

**PROCESS EVALUATION OF THE
ENERGY TRUST OF OREGON'S
EFFICIENT NEW HOMES PROGRAM
PY 2004-2005**

FINAL REPORT

July 19, 2006

Submitted by:



PROCESS EVALUATION OF THE EFFICIENT NEW HOMES PROGRAM

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PROCESS EVALUATION OF THE EFFICIENT NEW HOMES PROGRAM

EXECUTIVE SUMMARY

Opinion Dynamics Corporation (ODC) conducted a process evaluation of the Energy Trust of Oregon's (Energy Trust's) Efficient New Homes (ENH) program for program year 2004-2005. The ENH program promotes efficient construction and qualifies residential single-family new construction homes as ENERGY STAR homes. Builders construct single-family homes to ENERGY STAR Northwest specifications, apply for the incentive, and the home is verified to ensure that the program is achieving its goal of energy savings. As part of the program, the Energy Trust also makes outreach efforts to builders, trade allies (contractors), residential customers, realtors, and verifiers, and partners with Earth Advantage, a separate green building program that targets builders, to promote homes that are both energy efficient and environment friendly.¹

ODC interviewed different market actors involved in the ENH program to determine the program's strong points and areas for improvement. In addition to this process evaluation, we will conduct a short evaluability study in the future to determine if there is enough information in the program's databases to conduct an impact evaluation. This study focuses on the program's design and organization and provides recommendations for improvements to the program's processes. The Key Findings and Recommendations section below presents a list of evaluation indicators for inclusion in the program database, as well as a strategy for measuring the baseline of the ENH program. This evaluation comprises several tasks:

- Creation of a program theory logic model
- Depth interviews with program administrators and staff
- Interviews with builders, both participating and non-participating
- Interviews with trade allies of the ENH program

In 2004, program efforts focused on recruiting builders and signing them on to the program; while in 2005, program staff helped builders build through the program, verified the savings, and disbursed the incentives to the builders. Future efforts include verifying homes through market-based contractors and increasing consumer awareness and demand for ENERGY STAR homes.

Overall, the program appears to be successful in meeting its contractual goal of achieving energy savings as well as changing the residential new construction marketplace. The enthusiastic Energy Trust and contract staff are attuned to the needs of builders and trade allies, reaching out effectively to these market actors and supplying them with the support needed to participate in the program and to fill out the forms. Builders and trade allies feel the program has made an impact on their business and are generally satisfied with the program. Findings from the evaluation and recommendations are provided below.

¹ Earth Advantage homes do not always qualify as ENERGY STAR homes, and vice versa.

Key Findings and Recommendations

The key findings and recommendations of our evaluation are presented below, along with the program theory logic model and results of the in-depth interviews with program administrators, staff, participant and non-participant builders, and trade allies.

The full set of findings and recommendations can be found in the Findings and Recommendations section at the end of this report.

Findings

- While it is a new program, the Efficient New Homes program has had a very successful start.²
 - Achievement of energy savings goals of 6,100,00 kWh and 290,000 therms from acquired and committed homes³
 - Built 505 homes through program (including ENERGY STAR homes and zonal electric homes)
 - Set up networks with trade allies and builders
 - 113 of builders recruited
 - 153 of trade allies (including builders and performance testing contractors) recruited
- The program staff understand that program goals are energy savings (therms and kilowatt hours) and realize that building secondary and tertiary aspects of the program will support the end goal.
 - Care needs to be taken in signing up home builders to avoid exceeding the incentive budget.
- The program's focus is evolving from resource acquisition (incentives for builders) toward market transformation (educating market actors and marketing/brand maintenance).
- Barriers limit builder participation.
 - Builders and program staff see the compact fluorescent lighting (CFL) requirement as a barrier to program participation. However, given participation levels, this potential barrier is not yet a concern in terms of achieving program goals of energy savings. For further market transformation to take place, however, builders and other market actors must be further educated about CFLs.

² Information is for the implementation team's first contract, from March 2005 to March 2006. The program met its energy savings goals based on committed and forecasted homes.

³ Energy savings goals have been achieved for the implementation team's current contract (April 2006 to December 2006): 5,875,436 kWh and 225,000 therms from committed homes. Other current contract information, as of July 14, 2006): 384 homes (including ENERGY STAR homes and zonal electric homes) have been built, 11 new builders signed, 16 new trade allies recruited (includes builders and performance testing contractors).

- Program staff feel that builders may not realize that ENERGY STAR homes can be luxury developments.
- Some participants feel that the site incentive application is cumbersome.
- Program processes for builders and trade allies are running smoothly. The builder outreach specialists are the key to this success.
 - Enrolling in the program is easy and well facilitated by outreach specialists or Earth Advantage representatives.
 - The site incentive application is a little more cumbersome, and forms can be time consuming and repetitive.
 - Builders are very satisfied with the verification process.
 - Builders say the lag time for receiving incentive check is reasonable.
 - No issues for trade allies to meet program technical specs, but some difficulty obtaining heat pumps and AC units.
- Program marketing by outreach staff is very successful.
 - Partnerships have proved very beneficial, i.e. with Earth Advantage and Street of New Beginnings.
 - Builders often mention using the marketing materials to educate customers and to differentiate themselves from other builders.
 - Other benefits include:
 - Identifiable brand name
 - Third party verification
 - Better quality homes
 - Training
 - All builders had positive experiences with builder breakfasts.
 - ENERGY STAR recognition and program materials are good marketing tools for builders.
 - The training classes for trade allies make the program requirements easier to understand.
- Trade allies feel the program has a positive effect on their business and say they notice an increase in demand for high efficiency HVAC equipment, due to more educated buyers.
- Good teamwork among program staff.
 - Seamless interaction is occurring between implementer and subcontractor.
 - Builders and trade allies are pleased with outreach specialists.
- Northwest Energy Efficiency Alliance (NEEA) complements the ENH program
 - NEEA sets up the structures (builder outreach specialists, builder operator package) that the ENH program utilizes.
 - NEEA emphasizes the market transformation aspect of the program.
 - NEEA maintains consistency throughout the region.
- For ENH program managers, managing databases and generating reports can be tedious because forms must be complete and accurate.

- The two software programs, FastTrack (information about individual projects) and Goldmine (repository for trade ally data), are not well integrated with each other.
- Forecast reports can be tricky because construction schedules change, often due to external factors.
- Earth Advantage is a key partner in the ENH program⁴.
 - Participants often report having initially heard about the ENH program from Earth Advantage.
 - Builders say they have had positive experiences with Earth Advantage and feel that it is a credible information source.

Program Recommendations

- Program participants indicate that the amount and types of data required may be confusing to outside verifiers. Consider relaxing some of the program requirements in data collection or automating the data input process.
- Because many builders know the Earth Advantage name, consider further developing synergies between Energy Trust and Earth Advantage. Build on the Earth Advantage name recognition and increase awareness among builders of the ENH program. Reinforce that they can build homes under both Earth Advantage and ENH.
 - The Energy Trust should also work with Earth Advantage more to recruit more builders in the Earth Advantage program to build ENERGY STAR qualifying homes.
- Builders are sometimes turned off by the CFL requirement (and say that their customers do not like CFL lighting). Additional education about recent CFLs may improve the perception of compact fluorescent lighting, help dispel notions that CFLs make undesirable lighting, and reduce customer and builder resistance. Another option is to encourage ENERGY STAR to allow a certain wattage per square foot, instead of a CFL lighting requirement.

Because of the current success of the program and given the context of the budget, the following recommendations may be useful if the program expands or if participation lags in the future:

- Hire additional builder outreach specialists:
 - To canvass the region and sign up more builders as the current staff are busy walking builders through the paperwork and through the stages of qualifying their home
 - To support builders and trade allies who rely on builder outreach specialists to guide them through the process and forms

⁴ Earth Advantage homes do not always qualify as ENERGY STAR homes, and vice versa.

- Increase awareness among builders of existing marketing opportunities and collateral. In addition, provide more marketing services and materials to builders for customers. Builders think that marketing/education and promotion of program cost savings will help customers understand benefits.
 - Future evaluation efforts should identify the marketing messages that are effective with customers.
- Consider providing awards to builders to give them recognition for building ENERGY STAR homes.

