OREGON HOME ENERGY SAVINGS PROGRAM PROCESS EVALUATION

- FINAL -

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February 27, 2004

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EXECUTIVE SUMMARY

This report provides a summary of process evaluation research conducted for the Home Energy Savings Program (HES) implemented by the Energy Trust (Energy Trust). The Home Energy Savings (HES) program, approved by the Energy Trust Board on October 30, 2002, is the first Energy Trust program for the residential sector. The program provides retrofit services to electric utility customers of PacifiCorp and Portland General Electric, and gas customers of Northwest Natural. The program is a multi-year program, running through the 2005 fiscal year.

The HES program is a successor to the transition programs of PacifiCorp and Portland General Electric (PGE) that provided residential retrofit services. As such, it replaces utility residential retrofit transition programs that ceased to take new customers as of February 28, 2003.[1] Additionally, the HES program serves Northwest Natural Gas customers outside of the Portland Metro Area with residential retrofit services, and offers solar water heating, a renewable resource, in all three utility service areas.

This evaluation is intended to document the development of the program and to provide early feedback to the Energy Trust regarding the initial design and implementation phases of the program. The research undertaken to meet these objectives includes:

- Review of program documentation
- Documentation of program design and underlying theory
- On-going review of program databases and tracking
- In-depth interviews with program staff and management
- In-depth interviews with the program management contractor (PMC) staff
- Telephone interviews with 25 participating Trade Allies
- Telephone interviews with a sample of 10 non-participant contractors

Analysis for Program Performance

- **2003 Program Performance Relative to Goals (units as of November 31, 2003)** – Table 1-1 provides a summary of performance relative to program planning goals.

Table 1-1: Program Performance Relative to Goals

Element	Actual (# units)	Goal (# units)	Actual as % of goal
SF (Weatherization, Electric-Only)	850	848	100%
SF (Home Energy Reviews)	2,549	4,360	58%
MF (Committed & Completed)	13,000	1,710	760%
MH (Duct Sealing)	2,848	2,478	115%

[1] Board Decision – Approval of the Home Efficiency Program Management Contract, February 5, 2003.

- **The MF and MH elements of the program appear to be on-track** – program achievement in these areas has been relatively positive. The MF program committed all available funds for 2003, with significant additional commitments carrying into 2004. The MH contractors report some challenges in marketing, but appear to be on track for meeting program goals.

- **The SF element has not performed as expected** – As shown in the table below, the SF program has not achieved the momentum that were expected. Specific reasons for this include (1) delayed implementation due to issues with the Energy Trust regarding agency issues, and (2) insufficient marketing resources to achieve desired participation levels. Indirect reasons that may also contribute to this include an insufficient number of participating contractors, lack of "closing skills" on the part of Lighting-plus auditors, poorly designed incentives for heat pump replacements, and focus on developing other program elements, including multifamily and gas-heated residential.

- **Actual program performance may be less than reflected in percentage of units complete due to issues with savings estimates and B/C analysis assumptions** – Several areas of potential concern related to energy savings estimates were identified during the interviews. These include: (1) energy savings assumptions for CFL lighting may be over-estimated (a recent NEEA report questions hours of use assumptions); (2) The energy savings estimates for heat pumps were based on thee replacement of electric resistance heating, whereas the more common baseline may be replacement of existing heat pumps that will result in a fraction of the expected savings; (3) impact of the Home energy reviews assumes a level of follow-on work (weatherization and other measures) that has not materialized thus far.

- **Responsibility for less-than-expected performance of the SF element lies with both Ecos and the Energy Trust** – From both Energy Trust and Ecos staff perspectives, issues relating to the Energy Trust contracts and legal departments have played a major role in slowing the implementation and development of the program. Additionally, changes in program management at Energy Trust resulted in some lost momentum. On Ecos' side, there have also been delays in developing some of the program components.

Feedback from Program Staff

- **Several challenging implementation issues have been ironed out** – Several of the major issues encountered during program start-up appear to have been addressed at this point in time – it appears that the agency issue has been resolved and that issues stemming from that, such as co-op advertising and other program marketing are being resolved as a result. Similarly, marketing roles have been clarified and a new marketing plan has been prepared for 2004, with additional monies budgeted by the Energy Trust for Ecos to undertake these activities.

- **Program tracking and reporting has been inefficient** – Timely and accurate data on program accomplishments has not been consistently available to Energy Trust staff. This has contributed to lack of understanding of program performance at the savings level, and

a lag in responding to program shortcomings. Various people interviewed believe that the upcoming conversion of program tracking to the Energy Trust's Fast Track system will solve this problem.

- **Ambiguity in contract language regarding marketing roles and expectations has strained relations and impacted performance** – There appears to have been a fundamental miscommunication regarding which entity is / was responsible for program marketing. The Energy Trust has claimed that Ecos was responsible for program marketing and that the Energy Trust would be providing general awareness marketing only. Ecos, on the other hand, maintains that the Energy Trust had responsibility for targeted marketing of the program, to be supplemented by small and relatively focused efforts on the part of Ecos, for which only $40,000 had been budgeted.

- **There is an underlying level of discomfort in the working relationship between Ecos and the Energy Trust contracts and marketing staff** – Reportedly, the contracts person at the Energy Trust with responsibility for this program is not speaking with the Ecos project director. Similarly, relations between the marketing manager at the Energy Trust and Ecos staff are strained. While it is unclear how this is affecting the current implementation of the program, this appears to be an issue that could impede the synergies that are necessary to achieving the mutual goals of the Energy Trust and Ecos and should therefore addressed directly. There were suggestions that Ecos is now a bit "gun shy" in bringing ideas and/or suggestions to the Energy Trust as a result of this strained working relationship.

- **Overall SF prognosis is mixed** – In spite of the fact that several of the above-highlighted details have been addressed, there remains a clear level of cognitive dissonance centering on the current prognosis for the SF program element. The Energy Trust and Ecos program managers are optimistic that the program is now on track. However, higher-level management staff at the Energy Trust expressed concerns that reflect a lack of confidence in the capabilities of Ecos program management. There are also remaining concerns regarding the responsiveness of Ecos to Energy Trust requests, timeliness in reporting and progress updates, and overall ability to develop the organizational capabilities necessary to delivery on contracted savings.

Participating Trade Allies

- **Participation by Trade Allies is limited** – While inclusion of gas space heating has resulted in an increase in the number of trade allies that have signed up to participate in the program, activity indicators show that participation was limited to 19 trade allies in the month of November.

- **Mixed feedback on the administrative processes was received from Trade Allies** – Feedback from contractors indicates a mix of experiences with the program from an administrative perspective. Since those who spoke favorably of the process were very firm in this opinion, we suspect that this may reflect a mix of training or communication issues, rather than an issue with the program forms or administrative process. Increased

outreach to these contractors, particularly those who are less likely to be in direct day-to-day contact with the Energy Trust, may help to bridge this perception.

- **Trade Allies have not received as much marketing support as desired** – Overwhelmingly, participating Trade Allies report that they would like to receive greater levels of assistance from their Energy Trust. Many of these Trade Allies have participated in utility-sponsored programs and are expecting to have such marketing support and leads directed their way. Communications with these contractors will need to emphasize the extent to which this program relies upon the Trade Allies to market the program.

Recommendations

Based upon these initial interview results, the central area of concern for this program focuses on the single-family element. In order to put the issue in context, it is worth noting that, largely, the MF and MH elements of the program already existed in some form before the Energy Trust initiative; Climate Crafters was providing services to mobile homes, and the OSD was already providing services to the MF sector. In contrast, the SF element has been started from scratch and, as such, may be viewed as much more of a start-up venture. This is important because, if one views the program as a start-up venture, this suggests that the program may require a different type of management attention on the part of the Energy Trust. This need for a different management perspective may also be contrasted with the C/I program that, as described to us, is based upon a program design that Aspen Systems had previously implemented.

If the SF element is viewed as a start-up venture being undertaken by Ecos (much as a start-up business), the Energy Trust might then be viewed as an angel investor, or as a provider of first round venture capital financing. This analogy provides a useful perspective for viewing the current situation. When an investor takes an early investment position in a private venture, that investor typically takes a much more active role in the management of the company. This may be contrasted with a more passive investment such as investments made in more mature companies through the stock market. These early investors may, for example, install specific management staff they know to have a specific skill set and whom they trust to manage infrastructure development and the growth of their investment. Extending the analogy further, the early investor typically requires a very tight business plan with specific near- and mid-term targets. These targets are reviewed closely on a regular basis and adjustments made as needed. In short, this type of relationship suggests that a much closer management relationship between the Energy Trust and Ecos may be warranted, with a significant focus on infrastructure development. The challenge, however, is that the contract between Energy Trust and Ecos is performance based. As such, the Energy Trust appears to have something of an internal conflict regarding how active of a role the Energy Trust should play in program implementation. On one hand, it is rational to assume that Ecos has every incentive to succeed. On the other hand, several elements of the underlying program theory for the SF element are relatively untested and therefore present greater risk to both Ecos and the Energy Trust. We suspect that the current ambiguity surrounding this relationship is an underlying source of tension between Ecos and the Energy Trust.

There are three primary recommendations that appear to be most important and fundamental in the near-term. These include:

- **Conduct an internal meeting among Energy Trust staff to form consensus on SF element status, issues, and prognosis** – During interviews, we noted a decided level of uncertainty among Energy Trust staff regarding whether or not the SF element was likely to perform adequately in the future. As a first step, we therefore suggest that a focused meeting needs to be held among Energy Trust staff to reach internal agreement on the status and prognosis for this program, as well as an assessment of risks relative to specific program components. Note that, based upon our assessment, the evaluation team sees a number of red flags which suggest that, although progress is certainly being made, the program is not yet on firm ground. With its impartial perspective, the evaluation team may be able to facilitate such a meeting.

- **Give serious consideration to whether or not a performance-based contract is in the best interests of the Energy Trust in moving forward with this program** – Numerous parties expressed concern about the nature of the contract negotiated between Ecos and the Energy Trust. It was questioned whether the performance-based nature is appropriate for a start-up program that requires attention to a lot of details that may affect the long-term outcome of the program but may not enhance the near-term achievement of performance goals and compensation. The structure also appears to perpetuate a certain level of ambiguity as to the roles of the Energy Trust and Ecos. This conflict has manifested itself, for example, in the area of marketing, (e.g., approval of marketing collateral), but impacts are seen throughout the single-family program in the form of program delays and lack of program cohesion.

- **Work with Ecos to develop a <u>detailed</u> SF "business plan" for 2004 –** Given that program development has, for a number of reasons, deviated from its original plan, there is a need for a clear (and high resolution) road map for the coming year. We therefore recommend that Energy Trust and Ecos work together to develop a very specific and concrete implementation plan (effectively a business plan) for PY2004 SF element. This plan should include specific and realistic installation rate targets by month, updated B/C analyses, a marketing plan (including timing of placements and rationale for such), contingency plans in the event that targets are not met, and a prioritized list of development activities. While the ultimate benefit will be a common understanding of expectations for the coming year, the process of creating such a plan is also likely to yield substantial benefits in that the creation of such a plan will require a very close look at the program and each aspect of the program design. Moreover, the ultimate business plan will require a clear delineation of both Energy Trust and Ecos responsibilities as the program moves forward. In the interest of ensuring positive communication between the Energy Trust and Ecos, a daylong "*Charrette*" approach might be warranted.

1. INTRODUCTION

This report provides a summary of process evaluation research conducted for the Home Energy Savings Program (HES) implemented by the Energy Trust of Oregon (Energy Trust). This program, newly initiated in 2003, represents the Energy Trust's first energy efficiency program for residential customers, and targets single-family (SF), multifamily (MF), and manufactured housing (MH) dwelling units.

This evaluation is intended to document the development of the program and to provide early feedback to the Energy Trust regarding the initial design and implementation phases of the program. The research undertaken to meet these objectives includes:

- Review of program documentation
- Documentation of program design and underlying theory
- On-going review of program databases and tracking
- In-depth interviews with program staff and management
- In-depth interviews with the program management contractor (PMC) staff
- Telephone interviews with 25 participating Trade Allies
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This report is organized as follows:

- Section 2 provides an overview and description of the program.
- Section 3 provides a discussion of the underlying theory for the program.
- Section 4 provides a quantitative summary of program achievements to date
- Section 5 provides a summary of interviews with Energy Trust and PMC staff.
- Section 6 summarizes interviews conducted with 25 participating Trade Allies.

Finally, Section 7 provides our summary and recommendations.

2. PROGRAM DESCRIPTION AND HISTORY

2.1 Background and Overview

The Home Energy Savings (HES) program, approved by the Energy Trust of Oregon (Energy Trust) Board on October 30, 2002, is the first Energy Trust program for the residential sector. The program provides retrofit services to electric utility customers of PacifiCorp and Portland General Electric, and gas customers of Northwest Natural. The program is a multi-year program, running through the 2005 fiscal year.

The HES program is a successor to the transition programs of PacifiCorp and Portland General Electric (PGE) that provided residential retrofit services. As such, it replaces utility residential retrofit transition programs that ceased to take new customers as of February 28, 2003.[2] Additionally, since July, 2003 the HES program serves Northwest Natural Gas customers outside of the Portland Metro Area with residential retrofit services, and offers solar water heating, a renewable resource, in all three utility service areas.

In developing this program, the Energy Trust has endeavored to develop a program that will "attract a variety of contractors and energy efficiency delivery businesses and address all residential-related electric end uses." The overall intent of the program is to increase market penetration of various cost-effective measures and, over the course of the program, increase the capability of the contractor community to provide comprehensive residential retrofit services.

In support of this approach, the program includes elements of some past program offerings in Oregon, with enhancements that are intended to increase participation by contractors and residential energy consumers.

These enhancements include[3]:

- Access to participant incentives without the need for an energy audit
- Ability to combine incentives for various measures
- Flat, fixed amount incentives to streamline the incentive process
- Tax credit application assistance
- Training assistance for contracting companies
- Screening and referral of clients through energy reviews such as the Lighting + Home Energy Reviews
- Listing of eligible contractors on the Energy Trust's Web site as Trade Allies[4]

To achieve a depth of savings, the program offers nontraditional services, such as duct sealing, heating system efficiency improvements, and compact fluorescent lighting technology, in addition to traditional shell measures and efficient water heaters. To achieve a breadth of savings, the program has developed a network of approved contractors (Trade Allies) throughout

[2] Board Decision – Approval of the Home Efficiency Program Management Contract, February 5, 2003.
[3] Home Energy Savings Contractor Guide, p. 4.
[4] Ibid.

the Energy Trust territory. The program also encourages development of a sustainable residential retrofit market by providing contractors with installation training, marketing assistance, and incentives for offering comprehensive retrofit services.

