builder Differentiation. Given the large number of builders in the market, individual builders must differentiate themselves from their competitors. In addition, the desire to differentiate tends to fluctuate with the market: When demand for housing decreases, builders are more interested in differentiation as a means to capture business.

Consumer Demand for New Home Efficiency. Historically, consumer surveys have shown that efficiency is a key component in what is expected in a new home. However, since the home is brand new, many consumers already assume that it will be energy efficient simply because it is new.

Consumer Awareness of ENERGY STAR Brand. Many consumers are already aware of the ENERGY STAR label for products but additional education may be needed to establish awareness of the label for homes. To facilitate this, the ENERGY STAR requirements for homes need to represent a significant improvement over current practice.

[20] This barrier primarily impacts those that have trouble qualifying for a mortgage such as some first time home buyers and low income households. The importance of this barrier is lessened somewhat in the current market that is enjoying very low interest rates but will become more of a factor as mortgage interest rates rise.

Interest in Sustainable Building Practices. There is a small but growing interest in sustainable or "green" construction practices among both builders and homebuyers. However, efficiency is not always part of the package of specified sustainable measures. The program will need to link efficiency to sustainability with those partners that may view efficiency or ENERGY STAR as competitors.

Table 31 summarizes the main components of the MPERs that have been completed for the ENERGY STAR Northwest Homes evaluations. Each report contains a market assessment showing current conditions in the new home market and tracking changes over time. Phone surveys of both builders and new homebuyers were included in the first and fourth MPERs in the previous funding cycle. In-depth interviews with a smaller sample of builders and various market actors, including realtors and building contractors, were conducted for the previous five reports. The process evaluation component also includes interviews with utilities, state energy offices, and home verifiers involved with the program. Beginning in 2005, a combination of post-occupancy phone surveys and on-site audits were used to collect information on homeowner satisfaction and retention of individual measures.

Table 31: Evaluation Report Components

Analysis Component	MPER 1 Baseline Report	MPER 2 (3Q 2005)	MPER 3 (3Q2006)	MPER 4 (2Q 2007)	MPER 5 (2Q 2008)	MPER 6 (2Q 2009)
Market Characterization	λ	λ	λ	λ	λ	λ
Market Actor Interviews	λ	λ	λ	λ	λ	λ
Utility Interviews	λ			λ	λ	λ
Builder Phone Survey	λ			λ		λ
Builder In-Depth Interviews	λ	λ	λ	λ	λ	
Homebuyer Phone Survey	λ			λ		
Process Evaluation		λ	λ	λ	λ	λ
Post-Occupancy Homebuyer Survey			λ			
Performance Testing Impact Analysis				λ		
On-Site Post Occupancy Survey				λ		
Duct Test Impact Analysis				λ		
Review of Cost Effectiveness Modeling		λ		λ	λ	

APPENDIX C: NORTHWEST ENERGY STAR HOMES SPECIFICATIONS

The Northwest ENERGY STAR Homes package is designed to include efficiency measures that will result in a level of performance that is a minimum of 15 percent better than that required by codes in the region. It is also designed to include efficiency improvements in all major end-uses including space heating and cooling, water heating, lighting, and appliances. Testing the HVAC and duct systems for leaks is also required using ENERGY STAR Northwest performance testing specifications. Finally, the requirements were designed to maximize the marketing impact by linking to as many ENERGY STAR branded components as possible, from the heating and cooling system to lighting and appliances.

Table 32 provides a summary of the Builder Options Package (BOP) for single-family, site-built homes in Oregon. The BOP allows builders to choose among four paths to achieve energy savings. These paths are:

- Upgrading the building envelope
- Installing an on demand water heater
- Upgrading the walls
- Locating ducts and HVAC equipment inside the conditioned space

Homes initiated in the Northwest ENERGY STAR database after July 1, 2008 and certified after December 31, 2008 must be built to these standards to receive the ENERGY STAR label. Homes initiated prior to July 1, 2008 and completed prior to July 1, 2009 can still be certified under the previous specifications (which are current in effect for Washington, Idaho and Montana).

Table 33 provides a summary of the two prescriptive BOPs for single-family homes in Washington, Idaho and Montana.

Table 32. Northwest ENERGY STAR Homes Technical Specifications – Oregon

Component	Code	ENERGY STAR Path Options			
		Envelope Upgrade	**Tankless Water Heater**	**Wall Upgrade**	**HVAC/Ducts Inside**
Ceiling Insulation	R-38	**R-49**	R-38	**R-49**	R-38
Wall Insulation	R-21	R-21	R-21	**R-21 + R-3 sheath**	R-21
Floor Insulation	R-30	**R-38**	R-30	R-30	R-30
Unheated Slab Below Grade	R-15 Perimeter	**R-10 Full Slab**	R-15 Perimeter	**R-10 Full Slab or R-15 Perimeter with R-21 Wall + R-5 Sheathing**	R-15 Perimeter
Windows	U-0.35	**U-0.32 Max**	U-0.35 Max	**U-0.32 Max**	U-0.35 Max
Heating System	8.5 HSPF 0.90 AFUE	8.5 HSPF 0.90 AFUE	8.5 HSPF 0.90 AFUE	8.5 HSPF 0.90 AFUE	8.5 HSPF 0.90 AFUE
Ventilation System	Operable Windows	**Mechanical**	**Mechanical**	**Mechanical**	**Mechanical**
Air Conditioning	SEER 13	SEER 13	SEER 13	SEER 13	SEER 13
Duct Insulation	R-8	R-8	R-8	R-8	Exempt
Duct Sealing	Mastic or Inside Envelope	Mastic	Mastic	Mastic	**Ducts/HVAC in conditioned space, Mastic**
Duct Tightness	< 0.06 CFM/ft^2 Floor or 75 CFM Total @ 50 Pa	< 0.06 CFM/ft^2 Floor or 75 CFM Total @ 50 Pa	< 0.06 CFM/ft^2 Floor or 75 CFM Total @ 50 Pa	< 0.06 CFM/ft^2 Floor or 75 CFM Total @ 50 Pa	No testing required
Envelope Tightness	No requirement	**7.0 ACH @ 50 Pa**	**7.0 ACH @ 50 Pa**	**7.0 ACH @ 50 Pa**	**7.0 ACH @ 50 Pa**
Water Heating	Electric 0.87 EF (> 70 gal.) Gas 0.55 EF (> 60 gal.)	**Electric 0.92 EF (> 70 gal.)** **Gas 0.62 EF (> 60 gal.)**	**On Demand EF 0.82**	**Electric 0.92 EF (> 70 gal.)** **Gas 0.62 EF (> 60 gal.)**	**Electric 0.92 EF (> 70 gal.)** **Gas 0.62 EF (> 60 gal.)**
Dishwasher	No Requirement	**ENERGY STAR**	**ENERGY STAR**	**ENERGY STAR**	**ENERGY STAR**
Lighting	50% ENERGY STAR lamps or fixtures	**75%**	**75%**	**75%**	**75%**

Table 33. Northwest ENERGY STAR Homes Technical Specifications – Washington, Idaho, and Montana

Component	BOP 1 (Heat Pump/Gas Furnace)	BOP 2 (Zonal Electric/Propane)
Ceiling Insulation	R-38	R-38
Wall Insulation	R-21	R-21 + 2.5 sheath
Floor Insulation	R-30	R-30
Unheated Slab Below Grade	R-10	R-10
Windows	U-0.35	U-0.30
Heating System	8.5 HSPF 0.90 AFUE	N/A / 0.80 AFUE
Ventilation System	Central Exhaust	HRV 70%
Air Conditioning System	SEER 13	SEER 13
Duct Insulation	R-8	Electric: N/A Propane: R-8
Duct Sealing	Mastic	Electric: N/A Propane: Mastic
Duct Tightness	< 0.06 CFM per ft^2 Floor OR 75 CFM Total @ 50 Pa	Electric N/A Propane: same as BOP1
Envelope Tightness	7.0 ACH @ 50 Pa	2.5 ACH @ 50 Pa
Water Heating	Electric 0.92 EF (> 70 gal.) Gas 0.60 EF (> 60 gal.)	Electric 0.93 EF (all sizes) Gas 0.60 EF (> 60 gal.)
Appliances	All built-ins are ENERGY STAR	
Lighting	50% of sockets either ENERGY STAR lamps or fixtures	

To further increase the flexibility of these requirements, there are also several Technical Compliance Options (TCO) that are allowed within each of the two BOPs:

- TCO #1 substitutes perimeter insulation for floor insulation in homes with crawlspaces.
- TCO #3 utilizes the U.S. EPA's Advanced Lighting Package[21] in place of the current BOP standard.

[21] The U.S. EPA Advanced Lighting Package requires that 50 percent of high-use rooms and outdoor lights must have ENERGY STAR fixtures. In addition, all ceiling fans must be ENERGY STAR and 25 percent of medium-use and low-use rooms must have ENERGY STAR fixtures.

- TCO #4 allows for a gas hydronic heating system for use with BOP #1 and includes several modifications to the efficiency requirements for water heating and insulation depending on the type of system.

- TCO #5 allows for an electric hydronic heating system for use with BOP #2 and includes several modifications to the efficiency requirements for water heating and insulation depending on the type of system.

- TCO #6 allows for U-value trade-offs within BOP #1.

- TCO #7 allows for U-value trade-offs within BOP #2.

- TCO #8 allows for trade-offs between hot water heater efficiency and insulation requirements.

- TCO #9 provides for hybrid gas unit heaters with electric resistance zonal heating.

- TCO #10 allows for hybrid "ductless split" heat pumps with electric resistance zonal heating.

- TCO #11 provides for propane furnaces (90 AFUE minimum).

- TCO #12 allows an HSPF 8.3 heat pump when coupled to a 90 AFUE furnace backup within BOP#1.

- TCO #13 provides for foam in place insulation in Cathedral Attics within BOP#1 for Idaho and Montana only.

- TCO #14 allows the use of efficient lighting to achieve an overall rating of 1.1 Watts per square foot, in place of the 50 percent CFL lamps/fixtures requirement.