Program Background and Goals

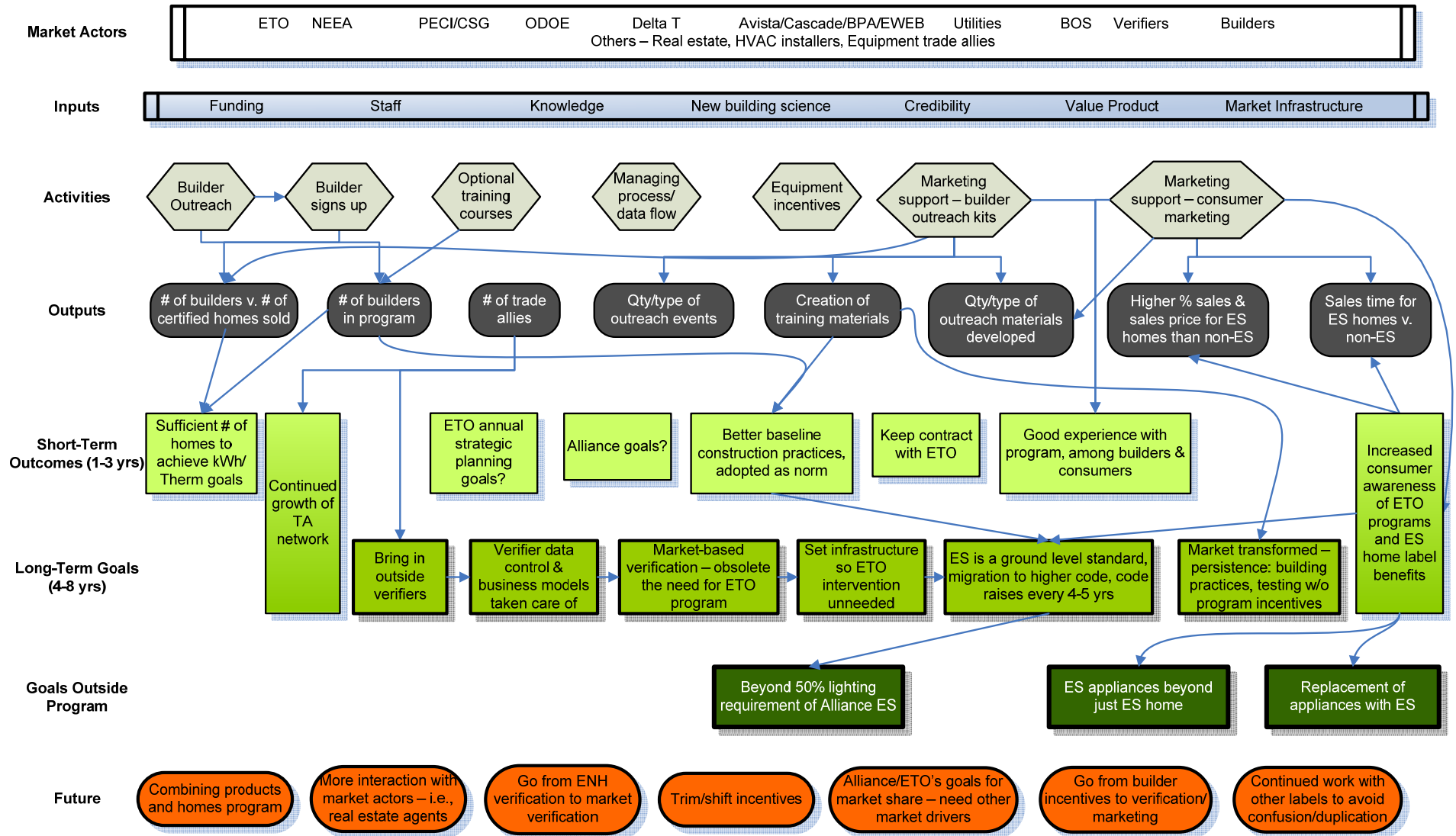
The ENH program is a relatively new program, having started in April 2004. The Energy Trust works closely with the NEEA to report savings from ENERGY STAR homes. The NEEA sets the regional ENERGY STAR Northwest specifications, which include a CFL component that is not included in the national ENERGY STAR specifications. According to one program staff member, at the time of program inception, the national specification was barely above Oregon and Washington code, so going with the national specification was not an option. The national ENERGY STAR specifications have since caught up to ENERGY STAR Northwest in many areas, but only because the Northwest blazed the path and showed some success. The following list summarizes the roles of each of these organizations and other key players in the program:

- The Energy Trust of Oregon (Energy Trust) fields the program, disburses funds, and ensures that target goals are met.
- The Northwest Energy Efficiency Alliance (NEEA) sets the ENERGY STAR specification for the Northwest region.
- Portland Energy Conservation, Inc. (PECI) is the managing implementation contractor.
- Conservation Services Group (CSG) is PECI's subcontractor, primarily responsible for recruiting builders and helping them through the program participation process.
- Earth Advantage, a sustainable building program, partners with ENH to leverage dollars spent to recruit builders. While this partnership allows builders to build homes that are both energy efficient (ENERGY STAR) and green (Earth Advantage), an Earth Advantage home does not necessarily qualify as an ENERGY STAR home, or vice versa.
- Builders are recruited by the Conservation Services Group (CSG) outreach staff and guided through the program participation process.
- Trade allies/contractors assist builders with requirements and specifications.

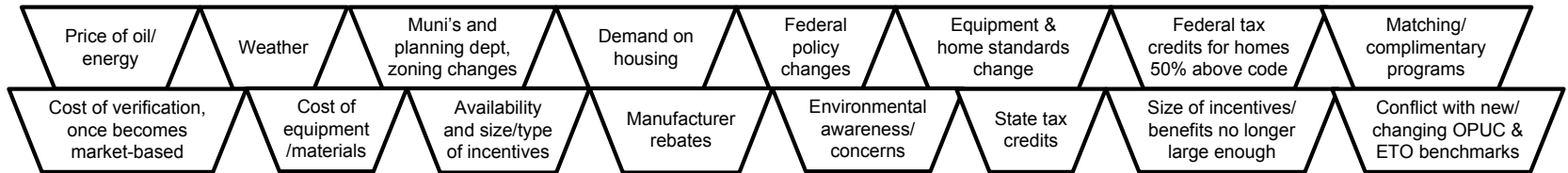
Program Theory Logic Model and Process Flow Chart

As part of the process evaluation of the ENH program, ODC conducted a one-day workshop in October 2005 with program, implementation, and evaluation staff, prior to the data collection efforts in order to create a complete and useful program theory logic model with metrics that can be used to evaluate the program's success. Based on the discussions and feedback from the workshop, the resulting program logic model is presented below, followed by the process flow chart for the ENH program as provided by the Energy Trust.

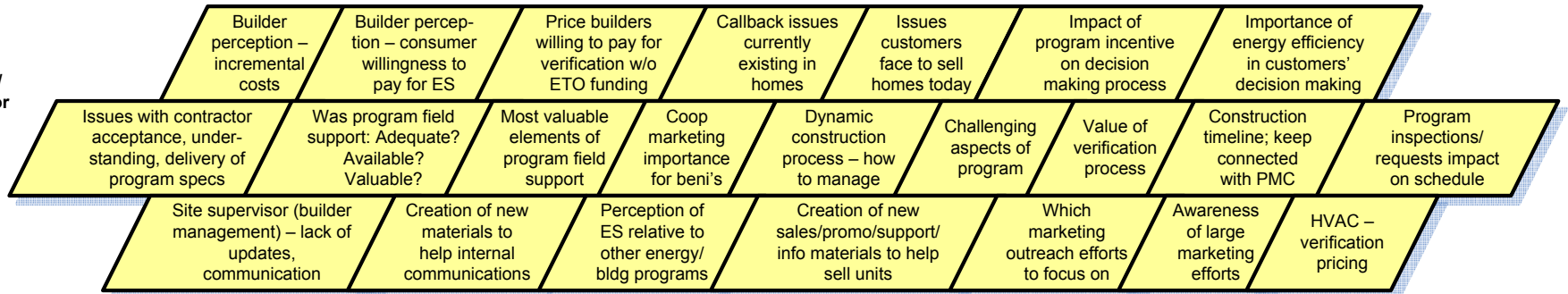
Figure 1.1: Program Theory Logic Model for ENH (continued on next page)



External Factors Impacting Program (subscription, project completions)



Challenges/ Obstacles for Program



Opportunities

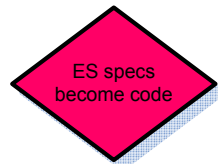
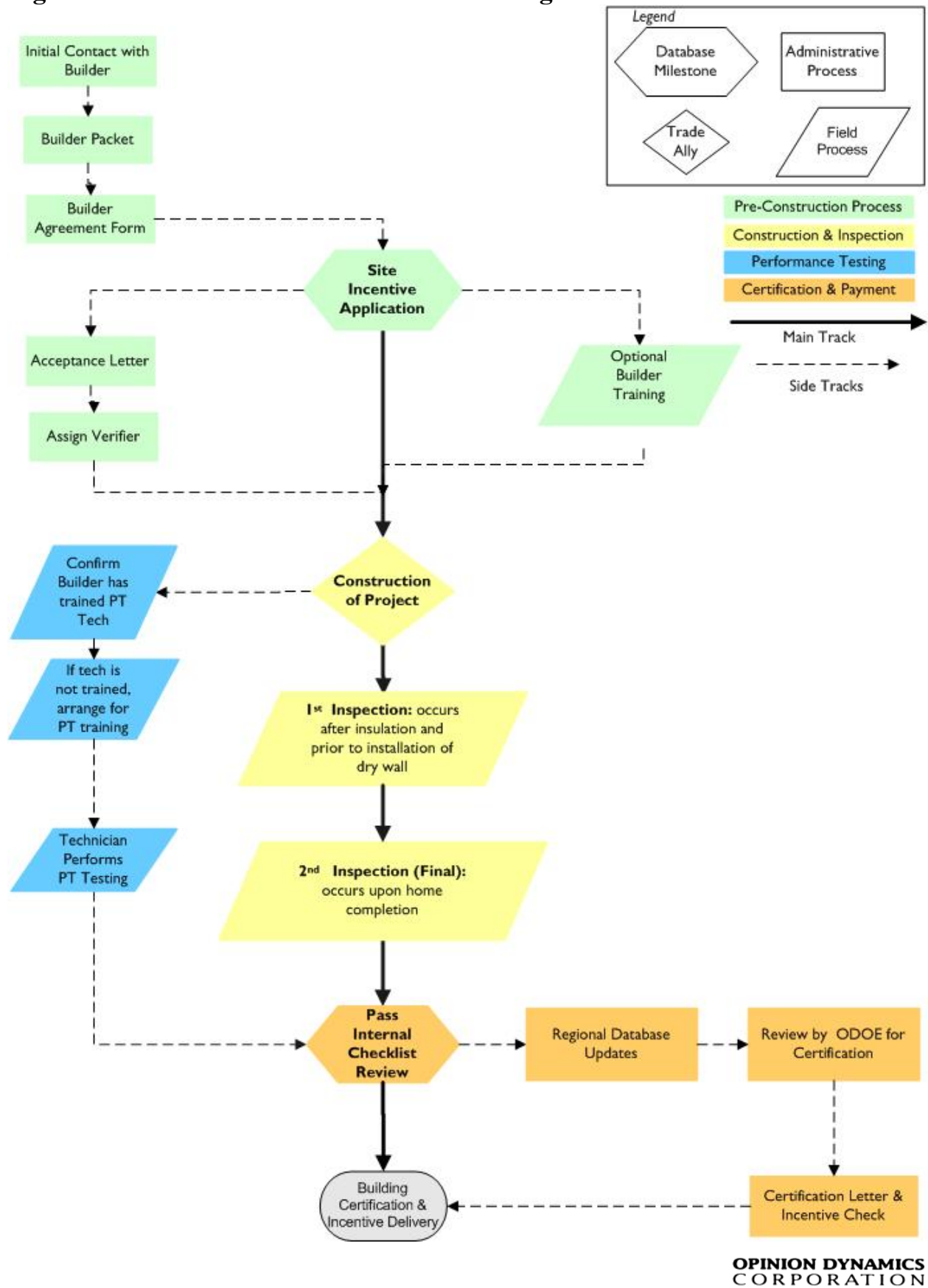