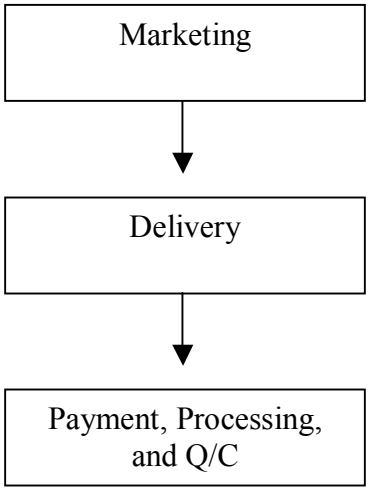
On February 1, 2003, the Energy Trust began administering its first residential program with the approval of a two-year contract with Ecos Consulting, Inc. (Ecos) to provide program delivery, marketing, and contractor support for the Home Energy Savings Program. In selecting Ecos at the program management contractor (PMC), the Energy Trust board cited the innovative approach that Ecos proposed to deliver energy retrofit services to the residential sector, a sector that has not been widely reached with energy retrofit services.

The HES program is organized by residential sub-sector:

- Single-family
- Multifamily
- Manufactured Housing

For each program element, there are three basic components. The first component, *Marketing*, is used to promote the program and recruit customers. The second component, *Delivery*, includes the installation of measures. The third component, *Processing, Payment and Quality Control*, comprises the tail-end activities of the program that are intended to complete the administrative functions of the program and ensure long-term customer satisfaction. These steps are shown in Figure 2-1 below.

Figure 2-1: Program Components



Importantly, as described below and as shown in the detailed process flow diagrams, the steps within each of these program components vary considerably from one program element to the other. Detailed process flow diagrams for each program element are contained as an attachment to this report.

2.2 Single-Family Program Element

Single-family services for electric efficiency in PGE and PacifiCorp Oregon service territory began in May 2003 as part of the initial program launch. For Northwest Natural Oregon customers, single-family gas efficiency services began in July 2003. These startup dates were coordinated with the curtailment of utility programs for each market. Single-family services include air sealing, duct sealing and heat pump measures, insulation, windows, and efficient water heaters. The gas furnace efficiency program formerly run by Northwest Natural was integrated into the program in October 2003. The program will then offer furnace services to gas-heated residences in addition to the measures listed above.

Marketing

Program Inquiry

There are two ways to become a participant in the single-family retrofit process. In the first, the owner or resident contacts the program through the toll-free Energy Trust telephone number or the program website. A customer service representative for the Home Energy Savings Program determines eligibility for program services. The customer service representative provides the caller with program information on measures, incentives, and tax credits. Alternatively, a contractor can talk with a prospective participant about the program. In either case, if the owner or resident identifies potential measures that are eligible for retrofit services, he or she can either arrange for services through a contractor or arrange for a Home Energy Review.

In some cases, a single-family owner or resident may have obtained a contractor bid before the Home Energy Review. If the contractor is not a Trade Ally, he or she may apply to become a Trade Ally to be eligible for receiving program incentives.

A single-family owner or occupant may also wish to self-install measures, in which case they are provided information on self-installed measures eligible for compensation.

Home Energy Review

If the customer agrees to it, a Home Energy Review is provided by the program. For a review provided by the program, a representative of the PMC visits and inspects the single-family residence. Based on the inspection, the reviewer identifies potential measures, and provides incentive estimates and a list of Trade Ally contractors. The reviewer also replaces an average of ten existing light bulbs with compact fluorescent lights.

The schedule of eligible single-family retrofit services and incentive levels is shown in Table 2-1. The measures are available for gas or electrically heated homes.

Table 2-1: Potential Measures and Incentives for Site Built and Manufactured Housing

Maximum Incentive	Potential Tax Credit	Energy Saving Measure
$200		Floor insulation
$200		Wall insulation
$200		Ceiling insulation
$200	Yes	New high efficiency heat pump · Minimum efficiency HSPF 8.5
$200	Yes	New high efficiency gas furnace · Minimum efficiency 90% AFUE · Incentive issued by NWN thru 9-30-03, By Energy Trust starting 10-1-03
$50	Yes	Heat pump maintenance
$75		Duct insulation
$50	Yes	Duct sealing
$50		Air sealing (per 0.10 reduction of ACH, *not to exceed $200)*
$1		Windows (per sq. ft. of window) · U-factor must be .32 or lower · An additional measure must be installed
$25		Energy-efficient electric water heater

After the review, the reviewer or contractor faxes a completed Form 301 – Reviewer Information Form to the Tax Credit and Incentives Hub. The form includes resident contact information, the existing home energy system, and potential areas for improvement.

At this point the owner or resident can decline further participation, or can continue participation by getting a bid from an existing contractor, seeking bids from one or more Trade Allies, or preparing an application for self-installation of eligible measures. The participant then submits the bid to the PMC.

Delivery

In most cases, retrofit services will be provided by a Trade Ally. However, for self-installation, where the owner or owner representative chooses to not to use a Trade Ally for retrofit services, incentives can only be applied to the cost of materials required for the retrofit. Self-installation retrofits must meet the program specifications, and some retrofit activities, including duct sealing, air sealing, and heat pump installs, are only eligible for incentives if they are installed by a certified technician.

Whether the project is a Trade Ally installation or a self-installation, it must meet program specifications to qualify for incentives. These specifications are provided to Trade Allies as part of the Contractor Guide, and are provided to those pursuing retrofits independent of Trade Allies.

The specifications are based on those of the Regional Technical Forum or in some cases developed as variants that better meet Energy Trust objectives. To meet heat pump and duct sealing measure specifications, the project contractors, who are certified by either CheckMe! or Enalasys, use Oregon Office of Energy and/or Climate Crafter test protocols on each job submitted to the Energy Trust (note that this requirement is waived for a heat pump with a TXV valve on the outside unit). For the measure to qualify, a certified technician must achieve a target leakage reduction.

Quality Control, Processing and Payment

During the installation process, all heat pumps have their refrigerant level and airflow optimized by using CheckMe! a telephone based quality control tool operated by Proctor Engineering Group. On completion of the retrofit services, the participant signs the Incentive Application Form 340 and faxes it, with invoices for the work, to the PMC. The PMC reviews the final forms, enters data from the forms into the program tracking system, and sends an incentive payment request to the program manager at the Energy Trust. The program manager reviews the payment list, approves payment, and forwards the approval to accounting. The Energy Trust records the payment in program database, issues the incentive check, and forwards the check to the PMC, which then sends the check to the single-family participant.

PMC field personnel inspect 10 percent of single-family homes for testing accuracy and specification compliance. If the reviewer finds deficiencies in the work, he or she can require corrections that will be verified with a re-inspection. The inspection is typically performed after the contractor has been paid for the project.

2.3 Multifamily Program Element

Multifamily services were part of the program from its inception, but were begun in earnest and greatly expanded on June 4, 2003, when the Energy Trust board approved an amendment adding one million dollars to the existing contract with the PMC to manage a multifamily retrofit approach. The first multifamily projects were completed in July, 2003 under this contract.

The multifamily services are administered jointly by the PMC and the Portland Office of Sustainable Development (OSD). The PMC directly administers the program outside of a six county Portland Metro area served by the OSD. The counties served by OSD under contract to the PMC are Multnomah, Clackamas, Yamhill, Marion, Polk, and Washington.

A multifamily complex is eligible for services if it has more than five units, and is located in the service territory of PacifiCorp, PGE or (outside of the area served by OSD) Northwest Natural.

Marketing

Program Inquiry

There are four options for entry into the multifamily process:

- Contact is initiated when an owner, owner representative, or residential contractor contacts the program through the toll-free Energy Trust telephone number or the program website.

- Contact is initiated when someone representing the Home Energy Savings program, a program employee, Trade Ally, or residential contractor, contacts a multifamily owner or owner representative.

- Contractors who are not Trade Allies contact the program regarding a specific multifamily property. For contractors who are not Trade Allies, information is provided concerning becoming a qualified Trade Ally.

- Multifamily residents contact the program, and are advised to contact their property manager or owner and request that they contact the program.

In each case, the PMC representative or Trade Ally determines eligibility for program services. The customer is provided with initial information on measures, incentives, and rebates. If the owner or owner representative identifies potential measures that are eligible for retrofit services, he or she can either arrange for a multifamily Energy Review, seek retrofit services from a Trade Ally without a Review, or can self-install some measures. If owner or owner representative does not identify potential measures eligible under this program, but does identify measures that may be covered under another Energy Trust program, the customer service representative will direct them to that other Energy Trust program.

Home Energy Review

If the customer agrees, a Home Energy Review is provided by either the program or the Trade Ally. For a review provided by the program, a representative of either the OSD or the PMC visits and inspects the multifamily site. Based on the inspection, the reviewer provides the owner or owner representative with the project's energy savings potential, cost and incentive estimates, a project payback calculation, and a referral to Trade Ally contractors. For mixed-use residential and commercial complexes, the review will also include the commercial space. The PMC for commercial retrofits, Aspen Systems, is used as a resource in the commercial review to identify measures and savings, but the project costs and savings accrue to the multifamily PMC.

For Trade Ally-initiated reviews, the Trade Ally provides information on one or more measures, prepares a bid, and offers installation services to the owner or the owner representative.

The following schedule of eligible multifamily retrofit measures and incentives is for gas and electrically heated buildings:

Table 2-2: Windows

Price / Square Foot	Retrofit Measure
$1.50	Single glazed to .35 U-Value window
$1.50	.71 U value metal double pane/storm to .35
$0.50	.40 U-value to .32 U-Value window
$1.00	Windows (gas heated building)

Table 2-3: Attic insulation

Price / Square Foot	Retrofit Measure
$0.40	R<7 to R38
$0.25	R-8 to R-19 toR38
$0.40	Roof deck insulation
$0.25	Wall insulation
$0.25	Floor Insulation

Table 2-4: Other Measures

Price / Unit	Retrofit Measure
$30.00	Insulated exterior door (R-2 to R-5)
$10.00	Showerhead
$25.00	Water heaters for individual units (Electrically heated only)
$62.00*	CFL Installation (average of 7 per unit)

* *Value of installation—not included in incentive to participant.*

The following additional energy savings measures and incentives are available for gas-heated buildings only:

Table 2-5: Additional Measures for gas heated buildings

Price / Unit	Retrofit Measure
$0.50/lf	Pipe Insulation
$150.00/boiler	Boiler Vent Damper and Tune-Up
$1.00/Kbtuh	High-Efficiency Boiler

As with the other sectors, participants in the multifamily sector may select to self-install limited measures (see the single-family element discussion, p. 17).

Delivery

After the review, the owner/owner representative can decline further participation, seek bids from one or more Trade Allies for eligible retrofit services, or choose to self-install measures. If

the participant selects a bid, or in the case of self-installation, prepares a bid, the participant then submits that bid to the PMC.

After receipt and review of the bid, the PMC calculates an incentive amount based on the information contained on the bid. A separate calculation is run for each project, as incentive amounts differ by the number of installed measures and the square footage and improved R- and U-values of shell measures. The calculated incentive amount is entered into Incentive Application Form 320MF. That form, along with a Business Energy Tax Credit packet is mailed to the participant. A blank Completion Certification Form 340MF is also provided, to be completed and submitted by the owner or owner representative after completion of the energy retrofit work. The participant signs the 320 MF form and returns it to the PMC. On completion and return of the 320MF form, the participant receives an incentive commitment and is authorized to proceed with retrofit activities at the project site, and the PMC reserves the incentive funds to be disbursed upon satisfactory inspection of the project.

At any time before this point, if a participant fails to obtain financing, the participant may drop out of the program.

Measures either are delivered by a Trade Ally or through the self-install option by an employee or non-Trade Ally contractor hired by the building owner.

Quality Control, Processing and Payment

On completion of the retrofit services, the owner or owner representative signs the Completion Certification Form 340MF and faxes it, with invoices for the work, to the PMC. A PMC reviewer inspects the project to check for correct installation of measures. The reviewer also installs an average of seven compact fluorescent light bulbs in each multifamily unit. If the reviewer finds deficiencies in the work, he or she can require corrections that will be verified with a re-inspection. For windows-only projects, the reviewer will determine whether any additional shell measures are feasible. If the reviewer identifies additional shell measure opportunities, the owner is required to complete that measure, and arrange for re-inspection.

After the multifamily project passes inspection, the PMC reviews the final forms, enters data from the forms into the program tracking system, and sends an incentive payment request to the program manager at the Energy Trust. The program manager reviews the payment list, approves payment, and forwards the approval to accounting. The Energy Trust records the payment in program database, issues the incentive check, and forwards the check to the PMC, which then sends the check to the multifamily owner or owner representative.

2.4 Manufactured Housing Program Element

Manufactured housing services began in May 2003 as part of the initial program launch. Manufactured housing services include duct sealing, heat pump maintenance, heat pump installation, floor insulation, and electric water heaters. Until November 2003, the manufactured housing services were managed by Climate Crafters, a firm that specializes in residential duct sealing. The PMC currently manages the MH retrofit program directly. For this effort, Climate

Crafters hired and trained contractors to offer program services, and has served as the administrator for manufactured housing retrofit services.

Marketing

Program Inquiry

Program participation can be initiated in two ways. Most frequently, a program contractor can make onsite contact with the mobile home park manager or resident to offer services. Alternatively, a mobile home park owner or resident can make an inquiry to the program through the toll-free Energy Trust telephone number or the program website. The contractor or customer service representative provides initial program information on measures and incentives. If the participant is interested, the contractor or customer service representative will also provide information on tax credits for heat pump purchase or maintenance.

Duct Testing

If the participant agrees, duct testing is performed to determine whether duct sealing can be performed on the home cost-effectively.

Delivery

If sufficient energy savings potential is identified during the duct testing, the contractor performs duct sealing on the residence. The contractor also offers all participants, whether receiving duct sealing services or not, installation of free CFLs and offers other services for pay as appropriate to their residence. This may include installation of a new heat pump, heat pump maintenance, floor insulation, and energy efficient water heaters.

The schedule of eligible manufactured home retrofit services and incentive levels follows.

Table 2-6: Potential Measures and Customer Incentives for Manufactured Housing

Maximum Incentive	Potential Tax Credit	Energy Saving Measure
$200	Yes	New high efficiency heat pump Minimum efficiency HSPF 8.5
$50	Yes	Heat pump maintenance
$200		Floor insulation
Full cost		Duct sealing (on a park by park basis)
$25		Energy-efficient electric water heater

Projects must meet program specifications to qualify for incentives. These specifications are provided to contractors through training and as part of the Contractor Guide.

The specifications are based on those of the Regional Technical Forum. To meet heat pump and duct sealing measure specifications, the project contractors, who are certified by either CheckMe! or Enalasys, use Climate Crafter test protocols on each job submitted to the Energy Trust. For either a duct sealing or a heat pump measure to qualify, a certified technician must

achieve a target leakage reduction. Additionally, contractors who provide duct sealing services are compensated according to the level of service they provide. The levels of service are test-only, text and seal, and complex test and seal. A compensation schedule or duct sealing services is below (Table 2-7).

Table 2-7: Duct Sealing – Contractor Incentive

Level of Service	Contractor Incentive
Test Only	$ 100.00
Test & Seal	$ 300.00
Test and Complex Seal	$ 450.00

Quality Control, Processing and Payment

On completion of the retrofit services, the participant signs the Incentive Application Form 320 and contractor submits it, with an invoice for the work, to the PMC. Rather than submit the project paperwork for a single completion, the contractor submits a package of paperwork for several projects on a weekly basis.