- TCO #15 provides for conditioned crawlspaces in homes east of the Cascade Mountains with gas furnaces or heat pumps.

These TCOs help the program to include a greater range of equipment options, many of which are driven by alternative building practices.

APPENDIX D: SURVEY INSTRUMENTS / INTERVIEW GUIDES

Builder Phone Survey

January 2008

Hello, my name is _____ with Itron, an energy market research firm based in Berkeley, California. First, I want to assure you that this is not a sales call. The Northwest Energy Efficiency Alliance has asked us to help them better understand the market for energy-saving features in the new home construction market. Could I speak to _____ or could I speak to the person responsible for making design and construction decisions affecting energy use of the homes you build?

[WHEN CORRECT PERSON IS ON-LINE:]
Hello, my name is _____ and I'm calling from Itron, an energy market research firm based in Berkeley, California. First, I want to assure you that this is not a sales call. The Northwest Energy Efficiency Alliance has asked us to help them better understand the market for energy-saving features in the residential new home construction market. Can I confirm that you're the person responsible for making design and construction decisions affecting energy use of the homes you build?

Yes	[CONTINUE]
No/DK	[ASK TO SPEAK WITH CORRECT PERSON, OR TERMINATE]
Refused	[TERMINATE]

This survey is important for our ability to make our construction programs as useful as possible to builders like yourself. Our survey will take about 15 minutes and all your answers are held confidential and we never link any information to a particular person or company.

Is now a good time?

Yes	[CONTINUE]
No	[SET UP CALLBACK]
DK/refused	[TERMINATE]

I. Background / Firmographic Information

Q 1. How many new homes did you build in 2008?

1) Number built_____
88) Don't know
99) Refused

Q 2. Of the homes built in 2008, what percentage was built inside the states of Washington, Oregon, Idaho, and Montana?

1) Percent within states_____

88) Don't know

99) Refused

Q 3. And of those homes inside these states, what percentages are: (READ LIST)

1) Single family detached (If 0, TERMINATE)
2) Single family attached (duplex, townhouse, rowhouse)
3) Multifamily
88) Don't know
99) Refused

For the remainder of this study, when we talk about homes you build, we are referring to the new single family homes that you built in 2008 in the states of Washington, Oregon, Idaho and Montana.

Q 4. What is the approximate price range of the homes you build?

1) Give Range:_____
88) Don't know
99) Refused

Q 5. What percent of your homes are "spec" built or have been almost completely built without the customer's direct involvement?

1) Percent _____
88) Don't know
99) Refused

Q 6. Do you sell your homes through your own sales representatives, or through real estate agents?

1) Sales reps
2) Real estate agents
3) Both
4) Other, please specify:_____
88) Don't know
99) Refused

Q 7. What methods do you use most frequently to promote your homes? (DO NOT READ)

1) Newspaper ads
2) TV/Radio
3) Real estate ads
4) Outdoor signs
5) Model homes
6) Brochures / Sales materials
7) Internet
8) Other_____
88) Don't Know
99) Refused

II. Awareness/Knowledge/Participation in ES Homes Program and other Green Building Programs

INITIALIZE [NOAWARE] = N
INITIALIZE [NOPARTS] = N

Next I would like to ask you a few questions about green building programs.

Q 8. Please tell me the names of any green or energy efficient home building programs you are aware of. (PROBE: "ARE YOU AWARE OF ANY OTHERS?" UNTIL NO MORE)

RECORD [DNR-AWARE PROGRAMS]

88) Don't know/Not aware of any
99) Refused

Q 9. Have you ever heard of _____? (READ LIST, ONLY THOSE NOT ALREADY MENTIONED, ACCEPT MULTIPLE RESPONSES)

1) The Northwest ENERGY STAR Homes Program
2) Earth Advantage
3) Built Green
4) Leadership in Energy and Environmental Design (commonly called LEED)
5) The National Association of Homebuilders National Green Building Program

RECORD [READ-AWARE PROGRAMS]

NOTES TO PROGRAMMER: Combine responses to above 2 questions into another field [ALL-AWARE PROGRAMS]. Only include 5 programs listed in Q9 - do not include Other programs that may have been mentioned for Q8, e.g., Federal Tax Credit Homes or Environments for Living.

IF RESPONDENT HAS NO [ALL-AWARE PROGRAMS], **SET [NOAWARE] = Y** AND SKIP TO "Building Practices/Components" SECTION

Define 2 "highest priority" programs - [KEYPROG1] [KEYPROG2] - using this ranking scheme, choosing from [ALL-AWARE PROGRAMS]:

#1 = Northwest ENERGY STAR
#2 = Earth Advantage
#3 = Built Green
#4 = LEED
#5 = NAHB National Green Building Program

READ FOR EACH [ALL-AWARE PROGRAMS]

Q 10. Do you currently participate in the [ALL-AWARE PROGRAMS]?

RECORD [PART PROGRAMS]

IF "ENERGY STAR" AMONG [PART PROGRAMS], SET [ENERGY STAR BUILDER] = Y, ELSE = N

NOTES TO PROGRAMMER: Set [NOPARTS] = Y if not participating in any programs.

Record programs *aware of but NOT participating in* as [NONPART PROGRAMS]

IF [NOPARTS] = Y, SKIP TO Q 17

ASK NEXT 4 QUESTIONS, AS A BATTERY, FOR EACH [PART PROGRAMS]

Q 11. How many [PART PROGRAMS] homes did you build in 2008?

1) Number of homes:_____
88) Don't know
99) Refused

Q 12. And how many [PART PROGRAMS] homes do you plan to build in 2009?

1) Number of homes:_____(IF GREATER THAN ZERO, SKIP TO Q 15)
88) Don't know
99) Refused

Q 13. What is the primary reason that you are not planning on building any [PART PROGRAMS] homes in 2009? (DO NOT READ. IF A SECOND REASON GIVEN, RECORD FOR NEXT QUESTION AND DO NOT ASK THAT ONE)

1) Adds to home price/market won't support home price
2) Don't want to have duct tests
3) Too much hassle
4) Process delays construction
5) Customers don't want it
6) Already build to PROGRAM standard, don't need label
7) Already have unsold homes on the market
8) Market is too slow/lack of demand
9) Going/went out of business
10) Other (SPECIFY):_____
88) Don't know (SKIP TO Q 15)
99) Refused (SKIP TO Q 15)

Q 14. Is there another reason that you are not planning on building any [PART PROGRAMS] homes in 2009? (DO NOT READ)

1) Adds to home price/market won't support home price
2) Don't want to have duct tests
3) Too much hassle
4) Process delays construction
5) Customers don't want it
6) Already build to PROGRAM standard, don't need label
7) Already have unsold homes on the market
8) Market is too slow/lack of demand
9) Going/went out of business
10) Other (SPECIFY):_____
88) Don't know
99) Refused

Q 15. (ASK IF [ENERGY STAR BUILDER] = Y) Have more homebuyers inquired with you about ENERGY STAR Homes in the past year than in the previous year?

1) Yes
2) No (SKIP TO Q 17)
3) Haven't been building ENERGY STAR very long/Doesn't apply (SKIP TO Q 17)
88) Don't know (SKIP TO Q 17)
99) Refused (SKIP TO Q 17)

Q 16. Why do you think this is? (DO NOT READ, ACCEPT MULTIPLE RESPONSES)

1) They are more aware of the program now
2) There is more marketing of the program now (by others, generally)

3) I am marketing these homes more now
4) Energy prices are increasing
5) More realtors are marketing these homes now
6) Other (Specify)
88) Don't know
99) Refused

ASK NEXT 4 QUESTIONS, AS A BATTERY, FOR EACH [NONPART PROGRAMS]

Now I'm going to ask you a little about the programs you don't participate in.

Q 17. Have you ever been approached about participating in the [NONPART PROGRAMS] **program?**

1) Yes
2) No
88) Don't know
99) Refused

Q 18. What is the primary reason you don't participate in the [NONPART PROGRAMS] program for the homes you build? (DO NOT READ. IF A SECOND REASON GIVEN, RECORD FOR NEXT QUESTION AND DO NOT ASK THAT ONE)

1) Adds to home price
2) Price places home in different market segment
3) Can't recover increased costs
4) There is no local verifier/rater/HPS
5) Customers more interested in other green homes programs
6) Don't fully understand program
7) Don't want to have duct tests
8) Too much hassle/Too hard to meet requirements
9) Process delays construction
10) Customers don't want it
11) Already build to PROGRAM standard, don't need label
12) Utility incentive payment problems
13) Plan to begin building these homes (SKIP TO Q 21)
14) Program is not available in my area/state (SKIP TO Q 21)
15) Other (specify)_____
88) Don't know (SKIP TO Q 20)
99) Refused (SKIP TO Q 20)

Q 19. Is there another reason you don't participate in the [NONPART PROGRAMS] **program for the homes you build? (DO NOT READ)**

1) Adds to home price
2) Price places home in different market segment
3) Can't recover increased costs
4) There is no local verifier/rater/HPS
5) Customers more interested in other green homes programs
6) Don't fully understand program
7) Don't want to have duct tests
8) Too much hassle/Too hard to meet requirements

9) Process delays construction
10) Customers don't want it
11) Already build to PROGRAM standard, don't need label
12) Utility incentive payment problems
13) Plan to begin building these homes (SKIP TO Q 21)
14) Program is not available in my area/state (SKIP TO Q 21)
15) Other (specify)_____
88) Don't know
99) Refused

Q 20. Do you plan to participate in the [NONPART PROGRAMS] **program in the next 12 months?**

1) Yes
2) No
88) Don't know
99) Refused

ASK NEXT 3 QUESTIONS AS A BATTERY

Q 21. (ASK FOR EACH [ALL-AWARE PROGRAMS]) To the best of your knowledge, what do you believe is the primary benefit to the builder, if any, of building [ALL-AWARE PROGRAMS] homes? (DO NOT READ. IF A SECOND REASON GIVEN, RECORD FOR NEXT QUESTION AND DO NOT ASK THAT ONE)

1) Marketing/ Product differentiation
2) Higher quality
3) Higher price
4) Sells faster
5) Rebate from utility
6) Promotion assistance
7) Reduced callbacks
8) No benefit (SKIP TO Q 23)
9) Other, please specify:_____
88) Don't know (SKIP TO Q 23)
99) Refused (SKIP TO Q 23)

Q 22. Is there another important benefit to the builder of building [ALL-AWARE PROGRAMS] homes? (DO NOT READ)

1) Marketing/ Product differentiation
2) Higher quality
3) Higher price
4) Sells faster
5) Rebate from utility
6) Promotion assistance
7) Reduced callbacks
8) Other, please specify:_____
88) Don't know
99) Refused

Q 23. (ASK ONLY FOR [KEYPROG1] AND [KEYPROG2]) Now, please tell me how much you agree or disagree with each of the following statements. Would you say that you strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, or strongly disagree that: [RANDOMIZE BY RESPONDENT BUT USE SAME ORDER FOR MULTIPLE PROGRAMS].