Figure 1.2: Process Flow Chart for ENH Program



STUDY OVERVIEW

Methodology and Data Collection Strategies

The following data collection methodologies were employed as part of the primary data collection efforts for this evaluation:

- Depth interviews with program managers and administrators, including the Energy Trust program staff, implementers staff (PECI and subcontractor CSG), and others
- Depth interviews with builders
- Depth interviews with trade allies

Initially, ODC intended to conduct 20 interviews with participant builders and 10 with non-participant builders. Upon review of the limited sample and discovering that some participants had not yet built any qualifying homes (the non-active participants), we interviewed 15 participants, five non-active participants, and five non-participants.

Similarly, ODC scaled back the number of trade ally interviews to nine upon learning that the sample of trade allies contained only 25 names.

Because the intent of the evaluation effort was to capture qualitative data regarding the program, we feel confident that the low number of completes does not affect the overall results.

EVALUATION TASKS AND STUDIES

During the evaluation, ODC conducted the following research activities:

- Program theory logic model
- Depth interviews with ENH program administrators and staff
- Builder interviews
- Trade ally interviews

The program theory logic model is presented in a previous section of this report and the results of the remaining three efforts are presented in the chapters below.

Chapter 1: Depth Interviews with Program Administrators and Staff

Introduction

Between January and March 2006, ODC conducted seven in-depth interviews with the Energy Trust's Program Staff and Implementation Program Management Contractor Staff for the ENH program.

While the program theory discussion focused on macro program issues, we used these interviews to evaluate the process and discuss specific implementation issues of the program. These in-depth interviews also allowed us to ask for data needed to complete other parts of our workscope. We discussed the following subjects with interviewees:

- Program goals and planning
- Program design and operations (e.g., how program design and implementation differ)
- Information, database design, and program tracking/documentation
- The identification of possible lost opportunities
- Program baseline discussions and strategies for measuring impact
- Internal communications, administration, and coordination among the various entities
- Quality control requirements and processes
- Insights about the overall success of the program
- Recommendations for ways to improve the program

We grouped the results of and key points from these interviews into eight categories and present them below.

- Program Goals
- Builder Outreach
- Program Challenges
- Marketing to Builders and Partnerships
- Team Chemistry
- Relationship with NEEA

➤ Databases / Reporting

Program Goals

Interviews show that program staffers understand that the program's contractual goals are energy savings in therms and kilowatt hours. However, they also understand that while these savings are the ultimate indicators of the program's progress and success, building the secondary and tertiary aspects of the program will support the entire spectrum of program goals. Overall, program administrators and staff are satisfied with the success of the program but continue to strive to improve and adapt the program.

The new construction single-family home market involves numerous market actors at various stages of the program process. Although the primary focus of the ENH program, is on the builders and getting them to build their homes through the program, program staffers also seek to incorporate other actors in the new home market into the program. These actors range from subcontractors like HVAC contractors and duct sealers to residential customers, realtors, and verifiers. The program staff coordinate these various efforts into one cohesive program, knowing that the number of builders recruited, the number of homes built, and quality training for trade allies will ultimately help achieve the savings goals. One program staff respondent said:

“Getting ENERGY STAR homes built is the key, that’s the bottom line, but it really involves working with the infrastructure to get the players adapting to, and accepting of, the elements that comprise the specifications.”

The direction of the ENH program continues to evolve since its initial rollout. For instance, in the very early stages of program development, the initial goals were extremely high because interactive effects of the various measures were not accounted for, but this was later taken into account when mapping out the actual goals for the program.

In 2004, the program emphasized recruiting builders and signing them on to the program; while in 2005, program staffers expanded their efforts to include helping builders build through the program, verifying the savings, and disbursing the incentives to the builders.

The orientation of the ENH program is slowly shifting from resource acquisition toward market transformation, i.e., creating and sustaining market demand for ENERGY STAR homes. One program staff member envisions ENH program success as a transformed market where *“ENERGY STAR certified homes become the norm...and where incentives are not required anymore.”* Included in this movement towards market transformation are difficult, but obtainable, sub-goals of increasing residential customer demand for ENERGY STAR homes, moving toward market-based verification, and, farther into the future, possibly increasing the actual level of energy efficiency in the ENERGY STAR home.

Builder Outreach

The program staff generally target large-volume builders, knowing that partnerships with large-volume builders will help the program's immediate need to achieve its energy savings goals, as well as work toward increasing customer awareness of ENERGY STAR homes. However, one program staff member says that the Oregon builder market is unique because there are not many large-volume builders and that the large-volume builders in Oregon do not build as many homes per year compared to other large-volume builders in other markets.

“Therefore, you have a short list of folks [to recruit]. If the [single-family home] market weren't as hot, they'd be looking for the edge and the advantage to sell a home and then you start to get in the door a little easier.”

To this end, Conservation Services Group (CSG), which handles the builder outreach and technical expertise aspects of the program, concentrate their efforts on “Champion Builders,” large-volume builders who want to build quality homes. These specific builder outreaches require greater effort to tailor information to the builder and many one-on-one meetings in order to generate interest and participation in the ENH program. Although they require significant resources, these focused efforts can bring great success. For example, CSG spent a great deal of time and effort to educate a large-volume builder, to help them understand that, although it will cost them a little more to build an ENERGY STAR home, homeowners will know they are buying a quality product and that they will pay less in energy bills in the long run. CSG also provided this Champion Builder with marketing support. Now that the large builder is participating, *“they're advertising the ENERGY STAR message and they're really into the program.”*

However, while the builder outreach specialists actively seek out large-volume builders, small and medium builders are not ignored. CSG conducts general blanket outreaches toward small and medium builders. Based on the builders' interest in the program, builder outreach specialists connect with them and help guide them through the program process.⁵

Take-away materials, such as the program marketing brochures, appear to be working well in increasing participation from small and medium builders. Another successful outreach method is the builder breakfasts. Builder breakfasts not only provide a venue for builder outreach specialists to meet many builders in the same place, they also provide a forum where builders can keep up to date on industry practices. The topics for builder breakfasts can vary from addressing a program requirement that is seen as a potential participation barrier to topics like performance testing, which may be new to the builder. Full-day builder workshops cover the building science approach and *“some of it's not directly tied to a requirement in the program but it's a situation that can occur by doing a requirement.”*

⁵ Both NEEA and Energy Trust provide services within their specified territories to builders to participate in the programs. These services include recruitment, and guidance. The Energy Trust's role is much more hands-on, with the outreach specialists providing builders a greater level of support both in the initial relationship and also throughout the building and verification process. In the Alliance territory, it is the verifiers who take a more active role in the building and verification process.

CSG also uses the Builder Option Packages (BOPs) that contain all the necessary forms, the specification sheets, and information cut sheets on various aspects of the home (such as duct performance, insulation, and windows) to promote the ENH program. Outreach specialists like to use the BOPs because they present vital information to the builder in a sleek and professional manner.

Program Challenges

Even with these marketing tools, builder outreach specialists often find it challenging to reach out to builders. Because the demand for new homes is currently very strong, CSG finds that less expensive builders do not respond because they currently have enough projects to work on and do not need help marketing the new homes. However, most program team members are fairly confident that when the market wanes slightly, builders will want to differentiate themselves by being able to provide the benefits and value of ENERGY STAR homes.

Another challenge to overcome is the perception that the market for ENERGY STAR homes does not include luxury development. “[B]uilders of very expensive homes don’t necessarily respond, although we do have some fairly luxury developments that are doing ENERGY STAR.” Further education for these builders – and consumers – will help them to understand that energy efficiency measures can be applied in luxury homes.

A challenge of another kind is presented by the budget – the program cannot support the many homes beyond the incentive dollars allotted, nor can it support as many builder outreach specialists as needed. *“It’s a fine line we’ve got to walk, between booking the right types of homes and also not exceeding our [dollars] either.”* Several program staff mentioned that while it would be useful to have additional builder outreach specialists available to work with more builders, the current budget is not large enough to support additional outreach staff. One program staff member said, *“If you don’t get to talk to that builder, that’s the lost opportunity.”* In addition to drumming up interest from builders, outreach specialists are busy walking builders through the stages of the program and its requirements: *“There’s a lot of information and builders are going to get lost in the shuffle pretty quick if we don’t hold [their] hands.”* In fact, one program staffer characterized the forms as onerous and the greatest weakness of the program. Program staffers have to help builders fill out the forms, and then others have to validate the data in them.