The PMC reviews the final forms, enters data from the forms into the program tracking system, and sends an incentive payment request to the program manager at the Energy Trust. The PMC then invoices the Energy Trust of Oregon. The program manager reviews the payment list, approves payment, and forwards the approval to accounting. The Energy Trust records the payment in the program database, and issues an incentive check, which is sent by the PMC to the contractor.

PMC field personnel inspect 10 percent of homes for testing accuracy and specification compliance. If the reviewer finds deficiencies in the work, he or she can require corrections at contractor expense that will be verified with a re-inspection. The inspection is typically not performed before payment.

3. PROGRAM THEORY

Behind each program lies a theory. This theory, consisting of hypotheses, logic models, and success indicators, is the foundation upon which a program is then built. An important element of program evaluation, then, is to test this underlying theory. In this section, we outline the underlying theory for the Home Energy Savings program.

We begin by reviewing definitions of key terms that we will use in this discussion. We then provide an overview of program logic models. We then provide a summary of the theory underlying the HES program, including a review of key hypotheses and a visual representation of the program logic.

3.1 Definition of Terms

In communicating the theory of this program, it is important to have a common vocabulary and definition of terms. The following terms are central to this discussion:

- **Program Activities** – Program activities represent the discrete action of the program. The HES program activities include, for example, a 1-800 information line, and heat pump tune-up rebates.

- **Program Components –** Program components represent clusters of activities. The HES program has four components: (1) Market Development, (2) Marketing, (3) Program Delivery, and (4) Processing, Payment, and Quality Control (Q/C).

- **Program Elements** – Elements represent groups of program components that focus on a particular market. The HES program has three elements: MF, SF, and Manufactured Housing.

3.2 Overview of Program Logic Models

Logic models serve as graphic representations of the operating theory for a program. The models communicate the rationale behind a program and the underlying set of assumptions about why a program will succeed. Specifically, a logic model illustrates the activities that will be undertaken based upon the underlying program hypotheses, and the desired program effects or program goals. The underlying hypotheses, as well as the effectiveness of the discrete activities undertaken, are then tested through program evaluation.

3.3 Key Program Hypotheses

Program hypotheses or if-then statements that identify the expected outcomes of the various program activities are central to the logic model. And, for each program element (single-family, multifamily and manufactured housing), there is an underlying set of assumptions and hypotheses that drive the program logic. During the course of meetings and interviews with program staff from Energy Trust and Ecos, several working hypotheses were identified as guiding the development of the program. A discussion of these assumptions and hypotheses for each of the program elements, as well as for the program overall, is presented below.

Overall Program Hypotheses

While most of the specific hypotheses are related to individual program elements, there is an overarching hypothesis for the program itself that is related to the long-term achievement of Energy Trust energy resource goals.

Assumptions and Hypotheses: Program Development and Timing

- Substantial energy savings are available from the SF, MF, and MH sectors.
- Near-term savings are readily attainable through the MF and MH segments.
- Duct testing and sealing is a new market and can provide significant resource value.
- Significant long-term savings may be available through the provision of comprehensive services (including duct testing and sealing).
- If near term savings in the MF and MH segments are pursued aggressively, the Energy Trust will have time to work toward developing the infrastructure and market demand for the SF segment. That would include the development of an active set of contractors delivering duct testing and sealing services.

Single-Family Element Hypotheses

The single-family element provides training for Home Energy Reviewers who visit customer homes, make recommendations, and provide a list of contractors. In parallel, the program seeks to train private-sector residential contractors and encourage these contractors to provide energy efficiency services. This element also seeks to encourage the collaboration among contractor trades that have historically not worked together (e.g., plumbers and window contractors) to cross-sell services. The SF element of the program is the most complex and has by far the greatest number of assumptions and hypotheses. This is because the element includes some significant market development objectives. Key assumptions and hypotheses include:

Assumptions and Hypotheses: Investments in Energy Efficiency

- Residential customers are not generally aware of energy savings opportunities in their homes.
- Residential customers require financial incentives to offset the cost of energy efficiency investments.

- If opportunities are identified and financial incentives are provided, then residential customers will undertake investments in energy efficiency.
- Residential customers will be drawn into the program by window incentives, and will then install other measures with better return on investment.

Assumptions and Hypotheses: Contractor Referrals

- Residential customers are not generally aware of contractors who can provide energy savings services or do not know who to trust.
- If the Energy Trust provides contractor referrals to customers along with audit results, then they will be more likely to seek out contractors to undertake recommended measures.
- If contractors receive referrals, they will be able to grow and develop their businesses around energy efficiency.

Assumptions and Hypotheses: Contractor Coordination and Cross-marketing

- If the program is simple to market, and contractors recognize that they have a lead in marketing, they will accelerate direct marketing efforts.
- Long-term resource acquisition goals for the Energy Trust require that the contractor market for energy efficiency be developed so that there is greater coordination and cross marketing of services among contractors from different trades related to energy efficiency.
- Contractors do not typically coordinate with each other to delivery a comprehensive set of energy efficiency services to residential customers.
- If incentives are offered to encourage comprehensive installations of energy efficiency measures, then the frequency with which contractors coordinate with each other will increase.

Assumptions and Hypotheses: Duct Testing and HVAC Tune-ups

- Long-term resource acquisition goals for the Energy Trust require that businesses provide services to reduce duct leakage and tune-up HVAC systems.
- Customers and contractors are not typically aware of the benefits to be derived from reduced duct leakage and HVAC tune-ups
- Training contractors to provide these services will increase the level of knowledge and capability in this area
- Offering incentives will attract customer interest in these measures and increase demand for these services
- If there is increased demand for these services on the part of consumers, then this will lead to increased interest among contractors, thereby resulting in more contractors seeking training and, potentially, new business formation to deliver these services.

Assumptions and Hypotheses: Lighting Retail Markets

- Long-term market transformation goals for the Energy Trust require that the retail market for CFLs and other energy efficient lighting products be viable and self-sustaining.
- Consumers have had negative experiences with CFL measures in the past.
- A positive consumer experience with CFL measures is required in order to stimulate a retail market for these measures.
- If the Energy Trust provides quality CFLs (defined in coordination with Northwest Energy Efficiency Alliance standards) to a large number of households, and if consumers have a positive experience with these measures, then the retail market for these products will be stimulated.
- Installing CFLs is a cost-effective efficiency measure that can help defray the cost of travel for home energy reviews.

Furnaces:

- If the Energy Trust works closely with Northwest Natural and the distributor/vendor network that they set up, this network will delivery applications for efficient gas furnaces and furnace rebates.

Heat Pump Upgrades:

- By packaging duct sealing and new heat pumps, a participant can capture two Energy Trust incentives, plus two Oregon tax credits. This is an attractive package that contractors can use to sell upgrades to heat pumps and possibly some conversions from resistance.

Multifamily Element Hypotheses

The multifamily element seeks to leverage existing relationships between MF property owners / managers and the Portland Office of Sustainable Development. Specific assumptions and hypotheses include:

Assumptions and Hypotheses: Investments in Energy Efficiency

- MF property owners and managers are generally not aware of assistance available to address energy efficiency opportunities.
- MF property owners and managers are not likely to invest in energy efficiency improvements without assistance funded through the Energy Trust.
- MF property managers require financial incentives to offset the cost of energy efficiency investments
- If the program offers financial incentives, then MF property owners and managers are more likely to invest in energy efficiency improvements.

Assumptions and Hypotheses: Achieving Resource Acquisition Savings in MF Element

- Private-sector contractors are not likely to invest marketing resources to market energy efficiency to MF property owners and managers.
- If the Energy Trust hires a centralized administrator to market and deliver services to MF owners and managers, then there will be greater success in achieving resource acquisition savings from this sector.
- It is less expensive to provide Mobile Home duct sealing for free than to market it.

Manufactured Housing Element Hypotheses

The Manufactured housing element trains and retains a finite number of private sector contractors to work with the managers of mobile home parks and provide duct-sealing services in a large number of homes. Key hypotheses for this element of the program include:

Assumptions and Hypotheses: Investments in Energy Efficiency

- Duct testing and sealing in MH units, as well as heat pump tune-up in these units, have the potential to provide significant energy savings.
- MH property residents, owners, and park managers are generally not aware of energy efficiency opportunities.
- MH property residents, owners, and managers are not likely to invest in energy efficiency improvements.
- MH property residents, owners, and managers require financial incentives to offset the cost of energy efficiency investments
- If the program offers financial incentives, then MH property residents, owners, and managers are more likely to invest in energy efficiency improvements.

Assumptions and Hypotheses: Achieving Resource Acquisition Savings in MH Element

- Aggregating delivery of services to a large number of units within a MH park is the most cost effective way to deliver savings for this element.
- Contractors are not likely to invest marketing resources in reaching MH parks.
- If Energy Trust hires a contractor to deliver these services to MH parks, and to market these services to these parks specifically, then there will be greater success in achieving resource acquisition savings from this sector.

3.4 HES Program Logic Model

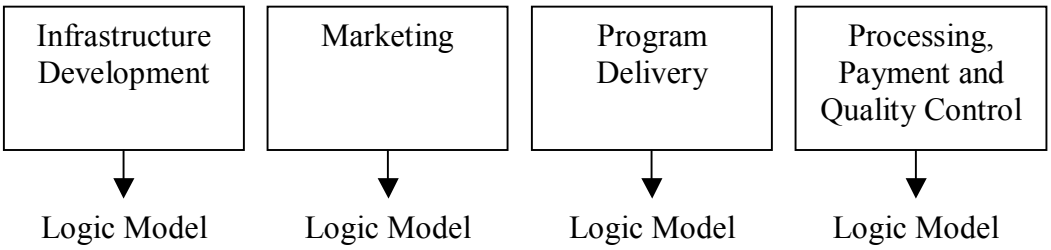
The logic model developed for the Home Energy Savings is based upon information from meetings that were held with Energy Trust and Program Management staff. This logic model is intended to depict to the Energy Trust of Oregon, the PMC, and the evaluators the whole elephant—an overview of the program parts, and how those parts integrate to form the entire program.

Program Components

In the logic model, we have organized the program in four discrete program components:

- Infrastructure Development
- Marketing
- Program Delivery
- Processing, Payment and Quality Control

Figure 3-1: Program Components and the Logic Model Framework



The market transformation activities, consisting largely of infrastructure development, serve as the foundation for the program. The logic within this component is overwhelmingly related to the single-family element. Based upon information provided to us, market transformation is less of an objective in the MF and MH elements.

Marketing activities are being used to attract and train contractors for program delivery, and to interest participants in program services. This in turn leads to delivery of program services, with quality control, processing, and payment used to ensure contractor compensation for delivery of savings.

As noted above, within the logic models are explicit if-then statements that relate to the hypotheses specified for each program element. There is an explicit causality between each of the groups, with marketing activities influencing delivery, delivery being verified by quality control; all of it driven by market transformation.

As with the general logic model presented above, the logic model for the HES program includes activities, target groups, and short-term mid-term and long-term outcomes. The activities of each group build on those of the predecessor groups. While each of the components of the program has the same, targets (contractors, mobile home park owners, single-family residents and multifamily owners) the target groups are addressed differently by each program component and the desired effects are also different.

The logic model for the HES program is presented visually on the following two pages.

Figure 3-2: Logic Model for Home Energy Services Program: Market Transformation & Marketing Components

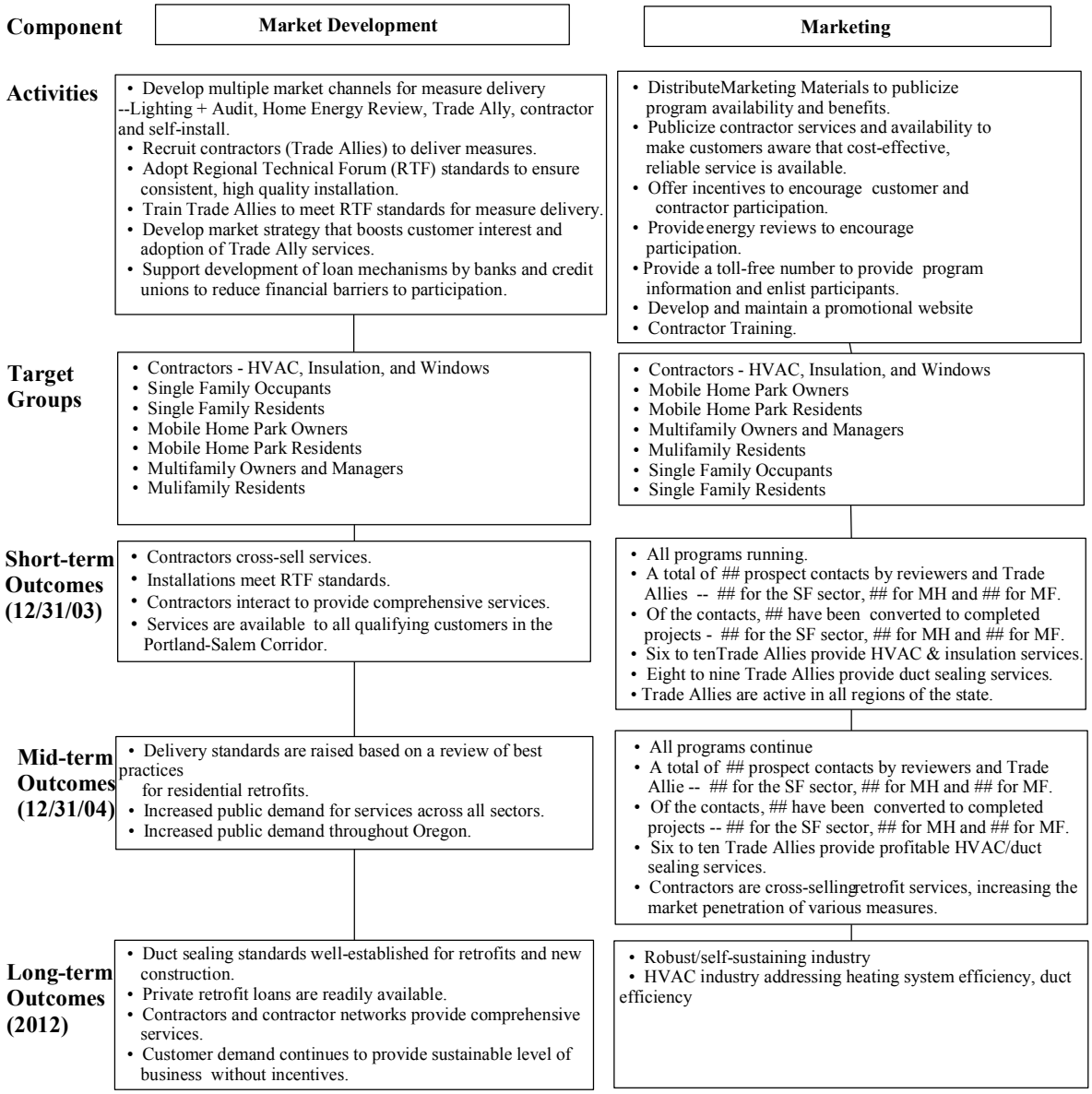
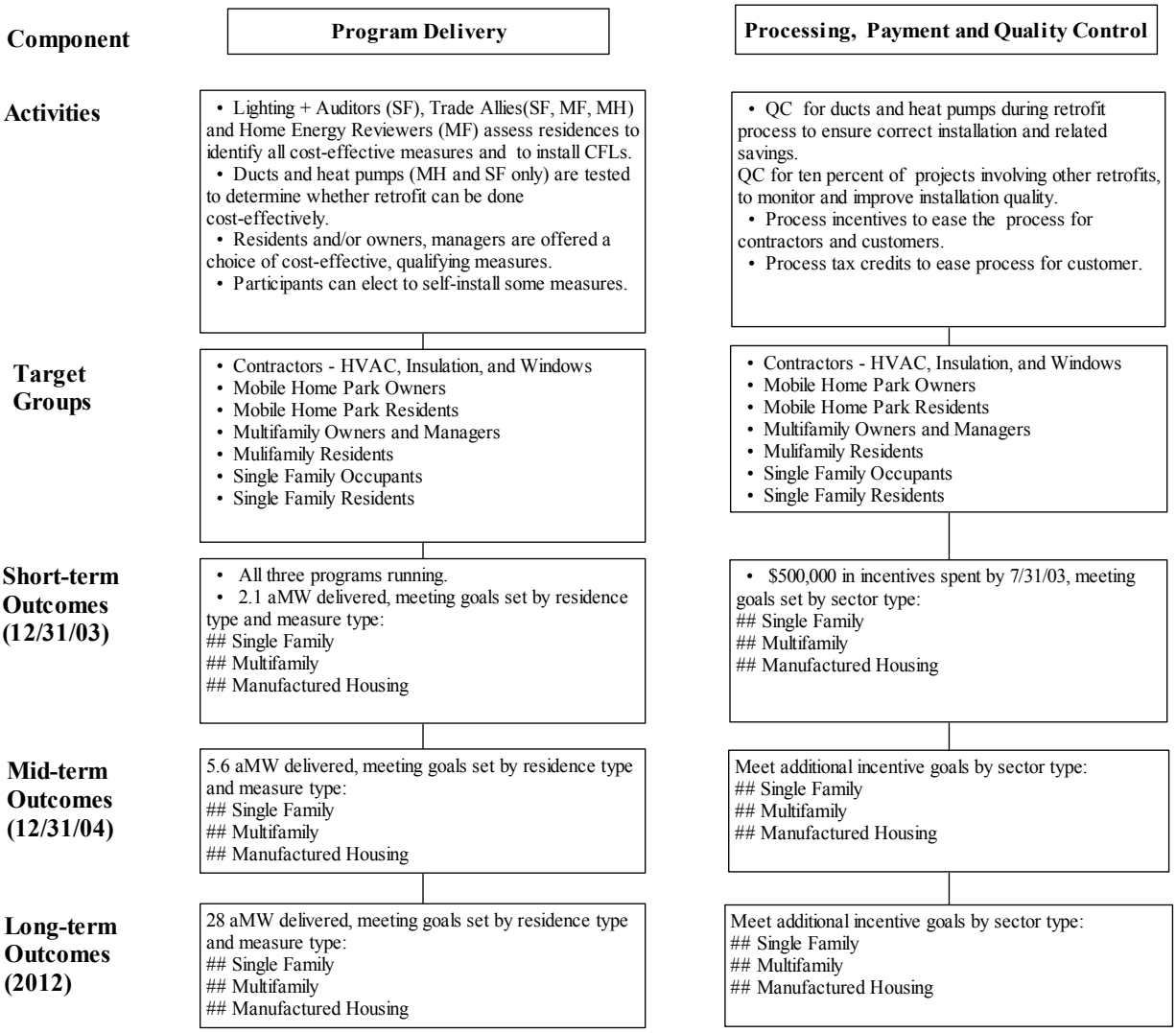