The [KEYPROG1,2] label makes homes more marketable to homebuyers
[KEYPROG1,2]-certified homes tend to be higher quality overall
[KEYPROG1,2]-certified homes sell faster than other non-green homes
[KEYPROG1,2]-certified homes sell for a higher price than other non-green homes
Builders of [KEYPROG1,2] homes enjoy a competitive advantage in the market
Homes built to code are energy efficient enough
Homebuyers ask for [KEYPROG1,2] homes.

III. Building Practices/Components: Awareness, Knowledge, Practices, Perceptions

(NOTE: ALL RESPONDENTS GO THROUGH THIS SECTION, ALTHOUGH SOME SKIP VARIOUS QUESTIONS DUE TO FILTERS)

Next I want to ask you about some of your standard practices regarding specific home features and their design.

ASK NEXT 2 QUESTIONS FOR EACH [PART PROGRAMS]

Q 24. In your opinion, what is the most beneficial feature of [PART PROGRAM] homes? [DO NOT READ. IF A SECOND REASON GIVEN, RECORD FOR NEXT QUESTION AND DO NOT ASK THAT ONE]

If respondent needs help, say: For instance, a beneficial feature might be a heat pump or additional insulation.

1) High-efficiency air conditioner/HVAC
2) Construction tightness, air seal, building envelope (not window envelope)
3) High-efficiency appliances
4) Clock/programmable thermostat
5) Daylighting
6) Ducts – tight ducts, insulated ducts
7) Fans (attic, whole-house)
8) High-efficiency furnace
9) Using more gas or electric
10) Heat pump
11) Insulation (Roof)
12) Insulation (Walls)
13) Insulation (Overall)
14) High-efficiency windows
15) High-efficiency/ENERGY STAR lighting
16) High-efficiency water heater
17) Whole-house Design
18) Air exchanger/better air quality
19) Recycled/sustainable building materials
20) Water conservation/reduced water use
21) Other _____

88) Don't Know (SKIP TO Heating and Cooling)
99) Refused (SKIP TO Heating and Cooling)

Q 25. Is there another very important feature of [PART PROGRAM] homes? [DO NOT READ]

1) High-efficiency air conditioner/HVAC
2) Construction tightness, air seal, building envelope (not window envelope)
3) High-efficiency appliances
4) Clock/programmable thermostat
5) Daylighting
6) Ducts – tight ducts, insulated ducts
7) Fans (attic, whole-house)
8) High-efficiency furnace
9) Using more gas or electric
10) Heat pump
11) Insulation (Roof)
12) Insulation (Walls)
13) Insulation (Overall)
14) High-efficiency windows
15) High-efficiency/ENERGY STAR lighting
16) High-efficiency water heater
17) Whole-house Design
18) Air exchanger/better air quality
19) Recycled/sustainable building materials
20) Water conservation/reduced water use
21) Other _____
88) Don't Know
99) Refused

Heating and Cooling

The next three questions refer to high efficiency heating and cooling equipment. For gas heating, "high efficiency" is defined as having an AFUE rating of 90 or higher. With an electric heat pump, "high efficiency" is defined as having an HSPF rating of 8.5 or higher. With a propane or oil furnace, "high efficiency" is defined as having an AFUE rating of 80 or higher. For cooling, "high efficiency" is defined as the air conditioner having a SEER rating of 13.0 or higher.

Q 26. Which of the following types of heating systems do you install in the *standard* homes you build, which don't meet all the requirements for green or energy efficient home building programs? [READ and CHECK ALL THAT APPLY]

1) Standard efficiency gas
2) High efficiency gas (AFUE 90 or higher)
3) Electric Resistance
4) Standard Efficiency Heat Pump
5) High Efficiency Heat Pump (HSPF of 8.5 or higher)
6) Standard efficiency propane or oil furnace
7) High efficiency propane or oil furnace (AFUE 80 or higher)
8) Hot water heating
9) Gas/oil fired boiler
10) Wood burning stove
11) Other, please specify:_____
66) (DO NOT READ) Only build green/energy efficient homes (DO NOT READ OTHER CHOICES - SKIP TO Lighting SECTION)

88) Don't know
99) Refused

Q 27. Which of the following types of cooling systems do you install in the standard homes you build, which don't meet all the requirements for green or energy efficient home building programs? [READ and CHECK ALL THAT APPLY]

1) Standard Efficiency Heat Pump
2) High Efficiency Heat Pump (SEER 13.0 or higher)
3) Standard Efficiency air conditioner
4) High efficiency air conditioner (SEER of 13.0 of higher)
5) Room air conditioners only
6) No cooling system
66) (DO NOT READ) Only build green/energy efficient homes (DO NOT READ OTHER CHOICES - SKIP TO Lighting SECTION)
88) Don't know
99) Refused

IF HIGH EFFICIENCY INSTALLED IN Q 26 AND Q 27 OR ONLY BUILD GREEN/ENERGY EFFICIENT HOMES, THEN SKIP TO Lighting SECTION

Q 28. Why don't you install high efficiency heating and/or cooling equipment in the standard homes you build? (DO NOT READ. CHECK ALL THAT APPLY)

1) Cost
2) Install high efficiency heat, but customers don't demand cooling
3) Customers don't demand it
4) Poor equipment performance/reliability
5) Energy savings not high enough to justify extra cost
6) Other, please specify:_____
88) Don't know
99) Refused

Lighting

The next set of questions refers to high efficiency lighting. For these questions, "high efficiency" is defined as any fixtures or lamps with the ENERGY STAR label. This includes various types of compact fluorescent light bulbs (CFLs) and dedicated CFL fixtures that use only fluorescent light bulbs, and any fixtures and lamps with the ENERGY STAR label.

Q 29. Do you install high efficiency lighting in your standard homes?

1) Yes (CONTINUE)
2) No (SKIP TO Q 31)
3) Do not build standard homes (SKIP TO Q 33)
88) Don't know
99) Refused

Q 30. Which of the following types of lighting, if any, do you install in the standard homes you build? [READ LIST AND CHECK ALL THAT APPLY]

1) Compact fluorescent light bulbs (CFLs)
2) Dedicated compact fluorescent fixtures

3) Halogen lighting
4) T-5's (long slender fluorescent tubes)
5) T-8's (long slender fluorescent tubes)
6) T-12's (long slender fluorescent tubes)
7) Other, please specify:_____
88) Don't know
99) Refused

SKIP TO Q 32

Q 31. Why don't you install high efficiency lighting in the standard homes you build [DO NOT READ. CHECK ALL THAT APPLY]?

1) Adds too much to home price
2) Bulbs burn out
3) Can't find fixtures/Not available where I build
4) Poor light quality / weak light
5) Don't look good
6) Start up too slow
7) Customers don't demand it
8) It is not required
9) Equipment problems with fixtures
10) Energy savings not high enough to justify extra cost
11) Other, please specify:_____
88) Don't know
99) Refused

Q 32. (ASK IF Q 30 NOT 1 AND NOT 2) Are there specific performance problems with either compact fluorescent light bulbs or fixtures that keep you from using them in the standard homes you build? [PROBE FOR PROBLEMS WITH BOTH CFL LIGHT BULBS AND FIXTURES.]

1) Yes (Specify:_____)
2) No
88) Don't know
99) Refused

Q 33. (ASK IF [BUILDER STATE] = WA) Did you visit any of the Bennett Homes models that were showing the ENERGY STAR Advanced Lighting Package?

1) Yes (CONTINUE)
2) No (SKIP TO Q 36)
88) Don't know (SKIP TO Q 36)
99) Refused (SKIP TO Q 36)

Q 34. Why did you visit the model home? (DO NOT READ, ACCEPT MULTIPLE RESPONSES)

1) Am interested in what the competition is doing
2) Wanted to see the Advanced Lighting Package
3) Wanted to get more information about the Advanced Lighting Package
4) Other (Specify)
88) Don't know
99) Refused

Q 35. Do you plan to install the Advanced Lighting Package in any of your homes in the future?

1) Yes
2) No
3) Maybe
88) Don't know
99) Refused

Duct Testing and Sealing

Q 36. Are you familiar with duct tightness testing and duct sealing for new homes?

1) Yes
2) No (SKIP TO **Q 46**)
88) Don't Know (SKIP TO **Q 46**)
99) Refused (SKIP TO **Q 46**)

Q 37. Do you have duct tightness tests performed for the homes you build?

1) Yes
2) Sometimes
3) Yes - for ENERGY STAR Homes only (SKIP TO Q 39)
4) No (SKIP TO Q 42)
88) Don't Know (SKIP TO Q 42)
99) Refused (SKIP TO Q 42)

Q 38. (IF [ENERGY STAR BUILDER] = N) What percentage of your homes are duct tested? (IF [ENERGY STAR BUILDER] = Y) What percentage of your non-ENERGY STAR homes are duct tested?