If program expansion is planned, the program should add more outreach specialists; however, given the context of the budget and because the program already reaches its goals, these additions are not yet necessary.

In addition, program staffers realize that the program does not provide consistent savings over time. While savings are typically accounted for year to year with other programs, the ENH program has a ramp-up element where savings can only be estimated, and then when homes are built, the savings can be reported and realized.

Staff explained that the variability of construction schedules makes it difficult to estimate consistent savings over time:

“With the incentive budgets, it’s just a really tricky thing to hit it [the savings goals] dead on...and also we were counting on one big development that we thought we would have to get a lot of the kilowatt hour savings and it looks like their construction schedule is going to push them out and we won’t be able to use them next year. So that all of a sudden puts a big dent, so things can change really, really quickly.”

Program staff need to stay on top of the progress toward achieving program goals, but construction schedules, which can be thrown off by outside factors (such as weather), make it difficult to verify the savings of completed construction.

Some program staff believe that builders may have heard about the program but may need help to get past preconceived notions that the program requirements are onerous.

“The biggest challenge the program has is overcoming myths about energy efficiency in construction and it being not a good thing. There’s a lot of myths out there about why homes have failures and things and energy efficiency is a common scapegoat for those things and the reality in the building science world and community is that that’s not really true.”

The assumption that program requirements are onerous or undesirable does, in some cases, appear to be a barrier to program participation. For example, NEEA’s ENERGY STAR Northwest specifications include a compact fluorescent lighting requirement that is not part of the national ENERGY STAR certification. Several program staff complain specifically that this lighting requirement can be a significant barrier for builders because they believe that fluorescent lighting is a poor choice based on past experiences with old technologies. *“Even though the barrier goes away for the builder once you show [them the new] a CFL, the initial barrier of knowing they have to do fluorescent might deter builders from participating.”*⁶

Program staff are also concerned that the inspection and verification aspect of the program (which is necessary to ensure that savings goals are being met) could also deter builders from participating in the program. However, staff believe that good communication with the builders early in the project regarding program requirements will help alleviate builder concerns and reduce the deterrent. The inspection and verification steps are important but time-consuming ones for not only the builder, but for the program as well in collecting accurate data.

Finally, while program staff say that managing the many subcontractors is difficult, training the HVAC contractors and encouraging builders to use these trained HVAC contractors is a difficult management task but a vital component of the program. The success of the program relies on the subcontractors to understand the specifications and be trained to properly install the measures. *“All the details go to the subcontractors.”* As mentioned before, the program intends to use

⁶ However, one program staff member says it is worth noting that the economic model of cost-effectiveness is built on the lighting savings, especially for the NEEA, which is funded by electric utilities. Without the lighting savings there would be no ENERGY STAR Northwest spec.

market-based verifiers, but these verifiers must first be trained correctly and to represent the program accurately, and then carefully monitored to make sure the verified savings are correct.

“We actively pursue the HVAC industry and train them to be performance testers because it’s a critical component of ENERGY STAR homes.”

Marketing to Builders and Partnerships

Although marketing efforts on public transit vehicles target customers and raises awareness and demand of ENERGY STAR, builders typically need a different approach that requires more effort and intentionality. Program staff have responded to this need and are very creative in marketing the program – for example, forging partnerships to increase the awareness and demand of ENERGY STAR homes.

Connecting the benefits of ENERGY STAR homes with green building, the builder outreach specialists often team up with Earth Advantage – which has additional requirements for builders wishing for sustainable building. This partnership attracts builders who wish to provide energy efficient and sustainable homes to customers, and the cooperation between the Energy Trust and Earth Advantage is most beneficial in builder recruitment. Because of this partnership, the ENH program is able to reach out to more builders with a slightly different message and, in the process, have ties to the green building community.

Another successful marketing strategy are home tours and the ENH partnership with Street of New Beginnings. These homes are more moderately priced homes with a 100% ENERGY STAR requirement for every home on the tour. Program staffers consider these tours effective in raising consumer awareness and demand for ENERGY STAR homes as well as increasing builder understanding and knowledge of what an ENERGY STAR home is. In addition, an added bonus was that all the homes in the tour sold instantly; consequently, builders could see the value that an ENERGY STAR home has for consumers.

Additionally, program staff extend the program’s marketing dollars through ancillary players in the building process. By using trade allies (such as HVAC contractors) and providing training sessions for this market actor group, these trade allies can in turn inform the builders and bring builders to the program. Or, as the program develops a network of market-based verifiers, the verifiers will also be marketing to builders on their own. Another partnership is with local government in the community:

“Some of these [builders] already make so much money that the thing that really gets them is recognition, so if the mayor stands up and says something nice about the builder, that means so much more, maybe, than money that we can give them.”

Team Chemistry

Overall, program staff members we interviewed are pleased with each other’s work. In fact, one program administrator considered the greatest asset of the program to be the program management contractors, saying “[The program’s greatest strength is] PECCI, their strength in

implementation, their adherence to cracking the whip about getting those things done right, [the forms] filled in, and sticking by the program.” Other program staff echoed this sentiment and feel that the tight teamwork has put them in a good position to further the work of the program.

Although CSG is the subcontractor to PECE, staff from both PECE and CSG consider their interaction to be seamless. Program staff have confidence in their partners from other entities, especially as they continue work together on the program: *“I think what has changed is us as a group understanding the market and being comfortable in being able to execute the deliverables required.”*

The communication methods – emails, phone calls, face-to-face meetings – are considered effective by most program staff. However, some respondents did complain that the numerous meetings are a *“time sink.”* Because so many players are involved in the program, meetings are necessary to keep everyone abreast of the program’s progress – but it may be worthwhile to utilize teleconferencing more often and have fewer in-person meetings so that the environment for discussion can be maintained. One program staff member said,

“Actually, it takes up a ton of time, though we’re looking at ways to reduce the number of meetings and still keep communication going. But I think the reason for all these meetings – there is just a vast amount of information that people need to be up on. It might be possible to rely less on face-to-face meetings and a little bit more on emails and phone calls. It might be possible to not have as many people in the meetings as we have at certain times so that we could maybe free up some of the people from all the meetings we go to.”

Relationship with Northwest Energy Efficiency Alliance

The ENH program works closely with the NEEA and with several implementing contractor staff⁷ working for both entities. This partnership brings compelling benefits to the program, but program staff also cite a few drawbacks.

Because NEEA is the umbrella organization for the Northwest region, including Oregon, many structures were already in place before the ENH program began. The NEEA had already set the ENERGY STAR specifications and had builder outreach specialists, and builders in the Oregon region were familiar with the Builder Option Package (BOP) because NEEA set it up.

However, while the NEEA and the Energy Trust have similar goals for ENERGY STAR homes, certain key aspects differ, which can lead to some conflicts. The NEEA negotiated with the Environmental Protection Agency (EPA) and made some specifications for ENERGY STAR homes to be more rigorous than the national standard, such as the lighting. Furthermore, while the NEEA’s focus is electric savings, the *“ETO’s mandate is to acquire savings in both the gas and electric side. Lighting can be a barrier, but this [requirement] is for the NEEA electric-oriented goals.”* Several program staff mentioned the lighting requirement as a barrier for

⁷ PECE holds the contract for both Energy Trust and NEEA and subcontracts pieces to CSG and Earth Advantage for both programs.

builders, who often have negative preconceived notions about compact fluorescent lighting, even though NEEA subcontracts with (ECOS) to handle the lighting issues with builders:

“That’s part of what the Northwest Energy Efficiency Alliance supports our program with, so we don’t directly do that. There is some excellent support coming through from ECOS.”

Program staff, however, express a certain frustration in the partnership with NEEA. Although NEEA negotiated the specifications for ENERGY STAR homes with EPA and works out equipment tradeoffs within that specification, program staff sometimes feel that while significant coordination needs to occur with NEEA to run the ENH program, program staff still want to maintain some of the program’s unique characteristics and not be told how to run the program. Initially,

“There was a bit of head butting, a real coordination that had to take place in that...but ultimately it all came together and seemed to carry out fine to the street level.”

However, staff understands that the partnership with NEEA provides support for the program:

“Working with NEEA means you have to follow with them to an extent, but it could be faster if ETO could do what we want to do. But we are trying to make it a regional approach, which ultimately would give us more consistency and longevity in the long run.”

In addition to providing consistency across the region, the program staff realize that NEEA also takes care of the market transformation angle that is necessary to keep the program continuing. The anticipated future savings from market transformation helps cost-justify the program and lends to making the program more cost effective. *“The goals are, between our funding of [NEEA] efforts and our funding of our program efforts, to get some savings in the short term and also transform the market in the long term.”* The Energy Trust can focus on acquisition while NEEA supplements the program with new technologies and market transformation. *“When we started off, I liked the market transformation portion of the Alliance [NEEA] program and I liked the technical measures that [the Energy Trust] was bringing, and what’s happening is it’s kind of merging so that [the Energy Trust] is starting to go more market transformation.”*

Databases / Reporting

Most program staff admit that managing the databases and developing reports is a difficult step in the process. It is imperative that the forms are filled out completely and correctly, and that they match in the database. The program uses two main software programs: FastTrack, which the Energy Trust uses and which contains information for particular projects; and Goldmine, which is a repository for all trade ally data. One program staff says she hears many complaints about FastTrack and O-reports (used by the subcontractor, CSG) because they are *“very labor intensive and take a lot of manual work.”* Crystal reports, which come from FastTrack, are difficult to get built on time. One example where reporting requirements became tedious is when

forecasting reports entered the picture mid-program. *“There wasn’t a processing place for gathering the information...all of the data that has to be entered into [the forecasting portion of FastTrack] is already in the FastTrack system.”*

Creating forecasting reports can also present a challenge because of the variance in construction schedules, mentioned earlier. *“[The Energy Trust] wants to know exactly when homes are going to close, and based on the way construction actually works, that’s pretty much an impossibility because there are countless things to delay [the construction schedule].”*

As more outside entities, like market-based verifiers, join the program, program staff wish the requirements in data collection could be relaxed. The amount of data and type of data, which can be confusing to outside verifiers, can often delay builder incentives. The program could also make it easier to submit data on homes by making the database look like the form.