Figure 3-3: Logic Model for Home Energy Services Program: Program Delivery and Processing, Payment and Quality Control Components



Note: kWh and incentive goals by sector and measure will be determined with program staff.

3.5 Recommended Program Indicators

This section reviews recommended program indicators that will enable the Energy Trust to test program hypotheses and track the progress of the program. Referring back to the organization and terms used throughout this report, we have identified recommended indicators for each component of the program. By applying program indicators that are grounded in program theory and processes, program evaluation can provide timely and actionable information for effective program management.

Note that, for most of these indicators, there is time dimension. Wherever possible, it is recommended that indicators track recent activity as well as total and average activity levels. The inclusion of these additional reference points will aid in understanding program trends and interpreting a given month's activity within a broader overall context.

3.6 Market Development Indicators

The indicators for this component are intended to enable the Energy Trust to track progress toward thee long term goal of developing a vibrant and sustaining contractor market that is delivering comprehensive retrofit services. Recommended indicators include:

- Number of jobs completed, monthly and cumulative.
- Number of contractors, monthly and cumulative, who have received various types of training.
- Number of applications received, monthly and cumulative, per approved contractor.
- Number of applications received, monthly and cumulative, per "current active" approved contractor (defined as a minimum number of applications per month).
- Total number of customers who have installed measures that address multiple end uses (note that this could occur over a period of time).
- Overlap in contractors serving the same residence with different measures (note that this could occur over a period of time).
- Number of jobs financed through third party entities.
- Number of measures of each major type installed, as an indicator that the program is operating in multiple ways. E.G., SF insulation, MF insulation, SF duct or air seal, MH duct seal, gas furnace, heat pump, heat pump tune-up, SF window, and MF window.

3.7 Marketing Indicators

The indicators for this component are intended to enable to Energy Trust to track marketing activity levels as well as customer interest over time. Recommended indicators include:

- Number of telephone inquiries, monthly and cumulative, for each program element.
- Ratio of customer-initiated jobs to contractor-initiated jobs.
- Number of calls, monthly and cumulative, tracked by type of inquiry (contractor referral, sign-up, rebate info etc.).
- Number of rebate applications mailed to customers, total and as a percentage of total inquiries.
- Average time lag between application or information request and job completion.
- Number of direct mail pieces.
- Number of print media ads placed.
- Participation of trade allies; how many, where, how diverse, do we have the big ones? Firmographics

3.8 Delivery Indicators

Indicators for this component focus on the physical delivery and installation of measures, and the delivery of kWh savings. Recommended indicators include:

- Total numbers of each measure installed, within each program element.
- Percent duct leakage test/no fix sites ("dry holes")
- Average duct leakage reduction achieved, total, and as percentage of initial leakage.
- Ratio of measures recommended to measures installed.
- Running average number installed, per month, and current month over/under that average.
- Number of kWh saved.
- Progress, on a percentage basis, toward annual and near-term kWh goals.
- Average and total cost of measures installed, by program element.

3.9 Processing, Payment and Quality Control Indicators

Indicators for this component provide information on processing, including potential delays in payment that could lead to dissatisfaction, as well as in-depth tracking of issues identified through quality control inspections. Recommended indicators include:

- Number of incentive applications processed, for each program element.
- Number of tax credit applications processed, for each program element.
- Average rebate, for each element (YTD and current month).
- Time lags between completion of work and date of rebate check.
- Number of complaints, total and, per month, by program element.
- Number of Q/C issues found, total and per month, by program element, by issue type.
- Average monthly customer satisfaction levels, from monthly survey, for each element

4. PROGRAM PERFORMANCE

The performance of the Home Energy Savings program is tracked in a variety of spreadsheets and databases. Compiling data from these various sources, we have summarized program activity for each of the program elements.

4.1 Single-Family Element Activity

The single-family element of the program addresses a variety of end uses for both gas and electrically heated homes. Table 4-1 through Table 4-3 provide summary indicators for gas-heated homes, electrically heated homes, and both gas and electrically heated homes combined. Additionally, Table 4-4 provides summarizes a set of market transformation indicators that are useful in tracking changes in the program over time. Highlights in the data include the following:

- Home energy reviews started in March, 2003, and have served over 1,600 homes through the month of November;
- Measure installation activity did not commence until July 2003;
- Electric savings from CFL installations accounted for approximately 50 percent of total electric energy savings reported through December 2003;
- Activity for retrofit and replacement measures has increased markedly since the start of the program;
- Electric savings from CFL installations, as a relative percentage of total savings, is declining over time with the increase in activity for retrofit measures (insulation, windows);
- Average electric energy savings per participating household peaked in July and has since decreased, with an average over the year of 1,217 kWh;
- Gas furnace replacements totaled 1,618 units in two short months, increasing the average annual therm savings per gas household to 92 therms.
- Seventy-nine percent of gas energy savings resulted from furnace replacements, with about 21% from retrofit measures and less than 1% from service-related measures.
- Very few savings, for either electric or gas, have resulted from the energy services portion of the SF element (e.g., duct sealing or air sealing).

Table 4-1: Total Gas & Electric – Single-Family Activity Indicators

Direct Installs	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
CFLs	**50**	**740**	**880**	**940**	**2,010**	**3,710**	**2,370**	**2,700**	**1,600**	**1,670**	**16,670**
Retrofits											
Attic Insulation	-	-	-	-	13	42	65	100	97	70	387
Floor Insulation	-	-	-	-	5	22	27	45	49	31	179
Wall Insulation	-	-	-	-	4	12	24	31	14	21	106
Duct Insulation	-	-	-	-	2	14	13	21	21	16	87
Windows	-	-	-	-	2	2	8	14	10	8	44
Total Retrofits	**-**	**-**	**-**	**-**	**26**	**92**	**137**	**211**	**191**	**146**	**803**
Replacements											
Electric Water Heaters	-	-	-	-	19	2	33	105	112	96	367
Gas Furnaces	-	-	-	-	-	-	-	392	413	813	1,618
Heat Pump Installation	-	-	-	-	1	-	2	6	-	2	11
Total Replacements	**-**	**-**	**-**	**-**	**20**	**2**	**35**	**503**	**525**	**911**	**1,996**
Energy Services											
Duct Sealing	-	-	-	-	1	-	2	7	5	4	19
Heat Pump Maintenance	-	-	-	-	-	-	3	-	1	-	4
Air Sealing	-	-	-	-	-	-	1	-	-	-	1
Home Energy Reviews	5	74	88	94	203	393	252	291	168	167	1,735
Total Energy Services	**5**	**74**	**88**	**94**	**204**	**393**	**258**	**298**	**174**	**171**	**1,759**

Electric Savings	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total (kWh)	% of Total
Direct Installs	3,800	56,240	66,880	71,440	152,760	281,960	180,120	205,200	121,600	124,640	1,264,640	62%
Retrofit	-	-	-	-	27,386	52,567	106,637	156,297	127,044	87,301	557,232	27%
Replacements	-	-	-	-	17,652	486	29,540	76,780	27,216	39,800	191,474	9%
Energy Services	-	-	-	-	1,887	-	5,014	4,104	4,747	-	15,752	1%
Total electric savings (kWh)	**3,800**	**56,240**	**66,880**	**71,440**	**199,685**	**335,013**	**321,311**	**442,381**	**280,607**	**251,741**	**2,029,098**	100%

Gas Savings	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total (Therms)	% of Total
Direct Installs	-	-	-	-	-	-	-	-	-	-	-	0%
Retrofit	-	-	-	-	507	3,603	5,319	9,923	11,994	8,374	39,720	21%
Replacements	-	-	-	-	-	-	-	36,064	37,996	74,796	148,856	79%
Energy Services	-	-	-	-	-	-	117	249	186	218	770	0%
Total gas savings (Therms)	**-**	**-**	**-**	**-**	**507**	**3,603**	**5,436**	**46,236**	**50,176**	**83,388**	**189,346**	**100%**

Source: Ecos, 2003 Monthly Delivered and Participant Incentive Reports

Table 4-2: Electrically Heated Homes – Single-Family Activity Indicators

Direct Installs	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
CFLs	50	740	880	940	1,380	1,590	850	970	610	490	8,500
Retrofits											
Attic Insulation	-	-	-	-	9	13	32	43	34	30	161
Floor Insulation	-	-	-	-	3	14	13	24	14	11	79
Wall Insulation	-	-	-	-	3	3	6	7	6	4	29
Duct Insulation	-	-	-	-	-	3	5	8	2	1	19
Windows	-	-	-	-	2	1	6	11	4	5	29
Total Retrofit Measures	**-**	**-**	**-**	**-**	**17**	**34**	**62**	**93**	**60**	**51**	317
Replacements											
Water Heaters	-	-	-	-	19	2	33	105	112	96	367
Heat Pump Installation	-	-	-	-	1	-	2	6	-	2	11
Total Replacements	**-**	**-**	**-**	**-**	**20**	**2**	**35**	**111**	**112**	**98**	**378**
Energy Services											
Duct Sealing	-	-	-	-	1	-	1	3	2	-	7
Heat Pump Maintenance	-	-	-	-	-	-	3	-	1	-	4
Air Sealing	-	-	-	-	-	-	-	-	-	-	-
Home Energy Reviews	5	74	88	94	201	371	237	270	160	167	1,667
Total Energy Services	**5**	**74**	**88**	**94**	**202**	**371**	**241**	**273**	**163**	**167**	**1,678**
Electric Savings											
Total measures installed	-	-	-	-	38	36	101	207	175	149	706
Electric savings-CFLs(kWh)*	3,800	56,240	66,880	71,440	104,880	120,840	64,600	73,720	46,360	37,240	646,000
Electric savings-Other(kWh)	-	-	-	-	46,925	53,053	141,191	237,181	159,007	127,101	764,458
Total Electric Savings (kWh)	**3,800**	**56,240**	**66,880**	**71,440**	**151,805**	**173,893**	**205,791**	**310,901**	**205,367**	**164,341**	**1,410,458**

** includes CFL installs from ETO Home Energy Reviews, 'Other Heat/ETO Home Energy Reviews*

Source: Ecos, 2003 Monthly Delivered and Participant Incentive Reports

Table 4-3: Gas Heated Homes – Single-Family Activity Indicators

Direct Installs	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Direct Install CFLs	-	-	-	-	630	2,120	1,520	1,730	990	1,180	8,170
Retrofits											
Attic Insulation	-	-	-	-	4	29	33	57	63	40	226
Floor Insulation	-	-	-	-	2	8	14	21	35	20	100
Wall Insulation	-	-	-	-	1	9	18	24	8	17	77
Duct Insulation	-	-	-	-	2	11	8	13	19	15	68
Windows	-	-	-	-	-	1	2	3	6	3	15
Total Retrofit Measures	**-**	**-**	**-**	**-**	**9**	**58**	**75**	**118**	**131**	**95**	**486**
Replacements											
Gas Furnaces	-	-	-	-	-	-	-	392	413	813	1,618
Energy Services											
Duct Sealing	-	-	-	-	-	-	1	4	3	4	12
Air Sealing	-	-	-	-	-	-	1	-	-	-	1
Home Energy Reviews-NWN Heat only	-	-	-	-	2	22	15	21	8	-	68
Home Energy Reviews - NW Heat/ETO	-	-	-	-	63	212	152	173	99	118	817
Total Energy Services	**-**	**-**	**-**	**-**	**65**	**234**	**169**	**198**	**110**	**122**	**898**