1) Percentage of homes_____
88) Don't know
99) Refused

Q 39. Who performs the duct testing for your homes? (DO NOT READ)

1) HVAC contractor
2) Third Party Company or Consultant
3) Utility staff
4) Alliance / ENERGY STAR homes program staff
5) Other, please specify:_____
88) Don't know
99) Refused

Q 40. What problems, if any, have you experienced with duct testing? (DO NOT READ)

1) Time consuming
2) Tests inaccurate, do not reflect actual equipment performance
3) Too expensive
4) Delays in scheduling testers
5) Testers not available in area
6) Lack of competence among testers
7) Other, please specify:_____
8) No problems
88) Don't know
99) Refused

Q 41. What do you view as the benefits to the builder, if any, of duct testing and sealing (DO NOT READ)

1) Reduced callbacks (liability, warranty issues)
2) Verification that HVAC done correctly
5) Verification that ducts do not leak
6) Catches some problems before customer moves in
7) Other, please specify:_____
8) No benefit
88) Don't know
99) Refused

[IF Q 37 = 1, 3, or 4 THEN SKIP TO Q 43]

Q 42. Why don't you have the ducts tested in the homes you build?

1) Time consuming
2) Tests inaccurate, do not reflect actual equipment performance
3) Too expensive
4) Not worth hassle
5) Customers do not consider testing valuable
6) Delays in scheduling testers
7) Testers not available in area
8) Certified testers not available in my area
9) Lack of competence among testers
10) Other, please specify:_____
11) No problems
12) Don't know who to call
13) Not familiar with duct testing
88) Don't know
99) Refused

Q 43. Do you expect duct testing to become standard practice?

1) Yes
2) No
88) Don't know
99) Refused

Q 44. Do you currently locate ducts inside conditioned spaces?

1) Yes (SKIP TO **Q 46**)
2) No
88) Don't know
99) Refused

Q 45. Do you plan to do this in the future?

1) Yes
2) No
88) Don't know
99) Refused

Q 46. When designing the layout of your homes, which of the following professionals do you typically work with: (READ LIST, accept multiples):

1) Designer on staff
2) Floor plan company
3) Architect
4) Home designer
5) Design the home yourself
6) Stock plans book
7) Other (Specify)
88) Don't know
99) Refused

Q 47. How frequently do you change the structural designs of the homes you build? Is it …? (READ LIST UNTIL ANSWERED)

1) Each year
2) Every 1 to 2 years
3) Every 2 to 3 years
4) More than 3 years
5) A continuous process
6) Other (specify)
88) Don't know
99) Refused

IV. Participant Attitudes and Marketing Practices

IF [NOAWARE] = Y OR [NOPARTS] = Y, TERMINATE.

ASK REMAINING QUESTIONS, AS A BATTERY, FOR EACH [PART PROGRAMS].

READ ONCE: Now, I'm going to ask you about your promotion and marketing for each of the programs you participate in.

Q 48. Do you actively promote the fact that your homes are [PART PROGRAMS]?

1) Yes
2) No (Skip to Q 51)
88) Don't know (Skip Q 51)
99) Refused (Skip to Q 51)

Q 49. What specific BENEFITS, if any, do you promote about your [PART PROGRAMS] homes? (DO NOT READ, CHECK ALL THAT ARE MENTIONED)

1) Energy savings
2) Better air quality
3) Increased comfort
4) Overall construction
5) Environmental stewardship/protection
6) Sustainable/recycled materials
7) Water conservation

8) QA/Third party certification
9) Other (Specify):_____
10) Don't promote any particular benefit, just general label
11) Do not promote
88) Don't know
99) Refused

Q 50. From whom do you receive financial assistance for marketing [PART PROGRAMS] components of your homes to homebuyers.

1) No one, advertising expenses entirely out-of-pocket
2) Yes, receive coop marketing funds from program
3) Yes, share promotion expenses with utility or other agency
4) Other (Specify)_____
88) Don't Know
99) Refused

READ ONCE: Now I would like to discuss your experience participating in green and energy efficient building programs.

Q 51. I am going to ask you to rate your satisfaction with each of the following aspects of the [PART PROGRAMS] program. For each, please rate your satisfaction on a 1 to 5 scale, with 5 indicating extremely satisfied and 1 indicating extremely dissatisfied. You can also say if it does not apply:

Q 51a) Cost of participation
Q 51b) Quality of marketing support materials
Q 51c) Certification and verification process
Q 51d) Duct Testing
Q 51e) Ease of participation
Q 51f) Responsiveness of program staff
Q 51g) Amount of co-op advertising support
Q 51h) Amount of paperwork required to participate
Q 51i) The program overall

Q 52. Please tell me how much you agree or disagree with each of the following statements. Would you say that you strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, or strongly disagree with the following statements [RANDOMIZE ORDER]:

a) Homebuyers understand the benefits of the [PART PROGRAMS] label
b) Homebuyers understand the value of duct testing and duct sealing
c) Homebuyers link the [PART PROGRAMS] home label with home value
d) Homebuyers link the [PART PROGRAMS] label with home comfort
e) The certification process for [PART PROGRAMS] homes does not delay home construction

Q 53. What single aspect of the [PART PROGRAMS] program do you like the most?

Q 54. (ASK ONLY IF [ENERGY STAR BUILDER] = Y) And what single aspect of the ENERGY STAR Homes program do you like the least?

Q 55. What changes, if any, would you recommend for the [PART PROGRAMS] program?

Q 56. (ASK ONLY IF [ENERGY STAR BUILDER] = Y) Do you have any final comments about the ENERGY STAR Homes program?

Those are all the questions I have for you today. Thank you very much for your time.

Fixtures Pilot Interview Guide for Advocates

January 2009

Objectives:

- Understand how existing industry Advocates were further developed to promote efficient lighting fixtures
- Learn if program participation has affected Advocates' sales approach/success and/or the local market in any way
- Solicit feedback for changes to future lighting fixtures program initiatives

Target Audience: Two Advocates that were selected for further professional development by Fixtures Pilot participants

Hello, my name is _____ calling from ECONorthwest, an energy research firm based in Portland. My company evaluates the ENERGY STAR Homes program for the Northwest Energy Efficiency Alliance, and as part of this effort we are also evaluating the Lighting Fixtures Pilot Program that was implemented by ICF International in 2008.

As you were one of the efficient lighting "Advocates" selected for further professional development, we'd like to learn how the program impacted you, and get your feedback regarding the program's effectiveness. This interview should take 20 minutes or less.

First I'd like to learn about the professional support you received from the program implementers, and how this has subsequently impacted your business.

1) Through the Pilot, did you receive any training or coaching targeted specifically to you?

   a) Please describe the training you received.
   b) How effective was the training? What elements were most valuable to you?

2) Did the Pilot involve you in industry activities so you could disseminate your knowledge and advocacy?

   a) If YES: How did this go? (Probe to see what they did, and if they perceive any missed opportunities)

3) What, if anything, is different about your advocacy approach or activities since participating in the Pilot? (Probe to see if speaking at more events, contacting builders differently, writing articles, hosting training, etc.)

   a) If changes made: Why did you make these changes?
   b) If no changes made: Why have you not changed your sales activities?

4) Do you think you are more effective at reaching builders or persuading them to install efficient lighting fixtures now?

   a) If YES: How did the training help you in this regard?
   b) If NO: Why not?

5) As a result of your participation in the Pilot, do you think other lighting industry professionals have become strong and recognized advocates of fixtures too?

   a) Why/why not?

6) Since the conclusion of the Pilot, have you seen evidence of increased fixtures stocking, promotions, incentive programs or actual sales?

   a) If YES: What have you observed?
   b) If NO: Why do you think this is?

Now I'm going to ask you to rate your overall experience with the pilot, and then we'll be done.

7) What was the best part about participating in this Pilot program?

8) What was the least useful aspect of the Pilot?

9) Is there anything you would change about the Pilot?

10) What do you think are the largest remaining barriers to installing efficient lighting fixtures in your area?

11) Do you have any suggestions for future regional initiatives to further promote efficient fixtures?

Those are all the questions I have for you today. Thank you very much for your time.

Fixtures Pilot Interview Guide for Builder Reps

December 2008

Objectives:

- Understand how lighting supplier builder reps interact with builders
- Understand builders' barriers to installing efficient lighting fixtures
- Get feedback on the quality of the training builder reps received through the Lighting Fixtures Pilot Program
- Learn if fixtures sales have increased since attending the training, are they increasing their stock.

Target Audience: 6-8 Builder Reps that received Lighting Fixtures training in late March 2008

Hello, my name is _____ calling on behalf of ECONorthwest, an energy economics firm based in Portland. The Northwest Energy Efficiency Alliance, which runs the ENERGY STAR Homes program, has asked us to help them better understand the market for energy efficient lighting fixtures and builders' decisions on whether or not to install fixtures. As part of our study, we are speaking with Builders Reps that received ENERGY STAR lighting fixtures training from ICF International in March of this year. Could I speak to _____?

[IF NECESSARY:] This survey is extremely important to NEEA's understanding of the lighting and new homes markets, and will help in the design and delivery of programs that will directly affect companies like yours. We're willing to work around your schedule to find a time when you can speak with us for about twenty minutes.

[IF NECESSARY:] The Northwest Energy Efficiency Alliance is a non-profit corporation supported by electric utilities, public benefits administrators, state governments, public interest groups and energy efficiency industry representatives. These entities work together to make affordable, energy-efficient products and services available in the marketplace. NEEA is currently in the process of refining and delivering a Northwest regional version of the national ENERGY STAR homes program. That's why they are looking for input from those involved in supplying the new homes market in the Pacific Northwest.

I. INTRODUCTION AND BUSINESS SCOPE

First I'd like to start with some general information about you and your clients.

1. How long have you been a builder representative for your company?

2. Approximately how many builders do you work with? How many of them build ENERGY STAR homes, either exclusively or as one of their offerings?

II. BUILDER INTERACTIONS AND PERCEPTIONS

Now I'm going to ask you some questions about your interactions with your builder clients and their perceptions of energy efficient lighting fixtures.