Program Future

Going forward, the program will continue to face challenges, especially as it gains a market transformation thrust and utilizes free market verification. The infrastructure for market-based verifiers needs to be built, and these trade allies need to understand the benefits and be convinced that verification will pay.

The program will also continue to provide incentives and training for trade allies, as well as recognition by posting their information (as well as the names of participating builders) on the Energy Trust website, so that builders can select trusted subcontractors.

Training will play an important role in the future of the ENH program. Program staff mentioned that they would like to see more duct design classes offered for trade allies, along with additional incentives, new technologies, support for building commissioning, and a push for solar integration. The program currently focuses on ensuring that the equipment is efficient, but one program staffer mentioned that the program sometimes neglects to see if the equipment is the right *size* for each home. Sizing could be a valuable additional requirement for the program and would help with the savings goals, but discussion of this topic should occur when ENERGY STAR specifications are next revised. Another program administrator suggested better education about building science, such as advanced framing, because it does not cost more up front like most other energy efficient equipment and is actually a cost savings if done correctly.

Review and revision of program materials will also occur. One respondent mentioned wanting to make the BOPs appeal more to builders by simplifying the checklist and highlighting the requirements that are different from code. Another respondent suggested allowing homes that meet the national ENERGY STAR standards, but not NEEA standards, to be qualified as an ENERGY STAR home, citing the barrier for builders who do not want to adhere to the lighting requirement. However, this is not a feasible option since ENERGY STAR homes built in the Northwest must adhere to NEEA specs

Program staff want to see the program involve more builders and eventually to see the level of efficiency, both in the program and in the marketplace, increase. One way this goal will be

accomplished is through the new efforts currently being put into place by the Energy Trust, such as the pilot program for multifamily and manufactured homes.

Overall, program staff are satisfied with how the program is running, giving the program ratings between 6.5 and 9.0 on a scale of 1 to 10. They are realistic in understanding that there is more to accomplish in the program, such as working to create a greater market demand for ENERGY STAR homes, but also are positive and optimistic when considering the contract goals and the overall effort of the program.

Chapter 2: Builder Interviews

Introduction

As a major component of ODC's evaluation of the Energy Trust's ENH program, we conducted depth interviews with 25 builders of single-family homes. Our purpose was to:

- Assess their experience in the industry
- Determine what types of support and information they need
- Get their feedback on ENERGY STAR homes
- Delve into their experience, or lack of experience, with the ENH program.

Fifteen of the builders interviewed are active participants in the ENH program, five are enrolled but have not yet built any homes through the program, and the remaining five builders are not enrolled in the program. Beginning with the five non-participants, we present the results of interviews with these three categories of builders below.

Non-Participant Builders

The five builders interviewed who were not enrolled in the Energy Trust's ENH program had the following characteristics:

- 15-30 years experience building single-family homes
- Small to medium size: Three build about two homes per year, while two build about 35 homes per year
- Familiarity with ENERGY STAR: Four builders familiar with the ENERGY STAR Homes program; one unfamiliar with ENERGY STAR homes, but aware of ENERGY STAR appliances
- Limited to no familiarity with ENH program: Only one builder familiar with the Energy Trust's ENH program (also the only non-participant builder fully aware of the ENERGY STAR new homes standards)

The four builders who are familiar with the ENERGY STAR Homes program said that they build homes that meet the energy efficiency specifications. One builder reports building homes through Earth Advantage and another builds solar homes.

One builder states that while he does not build to ENERGY STAR standards, he still builds highly energy efficient homes. He says he would not participate in the ENERGY STAR Homes program because the program has certain requirements that he believes are not efficient in applications such as air filtration and ventilation systems. He also indicates that he will not install the compact fluorescent lighting and the high efficiency central air conditioning systems in his homes that would be required under the ENERGY STAR Homes program. He does not

think his customers like the lighting and believes that the cost differential between the standard and high efficiency central air conditioning is too high, and the real energy savings negligible.⁸

The following issues and concerns were mentioned by the non-participant builders:

- Two builders think 100% of the homes they build meet highly energy efficient standards. The one builder who was not familiar with ENERGY STAR homes indicates he would not consider building highly efficient homes because his customers don't ask for it.
- Many of the builders don't think customers request ENERGY STAR homes because they don't know of the benefits. The CFL lighting requirement and the high cost of the central AC unit also discourage customers from qualifying their home. These builders think focusing the marketing and educational message on energy cost savings over time would catch customers' attention.
- These builders tend to read magazines or trade journals to keep up with industry developments. They also mention the Oregon Department of Energy, utility companies, and Earth Advantage as sources of information on energy efficiency. Some attend trainings a couple of times a year.
- Three of the builders indicate that they are very likely to participate in the ENH program. The Earth Advantage builder said, "*I guess I would be interested but I'm already participating in a program [Earth Advantage] but I hate to keep jumping from one program to another. I don't see why they can't consolidate the programs.*"⁹ The fourth builder was somewhat likely to participate – dependent on the lighting requirements (he will not install CFLs). The last builder will not participate because he thinks builders following the guidelines have been sued due to mold problems.

Non-Active Program Builders

The five builders interviewed who are enrolled but not active in the Energy Trust's ENH program had the following characteristics:

- 2-30 years experience building single-family homes
- Four respondents build less than 20 homes per year; one respondent builds about 600 homes per year
- All five builders are familiar with the Energy Trust's ENH program

These five builders are enrolled in the ENH program but have not yet built any homes through the program. When asked why they have not yet built a home through the program, one builder said, "*I've been working with the Earth Advantage program on a sort of green certification that I've been working on. I haven't really researched how beneficial the New Homes program*

⁸ It is worth noting that the 2004-2005 ENERGY STAR Northwest air conditioning requirements are now legal minimums under federal law.

⁹ Both the ENH and the Earth Advantage programs are consolidated, with the Earth Advantage energy specifications being the same as those for ENERGY STAR Northwest.

would be to my customers.” Another indicates that he is not sure if he could recover the costs associated with participating in the program. Finally, another builder indicates he isn’t sure what he needs to do to start participating.

Regarding the Earth Advantage program, one builder said,

“I got involved in the Earth Advantage program because I felt that it was performance based and it involved construction qualities that I could do something about. My view of the Energy Trust [ENH] program is that it is manufacturer driven and it’s intended to sell products. That’s the wrong approach, in my opinion. For example, 90% energy efficient furnaces are not always the best things to use. They create an awful lot of moisture. You have to be able to get rid of the moisture.”

The following are some of the issues and concerns mentioned by the non-active program builders:

- The builders indicate hearing about the program through meetings with the Energy Trust, word of mouth, and Earth Advantage.
- All of the builders say they are familiar with the ENERGY STAR new home standards. Four of the builders think that they build homes that meet these standards – they assert that they have been building homes to these standards from less than a year to ten years. Half to 85% of their homes meet these standards. The one builder that does not build homes to ENERGY STAR standards does not do so because of concerns about cost recovery. This builder offers upgrades that would meet these standards but says his customers rarely choose them. This builder does not think training would make a difference in the way he builds homes.
- The non-active builders are split on whether or not they think their customers know the benefits of highly efficient homes. Objections to the efficient homes that builders have heard from their customers include the high cost of upgrades (AC units and furnaces) and their dislike of fluorescent lighting. All but one of these builders thinks marketing and education would help customers understand the benefits. They believe that the energy cost savings needs to be promoted more.
- These builders learn about industry developments and energy efficiency through magazines, Earth Advantage, other builders, and suppliers. One builder recalled receiving information from the Energy Trust; however, he did not think it was useful because it was too general. Green builder organizations, *Environmental Building News*, and the Oak Ridge National Labs were also mentioned as credible sources of energy efficiency information and services. Two of the builders report going to trainings at least a couple of times per year.
- Three of these builders say they are very likely to participate in the ENH program in the future.

Non-Participants and Non-Active Builders – General Recommendations

Our research indicates that the Energy Trust should increase education for both consumers and homebuilders on the benefits of efficient lighting. Many builders mentioned problems with CFLs, indicating that they may only have experience with older CFLs.

The barrier of the lighting requirement was also brought up as a concern by several program administrators, but since the ENH program must follow the specifications for ENERGY STAR Northwest (which are set by the EPA based on an agreement with NEEA for the Northwest region), education may likely be the best way to reduce this barrier.

Many builders mentioned that they have had positive experiences with the Earth Advantage program and feel that it is a credible place to get information on industry developments and energy efficiency. Since so many builders mentioned this program, ODC added an in-depth interview with a program manager of Earth Advantage to the ENH program evaluation. We recommend that the ENH program manager work more closely with the Earth Advantage organization to find additional synergies between the programs and to streamline the process for building under both specifications. The Energy Trust should find ways to build on the Earth Advantage name recognition and alleviate some builders' misconception that the two programs are mutually exclusive.