Energy Savings	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Total measures installed in gas homes	-	-	-	-	9	58	77	514	547	912	2,117
Electric savings from CFLs(kWh)	-	-	-	-	47,880	161,120	115,520	131,480	75,240	87,400	618,640
Total savings (therms)	**-**	**-**	**-**	**-**	**507**	**3,603**	**5,436**	**46,236**	**50,176**	**83,388**	**189,346**

** Includes CFL installs from NWN Heat/ETO Home Energy Reviews*

Source: Ecos, 2003 Monthly Delivered and Participant Incentive Reports

Table 4-4: Market Development – Single-Family Activity Indicators

Trade Ally Involvement	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Six Month Average
Trade Allies completing projects	-	-	-	-	6	10	17	31	26	20	18
Trade Allies completing < 10 projects	-	-	-	-	6	8	13	23	22	15	15
Trade Allies completing 10 or > projects	-	-	-	-	-	2	4	8	4	5	4
Minimum number of jobs per contractor	-	-	-	-	1	1	1	1	1	1	1
Maximum number of jobs per contractor	-	-	-	-	2	30	19	22	26	19	20
Average number of jobs per contractor	-	-	-	-	1	7	6	6	6	6	5

Source: Monthly Participant Incentive Activity Reports

4.2 Multifamily Element Activity

Table 4-5: Multifamily Element Activity

Measure Installation	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Attic Insulation (Less than R-7 to R-19)	-	-	-	-	-	-	1	-	-	2	3
Attic Insulation (Between R-8 & R-19 to R-38)	-	-	-	-	-	-	-	2	-	1	
Floor Insulation	-	-	-	-	-	-	-	1	-	1	2
Windows	-	-	-	-	-	-	6	6	-	9	21
Roof Deck Insulation	-	-	-	-	-	-	-	-	-	-	-
Door	-	-	-	-	-	-	1	-	-	1	2
Wall Insulation	-	-	-	-	-	-	-	-	-	-	-
Showerhead Replacement	-	-	-	-	-	-	-	-	-	-	-
Water Heater	-	-	-	-	-	-	-	-	-	-	-
CFLs	-	-	-	-	-	-	4,142	547	5,156	29,346	39,191
Total electric savings (kWh)	**-**	**-**	**-**	**-**	**-**	**-**	**923,867**	**254,808**	**391,856**	**2,849,890**	**4,420,421**

Source: Monthly Participant Incentive Activity Reports

4.3 Manufactured Housing Element Activity

Table 4-6: Manufactured Housing Element Activity

Manufactured Housing Services	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Test-Only	-	133	50	45	69	45	29	69	28	32	500
Simple	-	194	230	364	363	193	229	286	242	184	2,285
Complex	-	9	11	12	8	8	2	2	6	5	63
Total	-	336	291	421	440	246	260	357	276	221	2,848
CFLs	-	1,680	1,455	2,105	2,200	1,230	1,300	1,785	1,380	1,105	14,240
Total kWh Savings	-	415,963	463,588	711,458	724,291	389,310	440,198	553,869	457,071	363,188	4,518,936
Average kWh Savings	-	1,238	1,593	1,690	1,646	1,583	1,693	1,551	1,656	1,643	1,587

Source: Monthly Participant Incentive Activity Reports

The number of test-only manufactured housing jobs has declined as the program progressed, from a high of 42 percent in April to a low of 10 percent in November. This decline in test-only projects may be attributable to two factors: an increased capability of the Trade Ally to seal problematic ducts, and the increased ability by Trade Allies to spot "dry holes" prior to testing.

Savings are consistent with those of the manufactured housing duct sealing pilot program conducted by the Energy Trust prior to the Home Energy Savings program. Per-unit savings between the pilot and the active program are similar, with an estimated saving of 1,200 kWh per manufactured home for the pilot, and a saving of 1,211 kWh per manufactured home in the program. The mix of test-only, simple, and complex duct sealing jobs is similar as well. Please see Table 4-7.

Table 4-7: Comparison of Savings – Manufactured Housing Pilot and Program

Manufactured Homes	Pilot		Program	
	Completions	Percent	Completions	Percent
Test only	186	19%	500	18%
Simple	731	73%	2,285	80%
Complex	83	8%	63	2%
Total Completes	**1,000**	**100%**	**2,848**	**100%**
Total Savings	1,200,000		3,180,499	
Average kWh savings (excluding CFLs)	1,200		1,211	

5. ENERGY TRUST AND PROGRAM MANAGEMENT CONTRACTOR INTERVIEWS SUMMARY

5.1 Overview

In order to provide early feedback on the program planning, design, and implementation to date, a series of interviews was conducted with staff from the Energy Trust and Ecos who have had direct experience with the program. Staff who participated in these interviews includes the following:

- Senior Program Manager (Ecos)
- Program Manager (Ecos)
- Multifamily Program Manager (Ecos)
- Field Manager (subcontractor)
- Program Manager, Portland Office of Sustainable Development Multifamily Assistance Program (subcontractor)
- Director of Planning and Evaluation (Energy Trust)
- Director of Energy Efficiency (Energy Trust)
- Residential Program Manager (Energy Trust)

An interview guide was prepared, covering a range of topics, including program administration, performance, marketing, measure delivery, and quality assurance. During these interviews, which lasted up to an hour in length, interviewees were asked to discuss the first year of the program experience and to offer suggestions for improving the program.

Based upon these interviews, it is clear that the program has presented some unexpected challenges for both Energy Trust and PMC staff, and that these challenges have resulted in an underlying degree of tension between the two organizations as well as personal stress for those involved in the program. Despite these difficulties, those interviewed also felt that, as one respondent stated, "we have turned a corner" and that many of the various organizational issues that had arisen in the first year had been satisfactorily addressed. Our summary of these interviews, provided below, reviews these issues.

5.2 Program Administration and Delivery

A variety of topics were covered that relate to overall program administration. Issues that were noted during these interviews involve (1) Energy Trust Agency Issues, (2) Contracts, (3) the Relationship between Ecos and Energy Trust, (4) Deployment of Resources, and (5) Data Collection.

Agency Issues

The term agency refers, in the broadest context, to the nature of the legal relationship between the Energy Trust and the PMC and the concomitant liability of the Energy Trust for program-related activities undertaken by the PMC and contractors doing work on their behalf. Agency

issues have had a significant impact upon the performance of the program to date. Both Energy Trust and Ecos staff noted that from the start of the program, uncertainty around this issue has had an impact on various facets of the program, including marketing, form development, and program start-up.

- **Program start-up** – PMC staff and some Energy Trust staff felt that agency concerns of Energy Trust have resulted in delays and complications in program start-up and delivery. In some cases, this delayed the start of some program elements; in other cases some program elements proceeded without the use of approved program forms.

- **Marketing** – Various staff noted that, for much of the program year, Trade Allies were not able to present themselves as performing work on behalf of the Energy Trust due to agency concerns. According to Energy Trust staff, this issue also resulted in a delay in co-op advertising. A quicker resolution of this issue would have enabled such advertising to create a clearer connection between Trade Allies and Energy Trust, thereby providing credibility for these Trade Allies as program representatives.

- **Approval of Program Forms** – Due to concerns about the agency issue, there were substantial delays in obtaining feedback and approval of incentive forms by the Energy Trust. A PMC staff member noted that, although they had hoped that forms used by Ecos in past retrofit programs could have been readily adopted for use in this program, these forms were subjected to a long period of review and revision.

Importantly, although the agency issue has been an impediment to program development, various Energy Trust and Ecos staff interviewed stated that they believe the issue has now been resolved in a way that will reduce delays in future program implementation.

Nature of Contract between Energy Trust and Ecos

The contract executed between the Energy Trust and Ecos was characterized as having been written with an emphasis on program performance (delivery of savings) while protecting the Energy Trust from legal liability. One of the selection criteria for the PMC included a willingness to guarantee savings achieved through program implementation and, as a result, the PMC has performance goals to meet for the first year. Moreover, according to the terms of the contract, failure to achieve these savings levels will result in financial penalties and suspension of payment for invoices until performance targets are reached.

Respondents from both the Energy Trust and PMC indicated that, due to program delays, the PMC should not be held to program performance goals established for the 2003 program year in the initial contract. While the PMC had requested a discussion earlier in the summer to revise the contract, the Energy Trust requested that any changes would wait until December. At the time of the interviews, performance goals for 2004 were under discussion and PMC staff indicated cautious optimism in meeting goals for the coming year, contingent on the effectiveness of new marketing efforts.

The decision to pursue this contract structure was driven, in part, by a desire on the part of the Energy Trust to ensure program performance, as well as a desire to assess the relative benefits of

performance requirements mechanism versus mechanisms used in other Energy Trust programs. As expressed in the interviews, the nature of this contract has created some tension between Energy Trust and the PMC. Doubts were expressed by both organizations regarding whether or not this is the best approach. Some of the challenges encountered include the following:

- From the perspective of the PMC, they have not had control over the scope and timing of program design and, as a result, are less responsible for the attainment of performance goals than if the Energy Trust had not made specific program design requests. While the PMC has made substantial efforts to be flexible throughout the process, some of these efforts may not benefit the near-term attainment of program performance goals.

- From the perspective of the Energy Trust, the near-term pressure to attain performance goals may not encourage the necessary level of attention to be paid to program details that may be in the longer-term interest of the Energy Trust. As an example, it was noted that the PMC rushed to participate in a Trade Show without sufficient organization. Trade Allies recruited to assist in the Trade Show were perceived as promoting their own businesses, causing unnecessary upset with other competing vendors.

Insurance requirements in the contract, characterized by some as being excessive by industry standards, were also cited as posing unnecessary costs upon the PMC. Energy Trust staff note that the same requirements were viewed as appropriate by other vendors with whom the Energy Trust is working.

Decision-Making and Communication

Comments from various respondents reflect challenges encountered in day-to-day decision-making and communication between the Energy Trust and Ecos.

While the Energy Trust has put significant time into developing and approving forms and contracts, the extensive nature of this process is viewed, in the eyes of the PMC and some at the Energy Trust, as having taken time and resources away from program delivery efforts. As one PMC staffer described it, they "strive to be fleet of foot, but multiple layers in the Energy Trust organization require documentation, which slows us down." One PMC staff member views the Energy Trust as an organization in development, and stated that, while their firm usually likes to work side-by-side with an organization as it develops the program, legal concerns and legislative threats have made such a relationship more difficult. With this relationship, reportedly, having more scrutiny than any program in which they have been involved. This person noted that, "the Energy Trust's pace as a developing organization and our need to achieve savings are not aligned."

Various PMC staff have credited the Energy Trust Energy Efficiency Director for being a champion for the program, but these staff also expressed concern that there is a liability in depending upon a single champion. If, for example, this person's attention is drawn elsewhere, then decision-making is slowed down. One of the PMC staffers perceives that major program issues still confronting the PMC, such as allocation of funding and lingering issues regarding

agency, are ones that have to be dealt with by the Energy Efficiency Director rather than the Energy Trust Program Manager.

In terms of overall communication, both Energy Trust and PMC staff noted examples of poor communication that had caused misunderstanding and complications related to the program. Energy Trust staff has reported several instances of inaccuracy and delay in receiving program performance data that the Energy Trust was responsible for reporting to the Energy Trust Board and the Oregon Public Utilities Commission. Conversely, from the standpoint of one PMC staffer, the Energy Trust does not communicate well internally. As an example, the PMC reported receiving three separate requests in a single day for the marketing plan (that had been submitted to the Energy Trust six weeks prior), and each request was made independently.

To address communications issues, members of Energy Trust and PMC staff met to discuss communicating more effectively. It was agreed that the project managers from each organization would serve as the information hub. According to Energy Trust staff, communication between the Energy Trust and PMC staff has improved significantly in recent months, with regular weekly meetings between PMC staff and the Energy Trust program manager facilitating routine check-ins on program activity.

Energy Trust and PMC staff felt that many of the changes recently made, including hiring a new program manager on the Energy Trust side and removing barriers to marketing and delivery, will serve to improve these issues. However, some PMC staff felt that the program is still overly reliant on the role of the Energy Efficiency Director as an internal program champion and trouble-shooter within the Energy Trust organization.

Data Collection and Tracking

Both Energy Trust and the PMC staff characterize the data management system for the program as being fragmented, having been developed to provide a temporary solution until the Energy Trust's FastTrack data management system was implemented. Energy Trust and PMC staff both state that the databases have been at times inaccurate and slow to be updated, and provide incomplete information about program performance. Some information that could be useful in managing the program is not being tracked in these interim databases. For example, Energy Trust and PMC staff report that it is not possible to determine whether projects were initiated by a Trade Ally or a Home Energy Reviewer. Additionally, errors in spreadsheet calculations have resulted in inaccurate reporting of program data, the detection of which took several months.

Most of the PMC and the Energy Trust staff whom we interviewed expect that the FastTrack system, which is in the process of implementation, will provide consistency and accessibility to information necessary to track program activity. However, one PMC staffer expressed concern that FastTrack may not be robust enough to do such actions as calculate program savings, and that the PMC will have to perform additional work to prepare data for input into FastTrack. Moreover, some PMC staff expressed reservations about the transition process. A PMC staffer felt that, until FastTrack is shown to work without problems, program data should be also be entered into the existing system so that the integrity of the data is maintained.

Financing and Tax Credits

The financing mechanism made available through this program was expected to be a major driver for this program. However, according to PMC staff interviewed, Trade Allies and program participants are not using the financial package offered through the program. While the financing package was expected to bring contractors into the program, this apparently is not happening. Insights offered during the interviews include:

- Good financial packages are available without having to use the program's financial package. For most homeowners, it would make better financial sense to use a home equity loan for which the interest payments are tax deductible.

- Trade Ally contractors, who have traditionally done business with utilities, typically have not used a financing package as part of their offerings. One person noted that financial packages are typically used by those contractors who are more proactive in generating leads and projects. Such packages are also more common among furnace and heat pump salespeople and may eventually contribute to the growth of program activities in this market. This person felt that, while banks would be happy to have the traditional contractors do business with them, these contractors are not familiar with these tools.

Also, while the business energy tax credits are an effective selling point for multifamily property owners, the residential energy tax credits play a more limited role in single-family residence owners' decision to retrofit

Quality Control

The program design provides the PMC with primary responsibility in program quality control. The Energy Trust can use staff or another contractor to provide independent quality assurance, basically spot checking Ecos' work[5]. As part of the program's design, quality control activities that are to be carried out by the PMC vary by residence type. This is due to the differences in the general physical characteristics of each residence type, the types of measures installed, and the number of completions to date by residence type. QA steps for each program element include:

- For manufactured homes, quality assurance steps are included as part of the process for each duct or air sealing job, and quality assurance inspections are completed for one out of ten completed manufactured homes that are retrofit.

- For multifamily, QA inspections by Ecos staff occur for each project, and CFLs are installed at the time of the QA inspection.

- For single-family buildings, one of every ten buildings will be inspected. At the time of these interviews, few single-family projects have been completed relative to the number of manufactured homes and multifamily units.