3. First, how do you usually work with your existing builder clients? Do you contact them regularly or do you let them contact you? (Probe to understand channels: meetings, phone, email, etc.)

4. Do your builders generally prefer to install energy efficient fixtures or not? (Probe to get rough mix.) Does this vary by builder volume, location, or other builder characteristics?

   NOTE TO INTERVIEWER: IF BUILDER DECISIONS ARE BASED MAINLY ON FIXTURE TYPES (I.E., SOME MODELS USED, OTHERS NOT) AND/OR ROOM PLACEMENT (E.G., OK FOR BATHROMS, NOT FOR KITCHENS) RECORD THIS INFORMATION.

5. (IF SOME DO INSTALL) What features are builders most interested in when they choose efficient fixtures?

6. (IF SOME DON'T INSTALL) Why don't some of your builders install efficient fixtures? What drawbacks do they mention to you? (Probe for availability problems, performance/quality issues, technical issues, added costs, homeowner objections)

7. Do you believe that builders understand the technical features of efficient lighting fixtures? Are there particular characteristics that builders have less knowledge about?

8. (IF NOT MENTIONED) Do you think homebuyers see any drawbacks to efficient lighting fixtures? If YES, What are these?

9. Based on your experience, is the ENERGY STAR label valuable? Does it make lighting easier to sell? Does it sell for a higher price?

10. What other insights can you share from your experience with ENERGY STAR/energy efficient lighting fixtures (e.g., what are the key features; what makes or breaks the sale; what makes builders buy vs. not; points of resistance, etc.)?

III. TRAINING EXPERIENCE

Now I'm going to ask you some questions about the lighting fixtures training you received, and then we'll be done.

11. Before you received the training, how would you characterize your knowledge about energy efficient fixtures? Would you say you were: (READ ALL)

    1) Very knowledgeable
    2) Knowledgeable

3) Only somewhat knowledgeable
4) Not at all knowledgeable

12. Before you took the training, about what percent of your fixtures sales to builders were for energy efficient lighting?

    1) And what is this percent now?
    2) If PERCENT has declined or the same: Do you think this percentage will increase in the next year? If YES, Why?

13. And before the training, how frequently did you promote energy efficient fixtures. Would you say you encouraged builders to buy them: (READ ALL)

    1) Always
    2) Usually
    3) Sometimes
    4) Rarely
    5) Never

14. [IF ALWAYS OR USUALLY, ASK] How did you do this? What did you tell your builders? (Probe to see what benefits they promote)

15. [IF RARELY OR NEVER, ASK] Why did you tend not to promote energy efficient fixtures to builders?

16. [IF SOMETIMES ASK] What determines whether or not you will promote energy efficient fixtures to a builder?

17. What topics did your fixtures training cover?

18. Do you feel that you thoroughly understand the technical aspects and benefits of energy efficient lighting fixtures now?

19. Do you feel that the training gave you the tools you need to more effectively sell energy efficient fixtures?
    1) If NOT: What additional information or tools do you need?

20. What elements of the training, if any, are you using most in your day-to-day activities?

21. What was the least useful part of the training?

22. What, if any, recommendations do you have for improving the training for builder reps?

23. In the future, if you need additional information about lighting fixtures or strategies to help you sell them, whom will you go to?

24. Overall, how would you rate your experience with the fixtures training?

Those are all the questions I have for you today. Thank you very much for your time and good information.

Fixtures Pilot Interview Guide for Builder Rep Managers

December 2008

Objectives:

- Understand if/how lighting store managers interact with utilities
- Get feedback on the quality of the training builder reps received through the Lighting Fixtures Pilot Program
- Learn if managers perceive changes in sales techniques of their builder reps
- Find out if shelf space for fixtures has changed after the training
- Learn if store-wide fixtures sales have increased after the training

Target Audience: 2-3 lighting store managers that received Lighting Fixtures training in late March 2008

Hello, my name is _____ calling on behalf of ECONorthwest, an energy economics firm based in Portland. The Northwest Energy Efficiency Alliance, which runs the ENERGY STAR Homes program, has asked us to help them better understand the market for energy efficient lighting fixtures. As part of our study, we are speaking with lighting store managers that received ENERGY STAR lighting fixtures training from ICF International in March of this year. Could I speak to _____?

[IF NECESSARY:] This survey is extremely important to NEEA's and the utilities understanding of the lighting and new homes markets, and will help in the design and delivery of programs that will directly affect companies like yours. We're willing to work around your schedule to find a time when you can speak with us for about twenty minutes.

[IF NECESSARY:] The Northwest Energy Efficiency Alliance is a non-profit corporation supported by electric utilities, public benefits administrators, state governments, public interest groups and energy efficiency industry representatives. These entities work together to make affordable, energy-efficient products and services available in the marketplace. NEEA is currently in the process of refining and delivering a Northwest regional version of the national ENERGY STAR homes program. That's why they are looking for input from those involved in supplying the new homes market in the Pacific Northwest.

I. BUSINESS SCOPE and INTERACTIONS

First I'd like to start with some general information about your business role and market relationships.

1. How long have you been a manager for your company?

2. How many builder reps do you work with?

3. Which store or stores do these reps work out of?

4. Do you have any direct interactions with utilities staff?

    a. If NO: Does someone else at your company typically deal with utilities? (If YES) Who is this person? (find out name and title)
    b. If YES: What issues do you work with the utilities on? (Probe to see if program design, incentive levels, stocking practices, etc.) Do you contact them regularly or do you let them contact you? (Probe to understand channels: meetings, phone, email, etc.)
        1) (If not mentioned) How have these interactions benefited your company?

II. MARKET PERCEPTIONS

Now I'm going to ask you a few questions about the market's perceptions of energy efficient lighting fixtures.

5. Do you believe that builders understand the technical features of efficient lighting fixtures? Are there particular characteristics that builders have less knowledge about?

6. Do you think homebuyers see any drawbacks to efficient lighting fixtures? If YES, What are these?

7. Based on your experience, is the ENERGY STAR label valuable? Does it make lighting easier to sell? Does it sell for a higher price?

8. What other insights can you share from your experience with ENERGY STAR/energy efficient lighting fixtures (e.g., what are the key features; what makes or breaks the sale; what makes builders buy vs. not; points of resistance, etc.)?

III. TRAINING EXPERIENCE

I'm going to ask you some final questions about the lighting fixtures training you attended, and then we'll be done.

9. Before you attended the training, how would you characterize your knowledge about energy efficient fixtures? Would you say you were: (READ ALL)

    a. Very knowledgeable
    b. Knowledgeable
    c. Only somewhat knowledgeable
    d. Not at all knowledgeable

10. Before you took the training, about what percent of your store's fixtures sales to builders were for energy efficient lighting?

    a. And what is this percent now?
    b. If PERCENT has declined or the same: Do you think this percentage will increase in the next year? If YES, Why?

11. How about your store's stocking practices? Have you changed the amount of shelf space dedicated to energy efficient fixtures since participating in the pilot program? (Find out if more/less sq. ft. used, and reasons for change/no change.)

12. And before the training, how frequently did you promote energy efficient fixtures. Would you say you encouraged builders to buy them: (READ ALL)

    a. Always
    b. Usually
    c. Sometimes
    d. Rarely
    e. Never

13. [IF ALWAYS OR USUALLY, ASK] How did you do this? What did you tell your reps or builders? (Probe to see what benefits they promote)

14. [IF RARELY OR NEVER, ASK] Why did you tend not to promote energy efficient fixtures to your reps or builders?

15. [IF SOMETIMES ASK] What determines whether or not you will promote energy efficient fixtures?

16. What topics did your fixtures training cover?

17. Do you feel that your builder reps thoroughly understand the technical aspects and benefits of energy efficient lighting fixtures now?

18. Do you feel that the training gave your builder reps the tools they need to more effectively sell energy efficient fixtures?
    a. If NOT: What additional information or tools do they need?

19. What elements of the training, if any, are your builder reps using most in their day-to-day activities?

20. What was the least useful part of the training?

21. What, if any, recommendations do you have for improving the training for builder reps?

22. Overall, how would you rate your experience with the fixtures training?

Those are all the questions I have for you today. Thank you very much for your time and good information.

Fixtures Pilot Interview Guide for Model Home Builder

January 2009

Objectives:

- Understand Bennett Homes' past experience with lighting fixtures and motivations for participating in the Fixtures Pilot
- Learn if program participation will affect Bennett's future installations of the Advanced Lighting Package in any way
- Gauge the reactions/feedback from builders and homebuyers that visited the model homes

Target Audience: Representative from Bennett Homes that was involved in the Fixtures Pilot

Hello, my name is _____ calling from ECONorthwest, an energy research firm based in Portland. My company evaluates the ENERGY STAR Homes program for the Northwest Energy Efficiency Alliance, and as part of this effort we are also evaluating the Fixtures Pilot Program that was implemented by ICF International. We'd like to talk with Bennett Homes to understand your participation goals and experience participating in this program. This interview should take 15 minutes or less.

First I'd like to get a little background about your company's past experience with energy efficient lighting fixtures.

1) Prior to participating in this pilot program, had Bennett Homes been installing energy efficient fixtures in its homes?

    a) If YES, ask: In about what percent of homes?
    b) Did any of these homes include the complete ENERGY STAR Advanced Lighting Package?
        i) If NO: Why not?

2) What were your primary motivations for participating in the pilot program? (Probe for green ethic, competitive advantage, to get financial/marketing assistance, to get realtor training, publicity)

3) In the model homes that were featured in the pilot program, about what percent of the homes' fixtures were energy efficient or ENERGY STAR?

Now I'm going to ask a few questions about your actual experience with the pilot, and then we'll be done.

4) Do you have a sense for how many builders and homebuyers visited the model homes?

   a) If YES: How many? (Get breakdown)

5) Did you expect more or less builders and homebuyers to visit?