Participants

Introduction and Program Participation

The fifteen builders interviewed who are enrolled and active in the Energy Trust's ENH program had the following characteristics:

- Fourteen participants are single-family builders and one is a multifamily builder.
- Participants have 18 months to 44 years experience building single-family homes; the majority of them have been in the industry for over 10 years.
- The number of single-family homes built per year ranges from one to two per year, to over 400 homes per year.
- Nine participants build less than 10 homes per year.
- Participants have been building ENERGY STAR homes from one month ago to 14 years ago;¹⁰ most respondents started in the past two years.
- Seven respondents build only ENERGY STAR homes; 14 respondents built at least half their homes as ENERGY STAR homes.

Most of the participating builders have been participating in the Energy Trust's ENH program for a couple of years, with a few saying they recently started. Many of the builders heard about the program from Earth Advantage and the Energy Trust. Others heard about it from other

¹⁰ It should be noted that ENERGY STAR homes did not exist 14 years ago. This respondent may have confused building a home under the Super Good Cents program for energy efficient manufactured homes, sponsored by the Oregon Department of Energy.

builders and subcontractors. One mentioned hearing about it from customers who were requesting it.

Many participants decided to participate in the program because they wanted to build energy efficient homes. They stated preserving natural resources and supporting the community as the reasons why they wanted to build more efficient homes. Many also said that having the ENERGY STAR recognition was a good marketing tool.

The majority of builders say the process for enrolling in the program was easy. Comments include:

- *“They [Builder Trade Ally Agreement and Site Incentive Application] were both easy. I had no issues with either one. I can’t remember specifics. It wasn’t something that took me a long time to process and I was able to do the application quickly.”*
- *“Both of them have been very easy. The initial application was taken care of in a matter of minutes and then each individual site is actually handled by the local representative. He does all the paperwork basically and then they send me an invoice.”*
- *“They were both easy. I can’t think of anything I would like to have done differently.”*

Some respondents mentioned that Earth Advantage had helped them with the forms. Comments include:

- *“What makes it so simple is that the Earth Advantage representative or the ENERGY STAR representative does that [fills out paperwork] for me with my approval. The home has already qualified through Earth Advantage and this rides on top of it and the paperwork is filled out accordingly.”*
- *“I found both [Builder Trade Ally Agreement and Site Incentive Application] were very simple. I think each of them were a one page application. The people at Earth Advantage greatly helped us with this.”*
- *“Earth Advantage made it quite easy. So it wasn’t something I had to put a lot of effort into, other than some things we had to modify in our construction process.”*

A few builders stated that having to fill out the form for each home could become cumbersome, but not difficult. Comments include:

- *“Both were fairly easy. The second one, the site [Site Incentive Application] one, is kind of cumbersome. I am assuming, being new, that we have to go through it every single time, for every house. It would be nice if we could somehow get away from that and say that since we’re in the program we’re obviously going to keep up on those whether there is an audit once a year or a paper trail, but to sit down with someone and go through them all every single time is going to be cumbersome.”*
- *“You know a little hard to navigate because there are so many variables in it. But all in all, it’s not real difficult, just a little cumbersome.”*

Program Processes

The following program issues and concerns were also mentioned by the participant builders:

- Most builders have had positive experiences with the site incentive application process. Only one builder thought the application process was redundant and overkill on paper work.¹¹ The other builders had no problems with the application process and many thought the application was very easy to fill out. One builder said, *“We were satisfied with the level of information available and the application was not overly difficult to fill out.”*
- Most builders were satisfied with the level of information offered. One builder found the *“level of information they give is both relevant and appropriate.”* Another thought there could be better documentation for air exchange factors to help the HVAC contractors.
- Builders were also very satisfied with their Energy Trust representative. Many stated that the representatives were very helpful in providing information. One builder recalled having some difficulty doing duct sealing, so the verifiers came out and did some on-site training so the homes would pass. Another builder said the Energy Trust representatives are very competent and clearly understand what is needed to meet the program requirements. One builder specifically mentioned that he liked that they called to verify schedules and showed up on time.
- All builders thought the lag time for receiving the incentive check was reasonable.
- The majority of builders rated their satisfaction with the verification process a five on a scale of one to five where one is extremely dissatisfied and five is extremely satisfied. The few that did not give it a five rated it a four. Comments include: *“When we called to have the verifiers come, they were prompt and everything went well”* and *“I was given a lot of information that I probably wasn’t aware of before. When they put the test on the front door it really showed where our leaks showed up and that was really helpful.”*

Program Satisfaction, Benefits, and Drawbacks

The following benefits, issues, and concerns were also mentioned by the participant builders:

- The benefit mentioned most often by the builders was the marketing materials. Builders like being able to use these materials to educate their customers on the benefits of buying an energy efficient home from them rather than a standard home from a competitor. One builder said, *“I like the marketing visibility to my company, to my website, the interactivity of your marketing materials and Web presence.”*
- Other benefits of the program that were mentioned included an identifiable brand name, third party verification, better quality homes, and training.
- The majority of builders built fewer than five homes through the 2005 program, although one said he built 800 homes.

¹¹ This builder gave this response after stating in the previous question “enrollment was easy and no forms to fill out per home. I would not have joined the program if I had to fill out a form for each home.”

- When asked to rate how much value the program brought them toward building ENERGY STAR homes on a scale of one to five where one is no value and five is extremely valuable,¹² almost all of the builders rated it a four or five. Builders thought the knowledge that they gained about building energy efficient homes and the overall improvement in the quality of the house was very valuable. One builder thought it was so valuable that he would continue to build ENERGY STAR homes even if the incentives were reduced. Other builders said that customers ask for ENERGY STAR homes by name. One builder, however, rated the program's value a one because the program is costing him more money and he doesn't know *yet* if he can recover his costs.
- About half the builders said they could not think of any drawbacks to participating in the program. The major drawbacks that were mentioned by the others included the higher cost for the equipment and increased paperwork. One multifamily builder said, *"When you are turning over 400-500 units you have to produce serial numbers for every appliance. That gets tedious."*
- All but one builder rated their overall satisfaction with the ENH program an eight or higher on a ten-point scale where one is very dissatisfied and ten is very satisfied. Many builders rated their satisfaction with the program high because of the people with whom they work at the Energy Trust. One builder who rated his satisfaction a 10 said it was *"because of the direct contact we're getting with the Energy Trust people,"* while another gave the high score because *"everything they said they were going to do they did."*
- Education and training offered by the Energy Trust is another reason builders gave a high rating for their program satisfaction. Builders stated that they liked being part of a program that helps them to build and deliver homes that meet the ENERGY STAR requirements. One builder said, *"I kick myself for not being involved earlier."*

Potential Improvements to the Program

Participating builders mentioned the following potential program improvements:

- Most builders felt that they are adequately supported in the program. One builder said, *"Knowing that people at the program are available with information is a big help."* Another said, *"Yes, but I should add that I see Earth Advantage as the marketing and technical arm of the Energy Trust to the building trade."* When asked what other ways the program could assist them in building more efficient homes, participants suggested:
 - Adding something about solar technology
 - Sending out information about new technologies through email or newsletters
 - Automating the program so that paperwork could be done online
- When asked about the educational and marketing materials they use to help them sell ENERGY STAR homes and how useful those materials were on a five-point scale where

¹² The question reads: On a scale of 1 to 5, where 1 is no value and 5 is extremely valuable, how much value has the program brought you toward building Energy Star homes?

one is not useful and five is very useful, all but one builder thought the materials helped them sell the ENERGY STAR home or helped convince the customer to buy it. The one builder who did not think the material helped said, *“I still think you have to sit down with the customer and convince them it’s worth the extra money.”* Feedback on specific materials include:

- All of the builders were aware of the Energy Star Certification Guidelines and most have used them and rated their usefulness a four or five in promoting their homes.
 - Most builders were also aware of the Homeowner Guide (a folder of information geared toward homeowners about their ENERGY STAR home and its features) and the plaque for ENERGY STAR homes. However, only about half of those who were aware of the Homeowner Guide or plaque have used them. Most of the users of these materials rated their usefulness a four or five.
 - Two-thirds of the builders interviewed were aware of the ENERGY STAR window stickers, yard sign, and call-out cards (a 12-card set for model homes that highlights features). Many builders who were aware of the stickers used them and rated their usefulness a four or five. Half of the builders who were aware of the yard signs and call-out cards used them and found them useful.
 - Builders were the least aware of the home brochure and doormat, but most of the builders who were aware of these materials also used them. Builders seemed to find the doormats not as useful as the home brochure.
- All but two builders were aware that the program allows participating builders to apply for a cash incentive to use to advertise their ENERGY STAR homes through the Builders Cooperative Advertising Fund. However, only four of the builders interviewed had applied for these funds. Three of these builders thought the process was easy while the other thought it was redundant and that the process could be improved if the application process were by subdivision rather than by home.
 - Half of the builders have attended at least one training session. They found training sessions dealing with mold, mildew, water penetration, energy efficiency, lighting, and indoor air quality useful. Builders suggested offering more training on current topics and moisture problems. Other suggestions included sending out newsletters of what was covered in each training session for people who couldn’t make it and sending emails to builders to notify them of trainings.
 - Most builders thought their customers were educated enough on the benefits of purchasing an ENERGY STAR home. One builder said, *“They could always be better educated, but I think it’s one of the better marketed programs.”*
 - The majority of builders have not heard any objections from customers about ENERGY STAR homes. Those that have stated the objections were about CFLs and cost.