[5] The Energy Trust has recently hired the Quality Assurance contractor for the program, who has done work for other programs. This is the first hire of a quality assurance position for the program.

While there are some minor issues related to quality assurance, respondents felt that the field manager is doing a good job ensuring that quality assurance checks are occurring. A PMC respondent reported that PMC inspectors have been trained to do quality control on multifamily housing, and that these inspectors are conducting Q/C on all multifamily buildings. One out of ten manufactured homes is also being inspected. The respondent reported that, now that single-family retrofits have started, they have enough completed projects to do the inspection at the agreed-upon rate of one out of every ten single-family residences. This respondent stated that it has been premature until now to look at the implications of what is found in the quality assurance inspections, and the impact of the Home Energy Reviews on program and measure adoptions.

5.3 Program Marketing

A variety of topics emerged during the interviews that relate to program marketing. A summary of these issues is provided below, including:

- Definition of Marketing Roles
- Allocation of Marketing Resources
- Energy Trust Brand Development
- Recruitment of Trade Allies
- Marketing Support for Trade Allies
- Utility Referrals
- Home Energy Reviews
- Trade Ally Marketing

Definition of Marketing Roles

Discussions with both the Energy Trust and the PMC indicate that each has looked to the other for increased attention and resources for program marketing. It appears that both the PMC and Energy Trust expected the other entity to put more resources into marketing efforts than they have to date. Some respondents from Energy Trust view the PMC's low initial budget for marketing the program as reflecting a lack of understanding of the need for aggressive marketing. Some PMC respondents point to the same low initial program marketing budget as an indication that the Energy Trust would play a bigger role in program marketing with separate funds.

There was also apparent confusion regarding which entity should take initiative for various marketing activities. Energy Trust and PMC staff both cited examples of each group being caught off guard by the other, and of confusion regarding approval of marketing collateral and other deliverables.

An Energy Trust respondent stated that a draft marketing plan had been prepared several months before the interviews, but that the plan had never received final approval from the Energy Trust. Despite the lack of approval, the PMC was using the plan to guide their advertising and marketing decisions.

PMC and Energy Trust respondents both indicated that issues related to marketing roles are now being addressed with additional resources being devoted to advertising, improved coordination between the PMC and Energy Trust marketing staff and introduction of a marketing plan that responds to the time-sensitivity of the residential energy retrofit market.

Allocation of Marketing Resources

According to a PMC respondent, the major obstacle for the single-family program is the transition of marketing efforts from a utility-based program to the Energy Trust program. Historically with marketing for utility programs, utilities had an unlimited budget, and were the answer for the last 20 years in providing retrofit services. Then utilities left, and everybody underestimated the effect of taking that marketing/public relations element out of the marketplace. One theory was that contractors would be more willing to play an aggressive marketing role if incentives were simple. Thus far, there is little evidence that contractors are accelerating their marketing efforts.

All respondents agreed that the marketing shortfall is being addressed, with marketing roles of the Energy Trust and the PMC being clarified, marketing plans and budgets being prepared by the PMC for 2004, and an agreement on cooperative marketing being prepared. The Program Manager for the Energy Trust is asking for $300,000 for marketing, about $9,000 more per month than the PMC was previously receiving for marketing.

Energy Trust Brand Development

The development of the Energy Trust as a recognizable brand is an issue that the program has wrestled with during the first year. In the absence of an Energy Trust branding effort, what have been characterized as piecemeal steps were taken by the PMC in marketing the program. Several PMC staffers stated frustration with the Energy Trust's lack of marketing of the Energy Trust brand, feeling that the public's lack of name familiarity with Energy Trust was limiting the effectiveness of program marketing.

One barrier highlighted by a PMC staff member was a lack of media awareness of the Energy Trust. This resulted in media reluctance to feature an organization that they knew little about, and so initial attempts to place an article promoting the program were stymied. It was this person's opinion that "we either need the full support of the Energy Trust in using the Energy Trust as a brand, or another brand is needed. A call to action that refers to the Energy Trust as the program sponsor is needed." This person also stated that this now appears to be happening.

Recruitment of Trade Allies

According to one PMC staffer, Ecos recommended a different program rollout process than that which was pursued by the Energy Trust. "The PMC proposed one approach, but wound up doing another." While the PMC preferred a more selective approach of recruiting, the Energy Trust mailed invitations to participate to "every contractor in the state, in the spirit of democracy and fairness." This PMC staff member feels that a one-on-one approach is a better approach with contractors who do not like to share information, and that the broader approach set the program back in terms of both time and money.

While the Energy Trust had the PMC mail to all contractors extensively, the contractors previously involved with utility energy efficiency programs were most eager to sign up as Trade Allies. One PMC respondent noted that the Trade Allies, who previously had received customers through utility referrals and had limited experience in actively marketing their energy retrofit services, perhaps had limited interest in doing so.

Marketing Support for Trade Allies

PMC staff members noted that Trade Allies were expecting to have marketing support and a financing package to offer customers, and that the PMC was informed right before meetings with contractors to introduce the program that no marketing support or financial packages would be available at that time. Rather, the program would offer incentives alone. There are indications that Trade Ally enthusiasm for the program was dampened initially by these limited benefits. Some staff at the PMC sense that contractors see a limited value in the program, which in turn may limit their willingness to actively market the program. One respondent, in particular, did not feel that the incentive offerings were sufficient to attract contractors, and stated, "Incentives are not big enough to force contractors to do this."

While support for Trade Allies was limited in the early stages of the program, this may be changing. It was noted that, more recently, Ecos had done a good job of getting door hangers and yard signs out to Trade Allies. It appears that a cooperative marketing agreement will enable coordinated marketing between Trade Allies and the Energy Trust. Both Energy Trust and PMC respondents expressed hope that this will provide a tangible benefit to the program and the Trade Allies, who see this as an opportunity to distinguish themselves from other contractors in their field.

Utility Referrals

There is concern on behalf of both Energy Trust and PMC staff that lack of active support from one or more utilities is limiting customer awareness and interest in the program. According to Energy Trust staff, there is a lack of expected support for the program from some of the utilities. And, although various respondents felt that they were getting good support from two of the three investor owned utilities, there was speculation that competition may be developing between this program and a program of the third utility. PMC staff expressed concern that the new utility program could lead to market confusion, and possibly put in jeopardy a planned joint investment among the utilities and Energy Trust in web-based energy analysis software that would serve as a feature of the Home Energy Savings Program. Energy Trust staff are, at this point, less concerned that this will be an issue that will impact activity in the Home Energy Savings Program.

In summary, while respondents are feeling positive about the anticipated improvements in awareness and interest through upcoming marketing efforts, concerns remain about the long-term level of utility marketing support and the ultimate impacts this may have upon program marketing and delivery costs required to meet Energy Trust goals.

Home Energy Reviews

The Home Energy Reviews are one of the gateways for participation of single-family residents in the program. Through a direct request or a referral, a PMC employee visits a home to assess

potential energy savings, provide program information, and provide a list of participating Trade Allies eligible to perform the retrofit work. Interview responses indicate some differences of opinion between the PMC and Energy Trust staff regarding the appropriate role of Home Energy Reviewers in promoting the program.

- Some participating Trade Allies report getting referrals via Home Energy Reviews, and are appreciative of them.

- Energy Trust staff expected that the PMC would screen homeowners requesting a Home Energy Review in order to ensure that these reviews were provided for those homeowners with the greatest potential and interest in participating in the program. According to one person interviewed, the PMC was initially less concerned about screening for potential energy savings before a Home Energy Review than they were for getting exposure for the program. This resulted in reaching a larger number of Home Energy Reviews, and delivering more CFLs than they may have otherwise been delivered, but is likely to produce fewer savings than visits to pre-screened prospects would have.

- In past programs conducted by the PMC, energy reviews were scheduled by clustering appointments, making the process more time efficient than the current process, in which the PMC is responding to individual requests.

- One Energy Trust respondent stated that the Home Energy Review staff members are not "closers," feeling that they are knowledgeable and friendly, but need to be more forceful in the close. However, a PMC staffer felt that having an expectation of strong program marketing in the Home Energy Review process was unreasonable. "The marketing is a lot to ask of someone making $10 hour…remember that, for the price of a visit, they are getting the install of 10 CFLs, and the delivery cost is only slightly more than the cost of other methods, with the Home Energy Review as an added service."

While an Energy Trust employee felt that the Home Energy Reviewers needed to do a better job of closing sales with potential participants, at least one person on the PMC staff doesn't like the idea of pushing someone towards closing. Rather, this individual wants the reviewer to have the customer think of the work as something worthwhile, and leave the people feeling better.

Respondents indicated that various changes are being considered to improve the Home Energy Review process, including pre-screening of Home Energy Review participants. One Energy Trust respondent suggested that those who were screened and not found to be good candidates could receive a consolation package containing coupons for CFLs and other energy efficient measures. Also, various respondents expect that Home Energy Reviewers will receive additional sales training in the coming year.

Trade Ally Marketing

Respondents commenting on Trade Allies said that the Trade Allies have been more effective than Home Energy Reviewers in bringing projects into the program. This is in part a function of program design, as the manufactured and multifamily parts of the program, which do not use the

Home Energy Reviewer process, have had the most program activity to date. Although reaching out to Trade Allies is a major goal of the program, only a small share of the Trade Allies who have signed up for the program are active.

Energy Trust staff feel that the PMC is doing a great job of working with existing contractors, but perhaps needs to be more aggressive in approaching and recruiting other contractors. This respondent was not sure whether the PMC has been sufficiently aggressive, for example, in finding Trade Allies to install heat pumps or other measures.

- One PMC staff member felt that, in retrospect, they should have spoken to all the Trade Ally employees (not just single representatives of various Trade Ally contracting companies) to persuade them to commit to the program.

- It was suggested by a PMC respondent that they needed to figure out an even-handed way to approach bigger distributors, about leveraging program offerings. This respondent noted that the PMC has met with some distributors to gain a better understanding of selling cycles, and dates of promotion at the manufacturer and distributor levels.

- One PMC respondent felt that the Trade Allies have helped make the program credible to the public, and that the field manager in turn has credibility with the contractors. The respondent stated that the PMC is getting good information from Trade Allies about what works to communicate with the public – yard signs, door hangers, etc. The program is taking a more focused look at what the contractors are saying about improving program forms, co-op marketing, and program messaging.

Various respondents expect that the relationship between the program and Trade Allies will get stronger if the Trade Allies see more direct benefits coming to them through the program, including a cooperative advertising agreement and the hire of a PMC staff member to serve as a liaison between Trade Allies and the program.

6. TRADE ALLY INTERVIEWS SUMMARY

In an effort to assess the various experiences and perspectives the participating contractors have with various aspects of the program, and to solicit their recommendations for improving the program, we conducted in-depth interviews with 25 registered Trade Allies who have participated in the program. These Trade Allies, each of which has submitted its qualifications to the Energy Trust in order to be included on a list of approved contractors for the program, have direct experience with the program. Interviews were conducted between November 17 and December 15, 2003. This section summarizes results of these in-depth interviews, including Trade Ally characteristics, program processes, marketing, service delivery, and suggestions for program improvement.

6.1 Sample Development and Disposition

The source for the survey sample was a list of 39 Trade Allies that had completed projects before November 1, 2003. We attempted to interview all of the contacts associated with these projects. Of these 39, we were unable to complete surveys with nine individuals and/or organizations for various reasons, including phone numbers not working, no answer after 10 rings or no response after three callbacks. Three individuals declined to participate in the survey. Twenty-five completed interviews resulted in a high response rate of 76 percent.

Table 6-1: Sample Disposition

	No.
Original Population	39
Could Not Reach	9
Late Respondents / Partial Surveys	2
Declined	3
Total Completed Surveys	**25**

Table 6-2: Respondents by Housing Type

Type of Housing	No.
Single Family	16
Single Family & Manufactured Housing	2
Single Family & Multifamily Housing	1
Manufactured Housing	5
Multifamily Housing	1
Total	**25**

6.2 Trade Ally Characteristics

Length of Time in Business

When asked how long their company had been in business, Trade Allies responded with a wide range of answers. Two Trade Allies have only been in business for one year or less, while one contractor has been operating for 68 years. As shown in Table 6-3, the majority has been in business between 21 and 30 years, with the average length of time being 23 years. Interestingly, the two contractors that had been in business one year or less indicated they started their business specifically to participate in the Home Energy Savings Program.

Table 6-3: Length of Time in Business

Years	No.
1 - 10	7
11 - 20	3
21 - 30	11
31 +	4
Total	**25**

Types of Services Provided

In order to understand the scope of services offered by these Trade Allies, we asked them to define what services they provide their customers. As shown in Table 6-4, the respondents offer a wide variety of services to customers, including insulation, duct testing and sealing and windows. A number of contractors offer a limited number of retrofit services. Ten of those interviewed indicated they provide a single energy retrofit service, six provide two energy retrofit services, and nine provide three or more services.

Table 6-4: Types of Services Provided

Type of Work	No.*
Insulation	16
Duct Testing & Sealing	11
Windows	9
Air Sealing	6
Heat Pump / AC Tune-Up	5
Furnace Installation	4
Doors	4
HVAC	3
Water Heater Installation	2
Siding	2
Other	2

* *multiple responses allowed*

Types of Customers Served

We also sought to determine what types of housing the respondents businesses serve. Note that the responses in Table 6-5 characterize all of the contractors' work, including work undertaken outside of the Home Energy Savings Program. While most Trade Allies said they worked with single-family facilities, the results show that the contractors also work with small and larger multifamily facilities as well as manufactured housing.

Table 6-5: Types of Customers Served

Type of Housing	No.*
Single Family	24
Smaller Multifamily (5 units or fewer)	19
Larger Multifamily (more than 5 units)	18
Manufactured Housing	15

* *multiple responses allowed*

Respondents were asked to estimate the general income levels of their customer base. Table 6-6 shows these income level estimates of Trade Allies customers. A significant majority said that they tend to work with housing occupants from middle-income households.

Table 6-6: Income levels of Customers Served

Income Level	No.
High	0
Middle & High	4
Middle	13
Middle & Lower	5
Lower	2
High, Middle & Lower	1
Total	**25**

Participation in Utility Retrofit Programs

We were interested in determining how experienced these Trade Allies have been in working with utility sponsored retrofit programs. Significantly, all respondents that have been in business for over one year have participated in utility-sponsored programs in the past, as shown in

Table 6-7. A typical response provided was that a contractor has worked with various programs offered by utilities in their area over several years. The only Trade Allies that indicated that they had not participated in past utility program were the two contractors who had started their business in the past year in response to this program.

Table 6-7: Previous Participation in Utility Retrofit Programs

	No.
Yes	23
No	2
Total	**25**

The Trade Allies referenced a variety of utilities they had worked with in the past, as shown by Table 6-8. Northwest Natural and Portland General Electric were the utilities most frequently cited. Various public utilities and oil heat programs round out those utilities in the other category.