6) How did builders and homebuyers react to the Advanced Lighting Package? Were they generally accepting or critical? (Get distinctions by group)

   a) If NEGATIVE FEEDBACK received: What issues or concerns did they have with the Advanced Lighting Package?

7) Did participating in the pilot make Bennett Homes more comfortable with the specification, purchasing, installation or marketing of the Advanced Lighting Package? (Note: may not be an issue if they have extensive experience with the ALP)

   a) Were any of these activities particularly problematic or more difficult than others?

8) As a result of the pilot, are you more or less likely to install the Advanced Lighting Package in other Bennett Homes? Why/why not?

9) How would you describe your overall satisfaction with the pilot?

10) (IF NOT MENTIONED) Were your participation goals achieved?

   a) If NOT, ask: Why not?

11) Is there anything you would change about the pilot?

Those are all the questions I have for you today. Thank you very much for your time.

Fixtures Pilot Interview Guide for Utilities and NEEA

November 2008

Objectives:

- Determine if Pilot Program goals were or are likely to be achieved.
- Identify the Pilot activities that the utilities valued most.
- Learn what follow up activities/programs the utilities may undertake, if any.
- Determine what role NEEA should assume for future pilots, if any.

Target Audience: Four utilities that participated in the Fixtures Pilot Program and NEEA

Hello, my name is _____ calling from ECONorthwest, an energy research firm based in Portland. My company evaluates the ENERGY STAR Homes program for the Northwest Energy Efficiency Alliance, and as part of this effort we are also evaluating the Fixtures Pilot Program that was implemented by ICF International. Right now we're interviewing the utilities that participated in the Pilot to understand if the Pilot's goals were achieved and what follow up actions the utilities may make in the future. This interview should take 20 minutes or less and your answers will be grouped with other respondents for reporting in aggregate form only.

I. INTRODUCTION AND PARTICIPATION (UTILITIES ONLY)

First I'd like to ask you about your utility's participation in the Pilot Projects. As you may recall four separate projects were completed. These were: Leveraging Advocates, Training for Lighting Showroom Builder Representatives, the Bennett Homes Model Home and Media Event, and Training for Lighting Showroom Floor Staff.

1) Did your utility participate in all of these projects?

    a) If NO, ask: Which ones did your utility not participate in, and why?

II. PILOT GOAL ACHIEVMENT AND FUTURE PLANS

I'm going to ask you about some of the specific goals that were established for the pilot projects.

NOTE: Only ask about projects that the utility participated in for next 4 questions.

2) For the Leveraging Advocates project, a key goal was to demonstrate how existing fixtures advocates can be further trained to better support market actors in the fixtures market. Do you think that this pilot successfully demonstrated and documented how to groom and support industry advocates?

    a) If NO, ask: Why not?
    b) If YES, ask: What impacts, if any, have you noticed due to this particular project?

3) For the Builder Reps Training project, a key goal was to demonstrate how lighting fixtures builder reps can be recruited and trained to better understand fixtures and then promote fixtures to builders. Do you think that this pilot successfully demonstrated and documented how to do these things?

    a) If NO, ask: Why not?
    b) If YES, ask: What impacts, if any, have you noticed due to this particular project?

4) For the Model Home project, a key goal was to demonstrate how utilities could work with a builder to get the Advanced Lighting Package into a model home and then maximize

publicity of the home. Do you think that this pilot successfully demonstrated and documented how to do this?

a) If NO, ask: Why not?
b) If YES, ask: What impacts, if any, have you noticed due to this particular project?

5) For the Showroom Staff Training project, a key goal was to demonstrate how lighting fixtures showroom staff can be trained to better understand fixtures and promote fixtures to their customers. Do you think that this pilot successfully demonstrated and documented how to do these things?

a) If NO, ask: Why not?
b) If YES, ask: What impacts, if any, have you noticed due to this particular project?

6) What did you like most about the pilot projects? (Probe to see if any other unanticipated, beneficial impacts)

7) And what did you like least?

8) Were there any significant challenges that reduced the effectiveness of any of the projects we just discussed?

a) If YES, ask: Which programs were hindered by what challenges? Could these challenges have been approached a different way?

Now I'm going to ask you about some other goals of the Pilots Projects.

9) For each of the following goals, please indicate if you think the goal has DEFINITELY been achieved, is LIKELY to be achieved, is NOT LIKELY to be achieved, or if it is TOO EARLY to know:

a) Improved utility understanding of fixtures distribution and sales channels to builders and developers
b) Increased percentage of builder sales reps that are comfortable selling ENERGY STAR fixtures
c) Increased stocking and promotion of lighting fixtures by key lighting distributors
d) Increased stocking and promotion of lighting fixtures in key lighting showrooms
e) Increased adoptions of fixtures by single family and multifamily builders

NOTE: For any NOT LIKELY, ask Why?

10) Did (you/your utility) have any other goals for the Pilots programs that we have not discussed?

a) If YES, ask: What were these goals, and were they achieved?

11) (UTILITIES ONLY) Is your utility planning any follow up actions or programs to build upon the activities of the pilot projects?

a) If YES, ask: What are you doing or planning?
b) If NO, ask: Why not?

III. NEEA'S ROLE

Now I'd like to ask some concluding questions about NEEA's role in this program, and then we'll be done.

12) Was it helpful to have NEEA as a sponsor of the pilot? Why/why not?

13) In the future, should NEEA continue to be involved in lighting fixtures programs?

a) If YES, ask: What should NEEA's role be? (probe to see if role needs to change in any way)
b) If NO, ask: Why not?

Those are all the questions I have for you today. Thank you very much for your time.

APPENDIX E: CERTIFIED AND INITIATED HOMES BY STATE

Below are charts showing the total number of certified and initiated homes by month and by state.