Program Marketing and Outreach

Related to marketing and outreach, participants made the following points:

- Builders typically keep abreast of industry developments by reading trade publications and periodicals. Other ways to keep informed were the Internet, trade organizations such as the Home Builders Association, conferences, and trade shows. Builders also mentioned getting information from their suppliers, Earth Advantage, the Energy Trust, and ENERGY STAR people.
- Builders tend to get their information on energy efficiency from the same sources, but also from the EPA, the ENH program, and contractors, specifically HVAC and insulation contractors.
- Most of the builders said they attend trainings a few times per year.
- The majority of builders prefer to receive information from the program through email, however regular mail and fax were also mentioned.
- About half of the builders interviewed had attended a builder breakfast. All of them had a positive experience with it. They specifically liked the displays, scope of coverage, and what was said about building science.
- Most of the builders that we interviewed suggested reaching other builders with news of this program through the Home Builders Association. One builder said, *“Most builders place a high degree of credibility on stuff that comes with the HBA stamp on it.”* Participants suggested additional ways of reaching builders, including:
 - Builder breakfasts
 - A mailing through the Construction Contractors Board
 - Word of mouth
- One builder suggested sharing success stories of participating builders with those who are not participating.
- Twelve of the fifteen builders are extremely likely to continue participating in the ENH program. The main reason given by builders for not continuing was cost. However, the majority of builders are extremely likely to continue participating because they think the program is very good, it separates them from their competitors, and the long range benefits are positive. Builders said:
 - *“It’s a great program and we appreciate it.”*
 - *“I have had nothing but positive results from the program for me and my customers.”*
 - *“Why would I not?”*

Chapter 3: Trade Ally Interviews

Introduction

Between March and April 2006, ODC conducted nine in-depth interviews with trade allies of the Energy Trust's ENH program to provide insight into market actor understanding and experience with the program.

ODC originally intended to conduct 50 interviews to provide quantitative findings for the evaluation, but this number was based on the understanding that there were 350 trade allies affiliated with the program. However, the actual sample provided by program staff contained only 25 participating trade allies. Consequently, we made the survey longer and concentrated on obtaining as many interviews with the 25 allies as possible.

Contractor Experience

The nine trade allies we interviewed had the following characteristics:

- All employ an average of 38 employees (ranging from five to 110 employees).
- All have been active in business for an average of 22 years (ranging from two to 57 years).
- All work in residential and commercial sectors.
- All do new construction and retrofit.
- Two-thirds of those interviewed reported that at least 60% of their business was single-family new construction.
- One-third stated that 10% or less of their business was single-family new construction.
- The average size of the new homes where HVAC equipment is installed is 2,500 square feet.
- Most heard of the program through the Energy Trust or the builders with whom they work.
- All are HVAC contractors.

Program Processes

Most of the trade allies with whom we spoke found the process to participate in the program easy to navigate, and the forms easy to complete. However, a couple of the trade allies thought that the forms were time consuming and repetitive. One said, *“A lot of the applications seemed like dual applications that we had to fill out. A lot of the paperwork seemed like it was redundant.”* Another said, *“There were a lot of forms but they are necessary. Getting all the information together and getting it back to you guys was time consuming.”*

All of the trade allies interviewed thought the ENERGY STAR requirements were clear and easy to understand and most thought the process of getting a home approved was clear and

straightforward. One trade ally said, *“Especially because of the [ENH training] class I went to, it was easy to understand.”*

Many of the trade allies did not have suggestions for improving the process of getting an incentive. Those who did offered these ideas:

- Standardize the forms.
- Provide training on how to fill out the forms.
- Conduct inspections during installation.

One trade ally said, *“It’s helpful to have the inspections done when we’re installing. We’ve had a couple of inspections done after it’s sheet rocked and we can’t fix any problems then. That makes it a little frustrating for us.”*

Other programs in which the trade allies participate include:

- \$350 tax credit for the electrically commutated motors
- Pacific Power and Light program
- Retro HVAC energy saving programs
- Manufactured home program
- Energy Trust program for existing homes and mobile homes
- Energy Trust gas furnace rebate
- Electric Northwest¹³ and Southern Power programs
- Earth Advantage
- Energy Trust rebate program

One trade ally thought that the Electric Northwest¹⁰ and Southern Power programs had a lot more paperwork, while another stated that the testing in the Earth Advantage program was easier.

Trade allies agreed that the market actor ultimately responsible for choosing the HVAC equipment is dependent on whether the home is custom built or spec built. In both cases, the HVAC contractor will make suggestions to the homeowner or builder. However, if the home is custom built, the homeowner is usually the one to make the decision. If the home is spec, the builder or general contractor will choose. The decision maker does not necessarily vary by the size of the home, except that larger homes tend to be custom built so homeowners tend to be more involved in the decision.

Program Interactions with Builders/Market Actors

Most of the trade allies we spoke with had relationships with builders in regards to the program, initiating participation in the program varies between contractor and the builder. About half of respondents stated that they initiated the relationship and the other half stated the builder initiated it. One HVAC contractor said, *“Generally the builder contacts us. We have had a couple of jobs where we told the homeowner or builder about the program and they decided to go ahead and do it.”* Another HVAC contractor said, *“The program is something that we can offer.”*

¹³ It is unclear what this respondent is referring to, since an Electric Northwest entity does not exist.

Basically we offer it to our builders as a company and then try to get them into the program. So far I have interacted with the program staff people well.”

HVAC contractors were split on who decided if a home should be submitted for an incentive through the program. A few contractors said the builder decided, while others said the HVAC contractor, along with the homeowner or builder, decided. All, however, agreed that the decision on whether to participate in the program is made early on and usually before the house is even started.

Many of the HVAC contractors with whom we spoke did not have a role in filling out the ENH application forms. However, those that did fill them out found them easy to complete. All of the trade allies felt their role in the program was clear and doable.

Program Marketing Materials and Interactions with Residential Customers

All of the HVAC contractors with whom we spoke interacted with residential builders and, to a lesser extent, homeowners. They were involved more with the homeowners if the house was custom built. The HVAC contractors generally would explain the options to the homeowner. One HVAC contractor said, *“Yes, I send them information, I’ll send my card and help walk them through sending in all applications and tax credit applications. Occasionally I’ll go out and walk through with the homeowner and explain their system to them and answer any questions.”* Another HVAC contractor said, *“The actual mechanical parts of it [the house], they [the builders] are often not too familiar with so it’s part of my job to explain what needs to be done for that house to be certified. If the house has been pre-sold, I go over with them [the homeowner] what needs to be done.”*

Most of the HVAC contractors use the brochures from the equipment manufacturers or distributors to educate homeowners and residential builders. A couple said that they do not use any materials. Another said, *“We have a company...letter that takes them through the process of what they’re going to do and what needs to be done and in that letter it actually instructs them or shows them the benefits of going to higher energy efficient equipment.”*

All but one trade ally thought the program helped them to introduce high efficiency HVAC to homeowners and residential builders. Comments include:

- *“Yes, it’s [the ENH program] a marketing tool explaining that not only can they upgrade to high efficiency equipment but there are also tax credits and rebates that will help absorb the costs.”*
- *“I think it will be more helpful with the builders. Many of my customers are well informed. It’s the builders who don’t know what’s going on.”*

The one HVAC contractor who did not think the program would help him said this was because *“90% of my work is already high efficiency.”*

Program Effects on Market Transformation and Barriers

Most of the trade allies with whom we spoke thought the program had a positive effect on their business and have noticed an increase in the demand for high efficiency HVAC equipment. One said, *“I think we are getting a more educated buyer. We get a lot of questions from people you can tell have been surfing the Web.”* Another said, *“I think more builders are getting more comfortable with the programs.”*

None of the HVAC contractors reported experiencing any issues with meeting the program’s technical specifications.

About half of the HVAC contractors with whom we spoke said that they have had some difficulty obtaining heat pumps and AC units due to the change in federal standards. One said, *“Just with the new federal mandate that’s 13 SEER or higher. AC and heat pump equipment is a little harder to get right now.”* Another said, *“We are having some difficulty in obtaining heat strips...and there is a certain size furnace that’s in short supply right now.”*

About half of the HVAC contractors did not think there were any barriers for increasing the saturation of high efficiency HVAC. Comments on barriers included:

- *“The only real barrier that I see out there is price. People sometimes want the high efficiency but it’s outside their budget.”*
- *“The only thing would be technical things that some folks have problems with. Some of the thermostats for example, they don’t just set a dial anymore.”*
- *“There was a barrier in lack of education of the public but I think that’s changed and we’re headed in the right direction.”*

Many trade allies thought the program had a positive effect on the appliance efficiency market, but none indicated noticing any changes in the availability of high efficiency units.

- *“Yes, it’s helped people understand that if they want an efficient home they have to put in the equipment to make it that way.”*
- *“Rather than one or two appliances having the ENERGY STAR sticker on them, more like a majority have the ENERGY STAR sticker.”*

We asked HVAC contractors about features of HVAC systems they install in new homes that are **not** part of the ENH program and have summarized their responses below. On average:

- 53% of the homes have gas furnaces that are 90% or more efficient (ranging from 25% to 100%)
- 51% of the homes have heat pumps that with HSPF 8.5 or more (ranging from 5% to 100%)
- 67% of the homes had their ducts sealed with mastic (ranging from 25% to 100%)

These practices of the program’s trade allies should not be used to represent the general HVAC contractor market, but instead serve to indicate that the program works with conscious trade allies who perform work at the ENERGY STAR level even in buildings that are not participating.

Training

Many of the HVAC contractors with whom we spoke reported attending training sessions in order to keep current with industry trends and energy efficiency options. These sessions were often offered by:

- Energy Trust
- Oregon Department of Energy
- Suppliers and manufacturers
- Utility companies
- Oregon Air Conditioning Contractors of America (ORACCA)

Trade allies mentioned that they would like to see training in the following areas:

- Filling out application forms
- 13 SEER mandate
- Energy efficient homes
- Heat pumps

Trade allies say they belong to the following organizations:

- Home Builders Association (HBA)
- Central Oregon Builders Association (COBA)
- ORACCA
- Marion-Cope county Building Industries Association
- Salem Contractors Exchange

Trade allies also stated that the Home Builders Association, Central Oregon Builders Association and ORACCA present energy efficiency opportunities to members.