Table 6-8: Utilities Offering Programs in which Trade Allie Participate

Utility	No.*
Northwest Natural	15
Portland General Electric	12
Pacific Power & Light	7
Avista	4
Cascade Natural Gas	2
City of Ashland	2
Other (*utilities receiving one mention)*	23

* *multiple responses allowed*

In the past, utilities have referred prospective energy service customers to contractors. We asked contractors if they have been currently receiving referrals for work from PacifiCorp, PGE, or Northwest Natural. A majority of Trade Allies said they were not, as shown in Table 6-9. Note that all of Trade Allies provide services in one or more of the utility service territories shown in Table 6-8. While the nature of the referrals was not explored in detail, the results indicate that relationships between utilities and contractors still exist and that some interaction occurs.

Table 6-9: Currently Receiving Referrals from Utilities

	No.
Yes	9
No	15
Don't Know	1
Total	**25**

Nearly all of the referrals received from PGE, PacifiCorp, or Northwest Natural utilities were for Home Energy Savings projects, as shown in

Table 6-10.

Table 6-10: Utilities Providing Referrals

Utility	No.*
Portland General Electric	5
Northwest Natural	4
None	3
Avista	2
City of Ashland	2
Pacific Power	2
PacifiCorp	2
Department of Energy	1
Energy Trust of Oregon	1
Multiple Referrals	1

* *multiple responses allowed*

Seven Trade Allies said the utility referrals were for Home Energy Savings projects, while two did not know if their referrals from these utilities were for Home Energy Savings projects (Table 6-11).

Table 6-11: Were the Utility Referrals for Home Energy Savings Projecs?

	No.
Yes	7
No	0
Don't Know	2

Time of Initial Participation in the Home Energy Savings Program

We sought to determine when participating contractors have come into the program. As Table 6-12 shows, Trade Allies became involved in HES projects at various times throughout 2003. Those who reported earliest participation were involved in the pilot phase of the manufactured housing part of the program.

Table 6-12: Initial Program Participation

	No.
July/August/September 2002	1
January/February/March 2003	3
April/May/June 2003	6
July/August/September 2003	7
October/November/December 2003	7
Not Applicable	1
Total	**25**

Number of Projects Completed

Participants were asked to estimate the number of projects they had completed through the program. As shown in Table 6-13, most Trade Allies said they had completed 20 or fewer projects in conjunction with the Home Energy Savings program. Nine Trade Allies have completed over 20 projects though it should be noted that five of these indicated they have done over 100 projects. One contractor serving manufactured housing stated that they had completed more than 800 projects.

Table 6-13: Home Energy Savings Projects Completed

	No.
3 - 5	7
6 - 10	2
11 - 20	5
21 - 50	4
51 - 100	0
100 +	5
Don't Know	2
Total	**25**

6.3 Trade Ally Recruitment

In order to learn more about how contractors became aware of, and chose to participate in, the program, we asked a series of questions regarding the recruitment process. Significantly, the majority of contractors learned about the program through one of the program's field management subcontractors, Bruce Manclark. Other ways in which contractors learned of the program include (1) contact by Energy Trust, (2) contact by the City of Portland Office of Sustainable Design, (3) through the Oregon Remodeler's Association, and (4) through equipment manufacturers.

We also sought to determine why contractors chose to participate in the program. The reasons provided centered on (1) the value provided to their customers, (2) the value of the rebates in the sales process, and (3) the potentially competitive position that association with the Energy Trust program provides relative to other contractors. The following provides some illustrative reasons:

- "It makes good dollars and sense."
- "That (program incentives sheet from Energy Trust) pretty much puts a stamp of approval on the program."
- "It's a darn good situation when you can tell a customer they can get rebates."
- "Independent referral adds credibility."
- "Customers were asking why our name wasn't on the list."
- "It's pretty much a necessity when multiple entities are offering rebates."
- "It gives us an edge to install high efficiency systems."

For most contractors, becoming a Trade Ally required the completion of paperwork to document licensing and insurance requirements, proof of bonding, and a signed agreement that they would follow equipment installation specifications. A few indicated that they needed to certify their technicians for the CheckMe! process in order to be eligible for participation. Contractors understood the need for these program requirements in that the Energy Trust needs to ensure that participating contractors are qualified so that "customers avoid bad experiences."

Fourteen of 25 respondents reported receiving no training from the Home Energy Savings Program, as shown in Table 6-14. In contrast, several Trade Allies volunteered that their employees had been trained and certified in retrofit activities as part of the Home Energy Savings Program.

Table 6-14: Trade Ally Training as Part of Home Energy Savings

	No.
Yes	10
No	14
Don't Know	1
Total	**25**

With the exception of training in duct sealing techniques and use of the CheckMe! software, program training was characterized as being informal and focusing largely on the administrative process for the program. A number of contractors have not received this informal training. One offered a suggestion that "it would have been beneficial to have some one visit our office for questions and program clarification."

Administrative Process

The majority of Trade Allies state that the working relationship with PMC and the Energy Trust is positive, citing that the staff is responsive and knowledgeable. Various contractors observed that any difficulties in interaction stemmed from the complexities of starting a new program, rather than specific difficulties with program staff. Illustrative comments include:

- "They are responsive to work with and helpful when I call regarding issues with forms."
- "The program staff are very, very good folks. They are very knowledgeable, willing to help, and go out of their way."
- "They are new, and could be a lot better. I think they are still trying to fine tune the program."

When asked about their impressions of the program administrative processes (i.e., forms, processing, and payment), we received a significant variation in the feedback. For some, this is viewed as a being very straight forward process:

- "Very easy to fill out; pretty fast."
- "They've given me every tool I could possibly think of."

- "Fantastic, it's easy, forms are simplistic, never confusing."
- "One thing they did well is they simplified forms and reports."
- "There have been bumps in the paperwork that I thought should have been worked out during the pilot period of the program. Things have improved since the switch from Climate Crafters – it seems to be getting better."

For others, the process is not viewed as positively:

- "It's not real clear on direction."
- "The paperwork takes too much time."
- "They're still working out the bugs."
- "Payments are late; it's a bookkeeping problem."

It is not readily apparent why the differences in perception exist around this issue. Possible factors include tenure with program participation, experience of administrative staff, and geographic issues. This issue may warrant further investigation on the part of the PMC.

Suggested Program Changes

One of the objectives of this survey was to solicit recommendations on how to improve the program. A range of recommendations were provided as follows:

- "Have a stand-alone incentive for windows."
- "Singular measures should qualify."
- "Make the program available to more people, reduce the qualifications."
- "Put realistic levels for the measures. Nobody makes a window that meets the requirements for the incentives offered."
- "The form should have space for recording total amount of insulation installed."
- "More training is needed beyond the initial (program) introduction."
- "Get other utilities on board, like in Douglas County."
- "Provide feedback to Trade Allies on the program's progress relative to goals."

One contractor expressed concern regarding the Home Energy Review. Specifically, this contractor reported that customers do not see that they are "getting much from their visits." The contractor suggested the reviewers should take measurements, calculate square footage, recommend R-values, and write down their recommendations so that customers have tangible information they can ask contractors to bid on. This issue may warrant a more thorough investigation with customer research in the next phases of this evaluation.

Some contractors expressed concern regarding the seasonality of the CheckMe! heat pump protocol, noting that temperatures are not high enough during several months of the year to check the AC.

The expressed desire for better understanding how the program is working is worth highlighting. It underscores the fact that contractors are watching to see if this program is something that will be stable enough for them to include into their long-term business planning. Another contractor

expressed concern about this, noting that he had heard the program was changing or ending at the end of the year.

6.4 Program Marketing

Trade Ally Approaches to Marketing the Program

A significant area of interest was in determining the Trade Allies experience with, and approach to, marketing the program. Many contractors indicated that they do not take a strategic approach to marketing and are more reactive than proactive as evidenced by the following comments:

- "I tell everybody when they call to have work done."
- "[We] make it known to customers that this is available."
- "We tell everybody about the rebates."
- "We only market through word of mouth."
- "Word of mouth…we might hand out door hangers…we would have designed them differently."
- "It would be nice to have a brochure to send out."

In cases where contractors have been more active in promoting the program, marketing approaches include:

- "Advertising through the Salem Statesman-Journal and local home and remodeling shows."
- "We printed a simple referral card with a five dollar referral incentive paid after an appointment is completed."

Contractors provided some recommendations for marketing messages to customers. These included a range of value propositions, including ease of participation and the availability of incentives. Few mentioned the long-term value of energy savings. Examples include:

- "Get your own money back, you have paid for this"
- "I let them know they are eligible for a Home Energy Review and free CFLs."
- "The program covers homes heated by Pacific Power & Light, PGE, and Northwest Natural – it's a good program."
- "I tell them that it is a program taken over from Pacific Power. I tell them it's not free, you have already paid for it."

One contractor mentioned packaging together the Energy Trust incentives with incentives offered by Lennox and the Oregon Tax Credit and presenting this to his customers. Another contractor specifically mentioned using the inspection process as a selling point. This contractor found that telling customers that there is a possibility that their jobs will be inspected does not act as a deterrent, but rather tells customers that they are a well-qualified company.

Customer Questions and Concerns

Another area of inquiry with Trade Allies concerned their experiences and interactions with their customers. According to some contractors, after being introduced to the program, some customers express skepticism to contractors about the program. As one contractor characterized it, customers want to know "who is paying for it and how can it be free?" Quite a few customers needed convincing that the program is legitimate. One Trade Ally said, "People want to find out if the Energy Trust is for real." A few contractors suggested that increased marketing by the Energy Trust would help in overcoming this first level of skepticism that they sometimes encounter. Frequently asked questions by customers concern the logistics of the rebate process (e.g. who gets the rebate?, how long does it take to get my money?, who does the paperwork?)

Contractors also noted that some customers are reluctant to pay the full cost of the project up front and wait to receive program rebates from the Energy Trust. These customers would prefer to pay the amount equal to the project costs minus the value of the rebate and sign the rebates over to the contractor. A majority of the contractors are willing to accept this arrangement as an added service to the customer. Moreover, most contractors provide active assistance in completing required forms and documentation for their customers to submit.

Marketing Assistance Provided by Energy Trust

Contractors were asked what types of marketing assistance have been provided by the Energy Trust. We received varied responses that indicate marketing assistance may not be uniformly experienced by participating contractors.

As Table 6-15 shows, Trade Allies most often received marketing assistance from the ENERGY TRUST in the form of brochures and fliers. Other means of marketing assistance include advertisements, advice and training, an information binder, signs, a listing on the HES web site and promotional items. Three Trade Allies indicated they did not receive any marketing assistance from the Home Energy Savings program.

Table 6-15: Marketing Assistance Provided by the Program

Marketing Assistance	No.*
Brochures & Fliers	13
Advertisements	3
Program Informational Binder	3
Nothing	3
Advice/Training	2
Not Applicable	2
Promotional Items	1
Signs advertising the program	1
Listing on HES web site	1
Don't Know	1

* *multiple responses allowed*

Respondents were asked to rank (on a scale of one to five, where one indicated the marketing assistance was "not at all effective" and five indicated the marketing assistance was "very effective") the effectiveness of the marketing assistance provided by the program. Respondents provided an average score of 2.6 and fully half of the respondents ranking this assistance at a three or lower. Clearly, this area warrants attention by the program managers.

Table 6-16: Effectiveness of Marketing Assistance

	No.
1	7
2	5
3	2
4	5
5	2
Don't Know	4
Total	**25**

We received a variety of mixed messages regarding marketing support. One contractor indicated they have not received any marketing assistance of any kind. Another commented that he has not been notified of any advertising, and has not seen any. Others, however, commented favorably on (1) being listed on the Energy Trust website, (2) yard signs, (3) door hangers, (4) a coop marketing folder, and (5) local cable ads. One contractor, in particular, commented that he thought the marketing might be having an effect. "People are starting to hear about the program." Another reported, "fifty percent of customers calling don't know that the programs exist."

Door hangers were generally perceived as a good way to get information out to customers. It was expressed that, although customers may not pay attention to these materials initially, when they see that work is being done on someone else's house, they will look more closely.

Another contractor valued rebates as the best marketing tool, saying "rebates encourage customers." Another felt strongly that the Energy Trust should be marketing the program, rather than contractors. As he stated, "contractors want to be order takers. Let's have the Trust getting customers signed up and approved."

Home Energy Review Referrals

Respondents were asked to estimate the number of projects that had been referred from a Home Energy Review. As Table 6-17 indicates, seven Trade Allies said no customers were referred through a Home Energy Review, and seven Trade Allies said they received one to five customers via referral.

Table 6-17: Number of Home Energy Review Referrals

	No.
0	7
1 - 5	7
6 - 10	4
11 +	2
Don't Know	1
No Answer	4
Total	**25**

It should be noted that, based on these interviews, the source of referrals is not always clear. It is possible that more projects originate from Home Energy Reviews than the Trade Allies are aware of.

Coordination of Marketing with Other Trade Allies

We were interested in determining the extent to which contractors were coordinating their marketing activities with other Trade Allies. As shown in Table 6-18, a significant majority said they did not coordinate marketing efforts with other Trade Allies. Of the seven that indicated they were working with other firms, this coordination took the form of referrals to contractors that provided services they did not, and to contractors that served an area that they did not. Four Trade Allies reported getting additional work as a result of coordinated marketing.

Table 6-18: Coordination of Marketing with Other Trade Allies

	No.
Yes	7
No	14
Not Applicable	1
Don't Know	2
No Answer	1
Total	**25**

Effectiveness of Advertising and Recommended Changes in Advertising / Marketing

We sought to determine the contractors' perspective on advertising and its impact on the program and their business. The majority of contractors indicated that they had seen little advertising to date *and* they note that such advertising will be critical for the success of the program. Several contractors perceive that the level of marketing support needed for the HES is similar to that required for previous energy retrofit programs offered through utilities.

- "The Energy Trust will need to spend millions … there is no easy answer."
- "Any advertising would be good, they need to keep doing advertising – spend the money. If they want to be seen, they need to get their names out there."

One respondent felt that limiting the program to three utility service areas was a marketing liability, saying, "The fact that the program is not open to customers in all parts of the state complicates the marketing effort."

Some specific recommendations for changing the advertising effort include:

- Advertisements that mentioned both the Energy Trust and Northwest Natural
- Include more mailers about the program with utility billings.
- Provide an interactive web service, inventorying what the customer can do and its effects on energy savings and costs.
- The program should tie into dealers, so that the message is not ethereal but ties to a tangible image for the customer of what the program offers.

6.5 Measure Delivery

Measures

Contractors are generally of the opinion that the measures offered through the program are appropriate. One contractor noted that, while the measures seemed appropriate, "this program relies on Trade Allies, and Trade Allies tend to recommend the measures they specialize in. Pacific Power audits covered a whole blanket of measures."
Contractors were generally in favor of the measures included in the program and the incentive levels. Favorable comments regarding incentive levels fell into the following three categories: (1) they were comparable or favorable to incentives of current or previous utility programs; (2) they were straightforward to apply; and (3) they helped prospects who had decided to have retrofit work done.

In contrast, unfavorable comments regarding incentive levels also fell into three categories: (1) they were low compared to other programs; (2) fixed insulation incentives were less attractive for larger residences; and (3) incentive levels are unfair to some potential customers. On this third issue, one respondent said that "not all people are getting retrofit services even if they deserve it; they pay into the general fund like everyone else. I think the incentive levels can be adjusted to be fair if the program keeps close to what's happening in the field and listens to contractors."