Figure 5: Certified and Initiated Homes by Month - ID

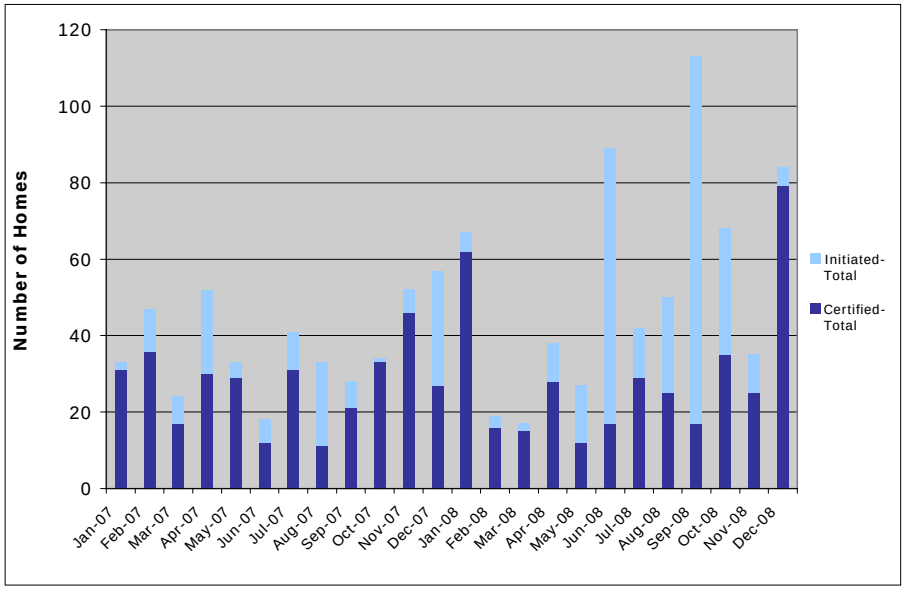


Figure 6: Certified and Initiated Homes by Month - MT

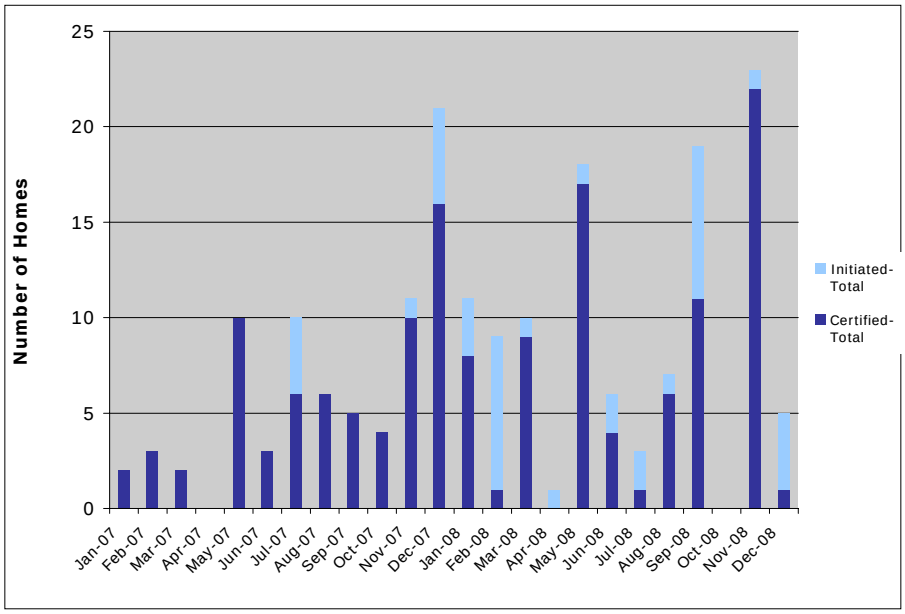


Figure 7: Certified and Initiated Homes by Month - OR

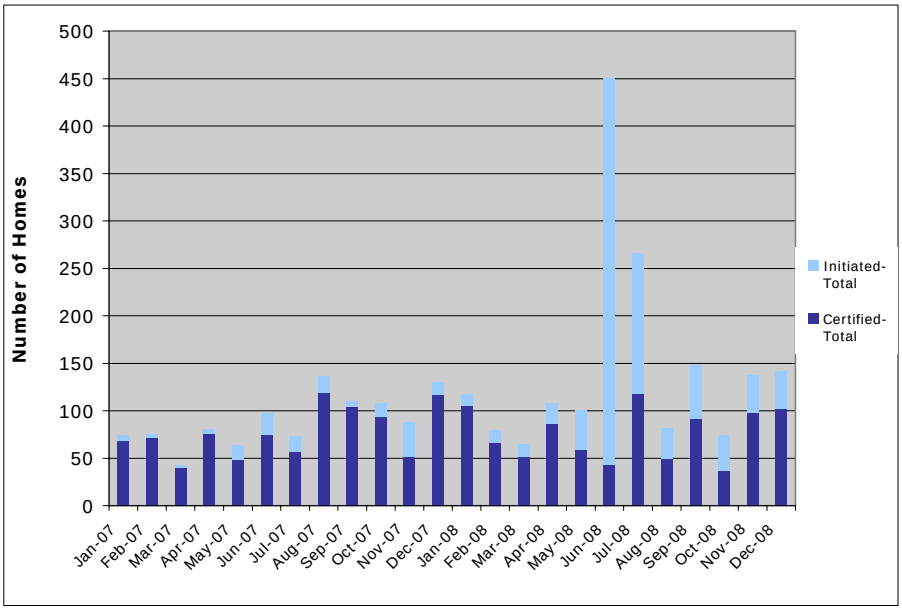
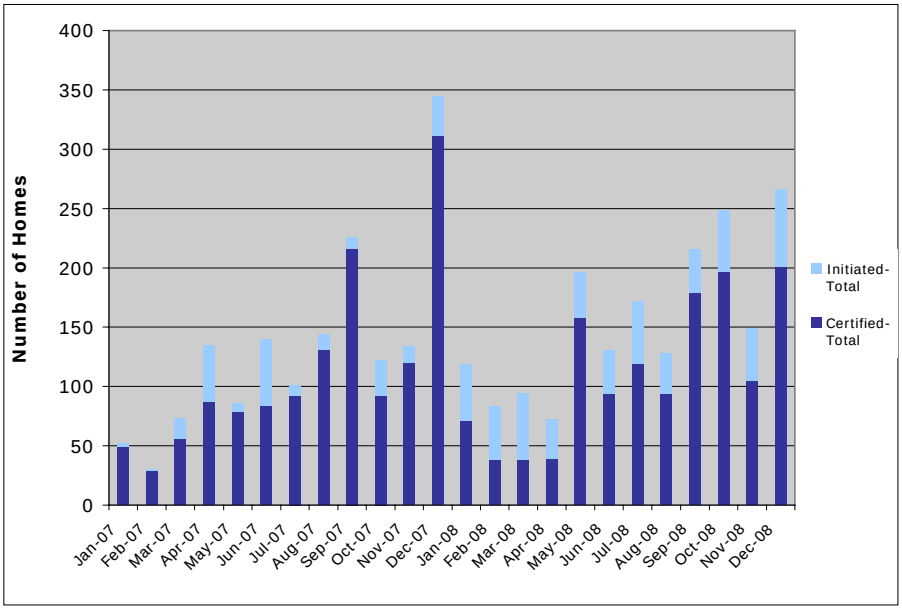


Figure 8: Certified and Initiated Homes by Month - WA



APPENDIX F: 2008 CONSUMER MARKETING MEDIA SUMMARY

media by region	dates	mediums	target population / circulation / gross impressions	net reach / circulation / impressions	% reach	freq/week	total exposures / spots	total campaign duration (weeks)	Total Hours of TV Advertising	Total Hours of Radio Advertising	Total Pages of Print Advertising	Total Online Impressions	Total Billboards
Regional Campaigns													
Radio PSAs - December Only	8/20/09	radio								**1,162**			
Market Totals													
Market 1: Puget Sound													
KIRO TV w/ PSE / Bennett / Schneider / Burnstead / CamWest	3/21-7/2	tv, online	2,123,400	1,416,308	66.7%	36	432	12	**216**			**1,241,104**	
Tacoma KBTC Ad / Sponsorship of "This Old House"	4/10-12/27	tv, online	50,000	30,000	60.0%	2	76	32	**16**			**42,000**	
KBTC Choice Guide TV Ad	4/10-12/27	print - 1/8pg ad	21,000	3,150	15.0%		9	32			**1**		
Net Zero Sponsorship	1/1-12/31	online, print, other									**3**		
New Homes + Living Magazine	6/1-9/1	Print - Real Estate Pub	80,000	32,000	40.0%		3	12			**1**		
Whatcom Built Green Homeowner Directory	9/30/08	Green Building Home Show Guide	3,000	1,050	35.0%		1	12			**0**		
Olympia Home Show - Tradeshow Booth	9/12-9/14	Print, Radio		7,500				1		**60**			
Seattle Radio Coop w/Belmark Homes	10/20-11/24	radio	2,123,400	420,433	19.8%	21	84	4		**42**			
2009 Seattle Real Estate Maps	3/1/09	Real Estate Directory	240,000	120,000	50.0%		1	1			**1**		
Project Green Build Sponsorship	12/15-12/31/2009	Sponsorship											
Market Totals			*4,640,800*	**2,030,441**									
Market 2: Greater Portland + SW Washington													
KGW Going Green TV Campaign	9/1-12/31	tv, online	2,516,971	2,038,747	81.0%	8	288	36	**144**			**800,000**	
PDX Radio - KINK, KCMD, KUPL, KLTH - Builder, Partner Coop	9/1-10/31	radio	2,516,971	737,473	29.3%	48	192	4		**96**			
PDX Cable TV Campaign	9/15-11/28	tv	2,516,971	767,676	30.5%	22	198	9	**99**				
PDX - EPA Print Campaign - Portland Monthly	9/1-9/30	magazine	168,908	67,563	40.0%	1	1	4			**1**		

media by region	dates	mediums	target population / circulation / gross impressions	net reach / circulation / impressions	% reach	freq/week	total exposures / spots	total campaign duration (weeks)	Total Hours of TV Advertising	Total Hours of Radio Advertising	Total Pages of Print Advertising	Total Online Impressions	Total Billboards
PDX - EPA Print Campaign - Portland Monthly	10/1-10/31	magazine	168,908	126,681	75.0%	1	1	4			**2**		
PDX - EPA Print Campaign - Portland Spaces	9/1-10/31	magazine	112,000	44,800	40.0%	1	1	16			**1**		
PDX - EPA Print Campaign - Oregon Home	11/1-12/31	magazine	80,000	32,000	40.0%	1	1	16			**1**		
Market Totals			*8,080,729*	**3,814,939**									
Market 3: Greater Boise													
EPA Co-Op campaign - Billboard	8/1-9/15	billboard	231,000	231,000	60.0%	12	12	16					**12**
EPA Co-Op campaign - Radio	6/30-10/26	radio	55,100	55,100		80	1,000	36		**500**			
KCIX Ultimate Home Makeover	6/1-6/28	radio	173,302	60,656	35.0%	90	180	2		**90**			
Twin Falls/Pocatello Radio Campaign - KEZJ, KIDA, KLLP, KPKY Radio	7/21-10/13	radio	92,976	37,004	39.8%	24	288	12		**144**			
Southern Idaho Print Full-Page Ad	8/10-10/1	print	70,000	28,000	40.0%	1	1	8			**1**		
Market Totals			*622,378*	**411,760**									
Market 4: Central OR													
Market Totals													
Market 5: SW OR													
Eugene - KVAL TV Campaign	7/28-9/15	tv	337,870	146,636	62.0%	33	132	4	**66**				
Eugene - Comcast TV Campaign	7/28-9/8	tv	62,000	51,460	83.0%	60	360	6	**180**				
Eugene - Green Umbrella Campaign	6/28-10/31	radio, online	337,870	182,450	54.0%	9	212	24		**106**			
Market Totals			*737,740*	**380,545**									
Market 6: SW WA													
See PDX schedule for TV/Radio													
BIASW Monthly Newsletter - FP Ad	7/1-7/31	print	1,050	840	80.0%	1	1	4			**1**		
Market Totals			*1,050*	**840**									
Market 7: Central WA													
Tri-Cities Network TV Coop - KNDU - Builder, Utility TV Coop	6/30-9/15	tv	191,822	182,615	95.2%	16	240	15	**120**				
Tri-Cities Cable TV Coop - HGTV, CNN, FOXNews,	6/9-9/28	tv	60,000	39,600	66.0%	51	810	16	**405**				

media by region	dates	mediums	target population / circulation / gross impressions	net reach / circulation / impressions	% reach	freq/week	total exposures / spots	total campaign duration (weeks)	Total Hours of TV Advertising	Total Hours of Radio Advertising	Total Pages of Print Advertising	Total Online Impressions	Total Billboards
Discovery, TNT													
Tri-Cities Radio Coop - KEYW, KOLW, KORD, KXRX	6/2-9/14	radio	191,822	156,187	33.0%	44	530	12		265			
The Real Estate Book - HBA coop w/TriCities Built Green	October	print	5,000	1,250	25.0%	1	1	4			1		
Homes & Land - HBA coop w/TriCities Built Green	October	print	10,000	2,500	25.0%	1	1	4			1		
CWHBA Yakima Parade of Homes Sponsorship	9/5-9/14	Co-sponsor w/Pacific Power	10,000	2,500	25.0%	1	1	2			0		
AppleTree Resort Vendor Guide	9/1/2008-9/1/2010	print	2,000	1,200	60.0%	1	1	1			1		
Market Totals			*470,644*	**385,852**									
Market 8: Eastern WA / N. ID													
Spokane Fall Parade of Homes - FP ad in Tour Guide	9/26-10/5	print, home show guide	20,000	14,000	70.0%	1	1	2			1		
Spokane Fall Parade of Homes - Newspaper Print Ad/Insert	9/26-10/5	print, newspaper	110,000	22,000	20.0%	1	1	2			1		
Spokane Development Sign - 100% ENERGY STAR Development	9/1/2008-1/1/2010	billboard	5,000	5,000		1	1	48					1
Market Totals			*135,000*	**41,000**									
Market 9: Montana													
Billings Dream Home Giveaway w/St. Jude + McCall Development	12/2/2008-8/30/2009	tv, radio, print, local	997,670	598,602	60.0%			12					
Market Totals													
2008 Consumer Marketing Totals			**14,688,341**	**7,065,377**	48.6%				**1,246**	**2,465**	**19**	**2,083,104**	**13**