Trade allies often mentioned home shows as the best way to showcase energy efficiency programs or services to the local new home construction community. They also mentioned TV and sending out information packages. One HVAC contractor said, *“By putting a new energy efficient home on the market and showcasing it as that.”*

Program Awareness and Satisfaction

HVAC contractors overall were satisfied with the ENH program. All but one rated their satisfaction a four or five on a five-point scale, where five is very satisfied. The other HVAC contractor rated his satisfaction a three because he feels the paperwork is too much of a burden. Another HVAC contractor mentioned that he would like to be able to fill out the forms online.

Many of the HVAC contractors with whom we spoke had worked with program staff and were satisfied with their interactions and with the program process. One HVAC contractor said, *“I’ve worked with CSG people. They get back to me with answers and they even came over here to Bend and put on a little workshop which was extremely helpful.”*

We told HVAC contractors that the program plans to move toward independent agents verifying the HVAC installations and asked them how likely it was that they will participate. All but one of the HVAC contractors with whom we spoke were confident that they would participate. The one that was less sure said, *“I don’t think you have to test every house.”*

Program Recommendations from Trade Allies

Program’s strongest points:

- *“The support – it gives us a third party”*
- *“They get information out to us ahead of time”*
- Customer awareness: *“People realize how important it is to have higher efficiency homes and the program enables them to do that”*
- Advertising

Program’s weakest points:

- Paperwork
- *“I have seen some of the companies that are doing their own testing and they need to be inspected better”*
- *“Design of some of the houses is very hard to make meet the program requirements”*

Changes that can be made to the program:

- *“Improve some procedures and paperwork”*
- Be able to use mastic tape instead of mastic putty
- *“I would like to get a representative from the Trust to help me sell the program to builders”*
- *“Higher incentives on the equipment”*

Most of the HVAC contractors with whom we spoke were very likely to continue participation in the program. Comments include:

- *“It’s a good program and I’d like to see more of the builders do it”*
- *“It helps us, our customers, and builders to move on the right direction”*
- *“I believe it sets me apart from my competitors and it’s great not only for my business but also for the environment”*

FINDINGS AND RECOMMENDATIONS

Findings

- While it is a new program, the Efficient New Homes program has had a very successful start.¹⁴
 - Achievement of energy savings goals of 6,100,00 kWh and 290,000 therms from acquired and committed homes¹⁵
 - Built 505 homes through program (including ENERGY STAR homes and zonal electric homes)
 - Set up networks with trade allies and builders
 - 113 of builders recruited
 - 153 of trade allies (including builders and performance testing contractors) recruited
- The program staff understand that program goals are energy savings (therms and kilowatt hours) and realize that building secondary and tertiary aspects of the program will support the end goal.
 - Care needs to be taken in signing up home builders to avoid exceeding the incentive budget.
- The program's focus is evolving from resource acquisition (incentives for builders) toward market transformation (educating market actors and marketing/brand maintenance).
- Barriers limit builder participation.
 - Builders and program staff see the compact fluorescent lighting (CFL) requirement as a barrier to program participation. However, given participation levels, this potential barrier is not yet a concern in terms of achieving program goals of energy savings. For further market transformation to take place, however, builders and other market actors must be educated about CFLs.
 - Program staff feel that builders may not realize that ENERGY STAR homes can be luxury developments.
 - Some participants feel that the site incentive application is cumbersome.
- Program processes for builders and trade allies are running smoothly. The builder outreach specialists are the key to this success.

¹⁴ Information is for the implementation team's first contract, from March 2005 to March 2006. The program met its energy savings goals based on committed and forecasted homes.

¹⁵ Energy savings goals have been achieved for the implementation team's current contract (April 2006 to December 2006): 5,875,436 kWh and 225,000 therms from committed homes. Other current contract information, as of July 14, 2006): 384 homes (including ENERGY STAR homes and zonal electric homes) have been built, 11 new builders signed, 16 new trade allies recruited (includes builders and performance testing contractors).

- Enrolling in the program is easy and well facilitated by outreach specialists or Earth Advantage representatives.
- The site incentive application is a little more cumbersome, and forms can be time consuming and repetitive.
- Builders are very satisfied with the verification process.
- Builders say the lag time for receiving incentive check is reasonable.
- No issues for trade allies to meet program technical specs, but some difficulty obtaining heat pumps and AC units.
- Program marketing by outreach staff is very successful.
 - Partnerships have proved very beneficial, i.e. with Earth Advantage and Street of New Beginnings.
 - Builders often mention using the marketing materials to educate customers and to differentiate themselves from other builders.
 - Other benefits include:
 - Identifiable brand name
 - Third party verification
 - Better quality homes
 - Training
 - All builders had positive experiences with builder breakfasts.
 - ENERGY STAR recognition and program materials are good marketing tools for builders.
 - The training classes for trade allies make the program requirements easier to understand.
- Trade allies feel the program has a positive effect on their business and say they notice an increase in demand for high efficiency HVAC equipment, due to more educated buyers.
- Good teamwork among program staff.
 - Seamless interaction is occurring between implementer and subcontractor.
 - Builders and trade allies are pleased with outreach specialists.
- Northwest Energy Efficiency Alliance (NEEA) complements the ENH program
 - NEEA sets up the structures (builder outreach specialists, builder operator package) that the ENH program utilizes.
 - NEEA emphasizes the market transformation aspect of the program.
 - NEEA maintains consistency throughout the region.
- For ENH program managers, managing databases and generating reports can be tedious because forms must be complete and accurate.
 - The two software programs, FastTrack (information about individual projects) and Goldmine (repository for trade ally data), are not well integrated with each other.
 - Forecast reports can be tricky because construction schedules change, often due to external factors.

- Earth Advantage is a key partner in the ENH program¹⁶.
 - Participants often report having initially heard about the ENH program from Earth Advantage.
 - Builders say they have had positive experiences with Earth Advantage and feel that it is a credible information source.
- Program staff target large-volume builders in order to ensure that energy savings goals are achieved.
- Small and medium builders receive blanket outreach via builder breakfasts, trainings, and through associations.
- Participation in the ENH program typically is initiated by the small or medium builders.

Program Recommendations

- Program participants indicate that the amount and types of data required may be confusing to outside verifiers. Consider relaxing some of the program requirements in data collection or automating the data input process.
- Because many builders know the Earth Advantage name, consider further developing synergies between Energy Trust and Earth Advantage. Build on the Earth Advantage name recognition and increase awareness among builders of the ENH program. Reinforce that they can build homes under both Earth Advantage and ENH.
 - The Energy Trust should also work with Earth Advantage more to recruit more builders in the Earth Advantage program to build ENERGY STAR qualifying homes.
- Builders are turned off by the CFL requirement (and say that their customers do not like CFL lighting). Additional education about recent CFLs may improve the perception of compact fluorescent lighting, help dispel notions that CFLs make undesirable lighting, and reduce customer and builder resistance. Another option is to encourage ENERGY STAR to allow a certain wattage per square foot, instead of a CFL lighting requirement.

Because of the current success of the program and given the context of the budget, the following recommendations may be useful if the program expands or if participation lags:

- Hire additional builder outreach specialists:
 - To canvass the region and sign up more builders as the current staff are busy walking builders through the paperwork and through the stages of qualifying their home
 - To support builders and trade allies who rely on builder outreach specialists to guide them through the process and forms

¹⁶ Earth Advantage homes do not always qualify as ENERGY STAR homes, and vice versa.

- Increase awareness among builders of existing marketing opportunities and collateral. In addition, provide more marketing services and materials to builders for customers. Builders think that marketing/education and promotion of program cost savings will help customers understand benefits.
 - Future evaluation efforts should identify the marketing messages that are effective with customers.
- Consider providing awards to builders to give them recognition for building ENERGY STAR homes.
- Increase awareness among builders of the promotional materials (ENERGY STAR window stickers, yard signs, call-out cards, home brochures) that can help them sell ENERGY STAR homes and convince consumers about the benefits.
- Provide participants with training on additional topics, including additional information on moisture issues.
- Teleconference some meetings among program staff to maintain high level of communication, but allow for more flexible scheduling.
- Conduct the first inspection during the installation period, because if done later, some problems cannot be fixed easily

APPENDIX

Satisfaction Questions

The responses to the satisfaction questions we asked in our data collection efforts (interviews with program administrators, builders, and trade allies) are summarized in Table A1.1 below. The data, however, are not necessarily representative due to small sample sizes and the method of capturing this data¹⁷ and are presented here solely as context for our other qualitative findings.

Table A1.1: Summary of Ratings

	Program Administrators	Participant Builders	Non-Participating and Non-Active Builders	Trade Allies
Program’s success	7.8 (1 to 10 scale)			
Overall satisfaction with program		9.2 (1 to 10 scale)		4.0 (1 to 5 scale)
Satisfaction with program staff				4.1 (1 to 5 scale)
Likelihood of participating if independent agents verify HVAC installation				4.2 (1 to 5 scale)
Likelihood of continuing participation		9.5 (1 to 10 scale)		9.3 (1 to 10 scale)
Satisfaction with verification process		4.6 (1 to 5 scale)		
How much value has the program brought you toward building ENERGY STAR homes?		4.1 (1 to 5 scale)		
Likelihood of participating in the future			7.9 (1 to 10 scale)	

¹⁷ Respondents in our qualitative interviews often provided ranges or indistinct numbers as ratings; furthermore, some respondents did not receive the question due to time constraints or other limitations.