Other notable observations include:

- The threshold for insulation levels should be higher than R-19 for single-family attic insulation.
- For windows, some contractors felt that the incentives were too low. One contractor noted that the windows should receive higher incentives as the gateway to additional participation.

Contractors using CheckMe! or other diagnostic tests felt that the tests were worthwhile as a tool for determining which projects should be done and as a check on the work once it was done. A few felt that the threshold requirements for duct sealing did at times prevent them from

conducting work that would have saved energy. "I would love to see the numbers adjusted so more duct sealing jobs could be done, but I recognize the need to be cost effective."

6.6 Program Effectiveness in Providing Anticipated Benefits

Trade Allies expect to have more customers as a result of program referrals, program marketing, and the added credibility of being a Trade Ally. Some Trade Allies also see a benefit of being able to offer incentives to prospective customers who call in for retrofit services. Overall assessments were mixed as to whether or not the program was providing anticipated benefits for participating contractors.

One area in which participating Trade Allies contrasted the HES program with previous utility programs was in marketing. As perceived by one contractor, "the Trust does little to get the contractor's phone to ring." Utilities used to put greater emphasis on marketing than is being observed by contractors participating in the HES program.

Asked to score the program on a scale of one to five in terms of the effectiveness of marketing assistance the HES provides for their company, seven scored the program fairly high with a four or five, while two scored the program in the middle, and eleven gave the program a one or two. Table 6-19 shows these scores.

Table 6-19: Effectiveness of Marketing Assistance

	No.
1	7
2	5
3	2
4	5
5	2
Don't Know	4
Total	**25**

A few Trade Allies reported that, to date, the potential benefits from this program are limited:

- "The qualifications are high, narrowing the potential market."
- "I don't know that it's getting us more customers. If someone wants something, we can offer rebates. Rebates for windows are too high."
- "Not so good. We have done 250 manufactured housing jobs, and gotten only five leads for heat pump change outs."

Manufactured housing contractors reported that it has been more difficult than anticipated to recruit participants for duct sealing and insulation services. They felt that lack of awareness of the Energy Trust and the Home Energy Savings Program, and skepticism regarding the availability of a free offer, were limiting customer acceptance of the free measures.

One participant suggested that "now it seems that you don't have to be a Trade Ally to get rebates to customers; this creates confusion and makes us look bad." This is an important observation in that many contractors wish to leverage their association with the Energy Trust program as something that differentiates them from other contractors. If the opportunity to market via association with the Energy Trust is not available, this may diminish the perceived value of participating in the program.

6.7 Summary

The participating contractors tend to have substantial experience in delivering energy retrofit programs that have been offered historically by utilities. Overall, program participants have generally favorable opinion towards the Home Energy Savings Program and its potential in the market. They are working with, and adjusting to, this new program. The feedback they provided based on their experience to date generally falls into two categories, (1) program administration and (2) program marketing. Almost all Trade Allies tend to attribute any difficulties with administration and marketing assistance as inevitable for a program in a start up phase, and several noted recent improvements in both of these areas.

In terms of program administration, respondents noted some initial difficulties with processing paperwork but noted that some changes have been made to improve forms. Many expressed very favorable feedback about the assistance provided by PMC staff when administrative difficulties have arose. Trade Allies appreciate that the program asks less of them in terms of paperwork than previous programs, and consider this a major benefit of program participation. Contractors also expressed appreciation for the technical support that is available from PMC staff.

In terms of program marketing, a review of feedback provided by the Trade Allies indicates two perspectives: (1) a majority that expects the program to be a continuation of the referral-based utility retrofit programs, and (2) a minority that sees this as an opportunity for them to market a unique set of services. For those contractors who desire a referral-based program, there are concerns that the Energy Trust may not be able or willing to provide marketing support for the program that is comparable to that provided by the utilities in previous efforts. For the latter group, strong ties to the Energy Trust brand and co-op advertising are seen as important for improving their company profile. They are hopeful that the program will step up their marketing efforts. Marketing assistance also appears to be particularly important to manufactured housing contractors, many of whom have done marketing in response to an unexpected lack of interest in the no-cost weatherization services they provide. These contractors had not expected to have to market a no-cost program, but did take on the unanticipated time and expense of doing so. The contractors attribute the need to market to the lack of awareness of the Energy Trust, and skepticism that a "free" program was available.

Related to the broader program marketing efforts is the Home Energy Review process. Based upon our interviews with Trade Allies, it appears that these contractors are not very knowledgeable about the Home Energy Review process or whether they are receiving referrals through that process. In cases where contractors are aware of the process, they feel that the

reviewers could be gathering information at a level of detail that would be more useful for preparation of estimates. One contractor also stated that customers seem disappointed with the lack of rigor in the Home Energy Reviews, having expected a more detailed inspection of their home.

The majority of firms indicated that they are not conducting business differently as a result of the Home Energy Savings Program. Several stated that they saw the program as a continuation of the work they had done or continue to do through utility programs. Importantly, however, two of the Trade Allies did start their manufactured housing retrofit businesses as a direct result of the program.

Several manufactured housing contractors noted that the success of their industry depended upon this program. These firms also expressed concern that the manufactured housing element of the program may not be financially viable for their firm in the long run if they cannot deliver the program and pay their employees what they consider to be a reasonable wage.

7. SUMMARY AND RECOMMENDATIONS

7.1 Analysis for Program Performance

- **2003 Program Performance Relative to Goals (units as of November 31, 2003)** – Table 7-1 provides a summary of performance relative to program planning goals.

Table 7-1: Program Performance Relative to Goals

Element	Actual (# units)	Goal (# units)	Actual as % of goal
SF (Weatherization, Electric-Only)	850	848	100%
SF (Home Energy Reviews)	2,549	4,360	58%
MF (Committed & Completed)	13,000	1,710	760%
MH (Duct Sealing)	2,848	2,478	115%

- **The MF and MH elements of the program appear to be on-track** – program achievement in these areas has been relatively positive. The MF program committed all available funds for 2003, and made considerable commitments carrying into 2004. The MH contractors report some challenges in marketing, but appear to be on track for meeting program goals.

- **The SF element has not performed as expected** – As shown in the table below, the SF program has not achieved the momentum that were expected. Specific reasons for this include (1) delayed implementation due to issues with the Energy Trust regarding agency issues, and (2) insufficient marketing resources to achieve desired participation levels. Indirect reasons that may also contribute to this include an insufficient number of participating contractors, lack of "closing skills" on the part of Lighting-plus auditors, poorly designed incentives for heat pump replacements, and focus on developing other program elements, including multifamily and gas-heated residential.

- **Actual program performance may be less than reflected in percentage of units complete due to issues with savings estimates and B/C analysis assumptions** – Several areas of potential concern related to energy savings estimates were identified during the interviews. These include: (1) energy savings assumptions for CFL lighting may be over-estimated (a recent NEEA report questions hours of use assumptions); (2) The energy savings estimates for heat pumps were based on thee replacement of electric resistance heating, whereas the more common baseline may be replacement of existing heat pumps that will result in a fraction of the expected savings; (3) impact of the Home energy reviews assumes a level of follow-on work (weatherization and other measures) that has not materialized thus far.

- **Responsibility for less-than-expected performance of the SF element lies with both Ecos and the Energy Trust** – From both Energy Trust and Ecos staff perspectives, issues relating to the Energy Trust contracts and legal departments have played a major role in slowing the implementation and development of the program. Additionally, changes in program management at Energy Trust resulted in some lost momentum. On Ecos' side, there have also been delays in developing some of the program components.

7.2 Feedback from Program Staff

- **Several challenging implementation issues have been ironed out** – Several of the major issues encountered during program start-up appear to have been addressed at this point in time – it appears that the agency issue has been resolved and that issues stemming from that, such as co-op advertising and other program marketing are being resolved as a result. Similarly, marketing roles have been clarified and a new marketing plan has been prepared for 2004, with additional monies budgeted by the Energy Trust for Ecos to undertake these activities.

- **Program tracking and reporting has been inefficient** – Timely and accurate data on program accomplishments has not been consistently available to Energy Trust staff. This has contributed to lack of understanding of program performance at the savings level, and a lag in responding to program shortcomings. Various people interviewed believe that the upcoming conversion of program tracking to the Energy Trust's Fast Track system will solve this problem.

- **Ambiguity in contract language regarding marketing roles and expectations has strained relations and impacted performance** – There appears to have been a fundamental miscommunication regarding which entity is / was responsible for program marketing. The Energy Trust has claimed that Ecos was responsible for program marketing and that the Energy Trust would be providing general awareness marketing only. Ecos, on the other hand, maintains that the Energy Trust had responsibility for targeted marketing of the program, to be supplemented by small and relatively focused efforts on the part of Ecos, for which only $40,000 had been budgeted.

- **There is an underlying level of discomfort in the working relationship between Ecos and the Energy Trust contracts and marketing staff** –Reportedly, the contracts person at the Energy Trust with responsibility for this program is not speaking with the Ecos project director. Similarly, relations between the marketing manager at the Energy Trust and Ecos staff are strained. While it is unclear how this is affecting the current implementation of the program, this appears to be an issue that could impede the synergies that are necessary to achieving the mutual goals of the Energy Trust and Ecos and should therefore addressed directly. There were suggestions that Ecos is now a bit "gun shy" in bringing ideas and/or suggestions to the Energy Trust as a result of this strained working relationship.

- **Overall SF prognosis is mixed** – In spite of the fact that several of the above-highlighted details have been addressed, there remains a clear level of cognitive dissonance centering on the current prognosis for the SF program element. The Energy Trust and Ecos program managers are optimistic that the program is now on track. However, higher-level management staff at the Energy Trust expressed concerns that reflect a lack of confidence in the capabilities of Ecos program management. There are also remaining concerns regarding the responsiveness of Ecos to Energy Trust requests, timeliness in reporting and progress updates, and overall ability to develop the organizational capabilities necessary to delivery on contracted savings.

7.3 Participating Trade Allies

- **Participation by Trade Allies is limited** -- While inclusion of gas space heating has resulted in an increase in the number of trade allies that have signed up to participate in the program, activity indicators show that participation was limited to 19 trade allies in the month of November.

- **Mixed feedback on the administrative processes was received from Trade Allies** -- Feedback from contractors indicates a mix of experiences with the program from an administrative perspective. Since those who spoke favorably of the process were very firm in this opinion, we suspect that this may reflect a mix of training or communication issues, rather than an issue with the program forms or administrative process. Increased outreach to these contractors, particularly those who are less likely to be in direct day-to-day contact with the Energy Trust, may help to bridge this perception.

- **Trade Allies have not received as much marketing support as desired** – Overwhelmingly, participating Trade Allies report that they would like to receive greater levels of assistance from their Energy Trust. Many of these Trade Allies have participated in utility-sponsored programs and are expecting to have such marketing support and leads directed their way. Communications with these contractors will need to emphasize the extent to which this program relies upon the Trade Allies to market the program.

7.4 Recommendations

Based upon these initial interview results, the central area of concern for this program focuses on the single-family element. In order to put the issue in context, it is worth noting that, largely, the MF and MH elements of the program already existed in some form before the Energy Trust initiative; Climate Crafters was providing services to mobile homes, and the OSD was already providing services to the MF sector. In contrast, the SF element has been started from scratch and, as such, may be viewed as much more of a start-up venture. This is important because, if one views the program as a start-up venture, this suggests that the program may require a different type of management attention on the part of the Energy Trust. This need for a different management perspective may also be contrasted with the C/I program that, as described to us, is based upon a program design that Aspen Systems had previously implemented.

If the SF element is viewed as a start-up venture being undertaken by Ecos (much as a start-up business), the Energy Trust might then be viewed as an angel investor, or as a provider of first round venture capital financing. This analogy provides a useful perspective for viewing the current situation. When an investor takes an early investment position in a private venture, that investor typically takes a much more active role in the management of the company. This may be contrasted with a more passive investment such as investments made in more mature companies through the stock market. These early investors may, for example, install specific management staff they know to have a specific skill set and whom they trust to manage infrastructure development and the growth of their investment. Extending the analogy further, the early investor typically requires a very tight business plan with specific near- and mid-term targets. These targets are reviewed closely on a regular basis and adjustments made as needed. In short, this type of relationship suggests that a much closer management relationship between the Energy Trust and Ecos may be warranted, with a significant focus on infrastructure development. The challenge, however, is that the contract between Energy Trust and Ecos is performance based. As such, the Energy Trust appears to have something of an internal conflict regarding how active of a role the Energy Trust should play in program implementation. On one hand, it is rational to assume that Ecos has every incentive to succeed. On the other hand, several elements of the underlying program theory for the SF element are relatively untested and therefore present greater risk to both Ecos and the Energy Trust. We suspect that the current ambiguity surrounding this relationship is an underlying source of tension between Ecos and the Energy Trust.

There are three primary recommendations that appear to be most important and fundamental in the near-term. These include:

- **Conduct an internal meeting among Energy Trust staff to form consensus on SF element status, issues, and prognosis** – During interviews, we noted a decided level of uncertainty among Energy Trust staff regarding whether or not the SF element was likely to perform adequately in the future. As a first step, we therefore suggest that a focused meeting needs to be held among Energy Trust staff to reach internal agreement on the status and prognosis for this program, as well as an assessment of risks relative to specific program components. Note that, based upon our assessment, the evaluation team sees a number of red flags which suggest that, although progress is certainly being made, the program is not yet on firm ground. The evaluation team may, with its impartial perspective, be able to facilitate such a meeting.

- **Give serious consideration to whether or not a performance-based contract is in the best interests of the Energy Trust in moving forward with this program** – Numerous parties expressed concern about the nature of the contract negotiated between Ecos and the Energy Trust. It was questioned whether the performance-based nature is appropriate for a start-up program that requires attention to a lot of details that may affect the long-term outcome of the program but may not enhance the near-term achievement of performance goals and compensation. The structure also appears to perpetuate a certain level of ambiguity as to the roles of the Energy Trust and Ecos. This conflict has manifested itself, for example, in the area of marketing, (e.g., approval of marketing

collateral), but impacts are seen throughout the single-family program in the form of program delays and lack of program cohesion.

- **Work with Ecos to develop a <u>detailed</u> SF "business plan" for 2004 –** Given that program development has, for a number of reasons, deviated from its original plan, there is a need for a clear (and high resolution) road map for the coming year. We therefore recommend that Energy Trust and Ecos work together to develop a very specific and concrete implementation plan (effectively a business plan) for PY2004 SF element. This plan should include specific and realistic installation rate targets by month, updated B/C analyses, a marketing plan (including timing of placements and rationale for such), contingency plans in the event that targets are not met, and a prioritized list of development activities. While the ultimate benefit will be a common understanding of expectations for the coming year, the process of creating such a plan is also likely to yield substantial benefits in that the creation of such a plan will require a very close look at the program and each aspect of the program design. Moreover, the ultimate business plan will require a clear delineation of both Energy Trust and Ecos responsibilities as the program moves forward. In the interest of ensuring positive communication between the Energy Trust and Ecos, a daylong "*Charrette*" approach might be warranted.