APPENDIX G: FIXTURE-ONLY SHELF INVENTORY FOR THREE LIGHTING SHOWROOMS

December 2008

Display Type	NUMBER OF FIXTURE MODELS - Store 1											
	Energy Star CFL Fixture			Non-Energy Star CFL Fixture			Non-CFL Fixture Models			TOTAL Fixture Models		
	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere
Ceiling	0	0	0	0	0	0	360	0	0	360	0	0
Floor	0	0	0	0	0	0	0	175	6	0	175	6
Wall	0	0	0	0	0	0	0	0	0	0	0	0
Shelf	10	0	0	0	0	0	223	0	0	233	0	0
Total	**10**	**0**	**0**	**0**	**0**	**0**	**583**	**175**	**6**	**593**	**175**	**6**

Display Type	NUMBER OF FIXTURE MODELS - Store 2											
	Energy Star CFL Fixture			Non -Energy Star CFL Fixture			Non-CFL Fixture Models			TOTAL Fixture Models		
	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere
Ceiling	22	0	0	0	0	0	1,085	0	0	1,107	0	0
Floor	0	0	0	0	0	0	0	516	7	0	516	7
Wall	0	0	0	0	0	0	0	0	0	0	0	0
Shelf	31	0	0	0	0	0	0	34	0	31	34	0
Total	**53**	**0**	**0**	**0**	**0**	**0**	**1,085**	**550**	**7**	**1,138**	**550**	**7**

Display Type	NUMBER OF FIXTURE MODELS - Store 3											
	Energy Star CFL Fixture			Non -Energy Star CFL Fixture			Non-CFL Fixture Models			TOTAL Fixture Models		
	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere
Ceiling	8	0	0	0	0	0	607	0	0	615	0	0
Floor	0	0	0	0	0	0	0	256	6	0	256	6
Wall	0	0	0	0	0	0	0	8	0	0	8	0
Shelf	0	0	0	0	0	0	308	0	0	308	0	0
Total	**8**	**0**	**0**	**0**	**0**	**0**	**915**	**264**	**6**	**923**	**264**	**6**

Display Type	TOTAL FIXTURE MODELS (Stores 1, 2, and 3)											
	Energy Star CFL Fixture			Non -Energy Star CFL Fixture			Non-CFL Fixture Models			TOTAL Fixture Models		
	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere	Mounted	Table Lamp	Torchiere
Ceiling	30	0	0	0	0	0	2,052	0	0	2,082	0	0
Floor	0	0	0	0	0	0	0	947	19	0	947	19
Wall	0	0	0	0	0	0	0	8	0	0	8	0
Shelf	41	0	0	0	0	0	500	34	0	541	34	0
Total	**71**	**0**	**0**	**0**	**0**	**0**	**2,552**	**989**	**19**	**2,623**	**989**	**19**

	Percent of Fixture Display Space Allocated to Energy Star CLF Fixture Models
Store 1	1%
Store 2	3%
Store 3	1%

APPENDIX H: SUPPLEMENTARY BUILDER SURVEY TABLES

Table 34: Benefits from Program Homes to Builder

	ENERGY STAR (N=115)	Earth Advantage (N=41)	Built Green (N=105)	LEED (N=86)	NAHB Green (N=99)
Benefit	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**
Marketing/product differentiation	38%	47%	36%	38%	23%
No benefit	17%	27%	13%	15%	23%
Higher quality	14%	7%	8%	14%	10%
Sells faster	13%	11%	10%	10%	5%
Environmental/sustainability/societal	10%	12%	12%	7%	7%
Energy efficiency	10%	3%	11%	7%	2%
Higher price	5%	5%	6%	1%	2%
Rebate from utility	7%	0%	3%	4%	2%
Promotion assistance	0%	0%	2%	0%	0%
Reduced callbacks	2%	0%	1%	0%	1%
Cost savings	6%	2%	4%	1%	1%
Program recognition	8%	3%	6%	6%	5%
Consumer demand	5%	3%	3%	1%	4%
Other	8%	4%	8%	9%	5%
Don't know	5%	19%	18%	20%	33%

Q21 and Q22. (If aware of PROGRAM) To the best of your knowledge, what do you believe are the primary benefits to the builder, if any, of building PROGRAM homes? Is there another important benefit to the builder of building PROGRAM homes?

Table 35: 2008 Actual and 2009 Expected Home Construction Volumes

	ENERGY STAR (N=35)	Earth Advantage (N=5)	Built Green (N=23)	LEED (N=6)	NAHB Green (N=4)
Response	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**
2008 Homes – Minimum	0	3	0	0	0
2008 Homes – Maximum	130	90	90	1	40
2008 Homes – Average	17	24	14	<1	10
2009 Homes – Minimum	0	5	0	0	2
2009 Homes – Maximum	190	110	190	1	40
2009 Homes – Average	19	29	26	<1	15

Q11 and Q12. How many PROGRAM homes did you build in 2008? How many PROGRAM homes do you plan to build in 2009?

Table 36: Reasons for Not Participating in Homes Programs

	ENERGY STAR (N=80)	Earth Advantage (N=37)	Built Green (N=81)	LEED (N=79)	NAHB Green (N=92)
Reason	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**
Adds to home price	28%	29%	27%	29%	20%
Don't fully understand program	28%	18%	42%	20%	43%
Already build to program standard, don't need label	17%	2%	5%	3%	5%
Can't recover increased costs	11%	6%	7%	17%	5%
Price puts home in different market segment	3%	0%	3%	4%	2%
Too much hassle/too hard to meet requirements	3%	6%	3%	6%	2%
Process delays construction	3%	3%	0%	1%	1%
Customers don't want it	6%	20%	10%	5%	10%
Plan to begin building these homes	1%	3%	1%	2%	4%
Program not in my area/state	0%	3%	1%	1%	1%
Don't want government involvement	1%	3%	1%	1%	0%
Involved with other programs	0%	6%	3%	3%	6%
Slow housing market	3%	6%	1%	7%	1%
Don't want to change current methods	0%	3%	1%	0%	2%
Current code is good enough	4%	0%	0%	0%	0%
Other	17%	12%	17%	14%	12%
Don't know	13%	11%	14%	13%	10%

Q18 and Q19. What is the primary reason you don't participate in the PROGRAM for the homes you build? Is there another reason you don't participate in the PROGRAM?

Table 37: Reasons for not Participating in ENERGY STAR Homes Program, by State

	Idaho (N=16)	Montana (N=11)	Oregon (N=18)	Washington (N=35)	Total (N=80)
Reason	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**
Adds to home price	43%	13%	28%	26%	28%
Don't fully understand program	7%	27%	20%	43%	28%
Already build to program standard, don't need label	33%	40%	0%	12%	17%
Can't recover increased costs	4%	19%	10%	13%	11%
Customers don't want it	7%	0%	10%	6%	6%
Price puts home in different market segment	0%	0%	10%	2%	3%
Too much hassle/too hard to meet requirements	0%	0%	0%	6%	3%
Process delays construction	7%	0%	6%	0%	3%
Plan to begin building these homes	0%	0%	6%	0%	1%
Don't want government involvement	0%	0%	6%	0%	1%
Slow housing market	0%	0%	12%	0%	3%
Current code is good enough	7%	0%	12%	0%	4%
Other	18%	27%	18%	12%	17%
Don't know	14%	10%	0%	21%	13%

Q18 and Q19. What is the primary reason you don't participate in the ENERGY STAR Homes Program for the homes you build? Is there another reason you don't participate in the ENERGY STAR Homes Program?

Table 38: Most Beneficial Home Features

	ENERGY STAR (N=35)	Earth Advantage (N=5)	Built Green (N=23)	LEED (N=6)	NAHB Green (N=4)
Feature	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**	**Weighted to Builder Population**
Overall insulation	32%	37%	0%	0%	0%
High efficiency AC/HVAC	23%	0%	3%	0%	0%
Construction tightness, building envelope	23%	37%	3%	0%	0%
Bill savings	21%	26%	13%	0%	51%
High efficiency furnace	13%	0%	0%	0%	0%
Energy efficiency	10%	18%	18%	15%	0%
High efficiency appliances	7%	0%	5%	15%	0%
Whole-house design	3%	0%	33%	46%	31%
Air exchange/better air quality	0%	0%	13%	15%	0%
Recycled/sustainable building materials	0%	0%	29%	0%	0%
Sustainability/environmental/societal	5%	19%	21%	0%	0%
Reduced maintenance	3%	26%	0%	0%	19%
Other	23%	0%	8%	0%	61%
Refused	0%	0%	5%	0%	0%
Don't know	3%	0%	8%	39%	0%

Q24 and Q25. In your opinion, what is the most beneficial feature of PROGRAM homes? Is there another very important feature of PROGRAM homes?

Table 39: Problems with Duct Testing

	2009 (N=48)	2007 (N=44)
Reason	**Weighted to Builder Population**	**Weighted to Builder Population**
No problems	83%	87%
Too time consuming	4%	7%
Too expensive	2%	0%
Lack of competence with testers	0%	5%
Tests inaccurate, do not reflect true equipment performance	0%	1%
Delays in scheduling testers	2%	0%
Other	8%	0%

Q40. What problems, if any, have you experienced with duct testing?

Note: Shading signifies that the responses from the 2007 and 2009 surveys are significantly different at the 90 percent confidence level

Table 40: Frequency of Home Design Changes

	2009 (N=184)
Frequency	**Weighted to Builder Population**
A continuous process	63%
Each year	11%
Every 1 to 2 years	6%
Every 2 to 3 years	7%
More than 3 years	3%
Only build custom homes	5%
Never	2%
Other	2%
Don't know	2%

Q47. How frequently do you change the structural designs of the homes you build? Is it…?