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Draft Final Report

Process Evaluation of 2009 Existing Buildings Program

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EXECUTIVE SUMMARY

The Existing Buildings Program has acquired over 293 million kWh of electricity savings and over 3.5 million therms since Energy Trust of Oregon launched the program in February 2003. To increase its penetration into the commercial market, the program team has adopted a strategy of targeting marketing and outreach activities to specific market segments. Since 2006, Energy Trust has identified 22 segments within the commercial market and has prioritized 10 of those for program intervention either because of high energy use intensity in buildings within those segments or because the segments previously have been underserved.

This is the first process evaluation of the program since the targeted-segment approach has become fully implemented. The process evaluation goal was to provide feedback on the current targeted-segment strategy. Through interviews with program and PMC staff, 26 program-active trade allies, four key trade organization representatives, four equipment distributors, and 95 program participants, the evaluation sought to identify strengths and weaknesses of program processes, clarify market trends and concerns, and elucidate the decision-making processes of program participants.

This evaluation focused on program activities in seven of the targeted market segments: office buildings, retail facilities, hospitals, K-12 schools, lodging establishments, restaurants and food service, and grocery stores. The program selected these segments as high-priority targets either because they generally have high energy usage intensity (grocery, food service, hospitals), have been underserved, (grocery, food service, K-12 schools, lodging), or have historically been targets because they constitute a large portion of the commercial market (office, retail).

PROGRAM AND PMC STAFF COMMENTS

Interviews with Energy Trust program staff and PMC staff suggest good program coordination and communication despite changes in key program and PMC staff in the months leading up to the evaluation. The greatest management challenge appeared to be mixed messages from Energy Trust to the PMC regarding marketing; Energy Trust has responded to this challenge by appointing a single point of contact for marketing directions.

The previous evaluation identified some project documentation issues and recommended steps to address them. Since the last program cycle, there have been improvements to the procedures related to project documentation, and no new documentation issues were identified. Program and implementation staff contacts indicated that data management remains the most problematic area for the program, largely because of limitations with the Energy Trust *FastTrack* database. A planned migration to a new system might address those challenges.

Staff descriptions of program marketing reveal a thoughtful, individually tailored approach to each targeted segment. At the same time, Energy Trust and the PMC continue to rely heavily on trade allies to market the program to end-users.

TRADE ALLY AND DISTRIBUTOR FEEDBACK

Although there has been an increase in recent years in the awareness of energy efficiency among the customers of trade allies and distributors, relatively few of those customers specify energy efficient equipment for their projects or ask about incentive programs for commercial buildings. A majority of the trade allies reported, however, that they always recommend qualifying equipment to customers who do not specify energy efficient equipment and they submit applications for Energy Trust incentives for most eligible projects. Occasionally exigent circumstances or practical realities argue against recommending the most efficient equipment.

The trade allies typically have little difficulty obtaining energy efficient equipment from distributors or manufacturers, with some exceptions. The distributors in turn have no difficulty obtaining such equipment from manufacturers.

Nevertheless, Energy Trust projects represent a minority of trade allies' business, and a large portion of that business continues to be in standard efficiency equipment, suggesting that trade allies have not been able to market the program effectively to all of their customers. Although the program participants indicate a high level of interest in energy efficiency (see below), there continues to be either limited interest in energy efficiency or limited awareness of the program in a large portion of the commercial market – and continued opportunity for deeper penetration. Funding limitations and the cost of high-efficiency equipment were the most frequently mentioned barriers to greater installation of energy-efficient measures.

To the extent that limited interest or awareness block program participation, a need exists to train trade allies to market the effectiveness of the program at reducing financial barriers to purchasing energy efficient equipment or for the PMC to carry out more direct outreach to the commercial market to explain the program benefits (or to do both) and to work with equipment manufacturers and distributors more to push the most energy efficient equipment. To the extent that funding limitations are a barrier even among those who are aware of the program's incentives, Energy Trust may wish to further investigate where those barriers exist most strongly and to develop or modify incentives to address them.

The interviewed trade allies are generally satisfied with the Existing Buildings Program, although most offered suggestions for program changes and additional program services. In particular, trade allies expressed a desire to expand incentives to other energy efficient equipment. Many of the measures they mentioned already are covered, suggesting that some trade allies are not aware of the flexibility the program offers. There were, however, some equipment types mentioned that the program does not yet cover.

TRADE ASSOCIATION FEEDBACK

We obtained information from associations representing the lodging, restaurant, grocery, and school segments. The restaurant, lodging, and grocery contacts reported interest in energy and sustainability issues within their respective memberships and the restaurant and lodging contacts also reported an interest in renewable energy. A particular interest mentioned by the lodging contact was in green or sustainability certification. The restaurant and lodging associations provide energy- and sustainability-related information to their memberships and efforts to promote energy efficiency or renewable energy, but the contacts did not know the extent to which their membership seek information about energy efficiency from those associations.

The contact for the school administrators association was not well acquainted with Energy Trust and gave no indication that the association was active in energy-related issues. Interestingly, as shown below, the school segment does show a high level of awareness of and interest in energy efficiency. Possibly, the school administrators association was not the best organization to speak with.

All of the contacts indicated that cost – or perceived cost – is a barrier to making energy efficiency investments. All contacts suggested that Energy Trust could improve program reach into their segments by maintaining a presence in their publications and at association events. The contact for the lodging association further suggested that program reach could be improved by promoting "entry level" energy reduction activities within the lodging industry and tailoring marketing and outreach to lodging businesses of differing sizes.

PARTICIPANT FEEDBACK

We conducted both in-depth and briefer interviews with program participants to identify the parties involved in equipment upgrade decisions and how decisions are made. We conducted 42 in-depth interviews with program participants distributed across the seven target segments. We conducted the briefer interviews with 53 participants divided into two strata: those from market segments with mean building size of about 40,000 square feet or larger (large stratum), and those from market segments with mean building size of less than about 40,000 square feet (small stratum). Although the evaluation plan also called for interviews with a group of targeted nonparticipants identified by the PMC, we were unable to complete interviews with any of those nonparticipants. The following feedback is entirely from program participants.

Decision-Making Actors

Interviewed program participants identified a range of actors involved in equipment upgrade decisions: owners and executives, in-house technical, facilities, operations, and financial staff; and contractors and other external consultants.

Most respondents indicated that decision-making involved multiple parties with both formal and informal channels of communication; about one-fifth said it spanned multiple company levels,

involving actors in corporate or franchise headquarters remote from the facility where the upgrade occurred. Similarities were noted in the descriptions of the processes among most target segments, although processes in the office segment were complicated by the involvement of real estate management companies, and the lodging and restaurant segments differed from the others.

The Role of Energy Efficiency

A variety of findings pointed to the important role that energy and energy efficiency play in decisions. Large percentages of respondents to both the program participant interviews said that it is an important consideration from the start of upgrade planning. Respondents overwhelmingly agreed that energy efficiency investments are worth the cost and effort, and more than one-quarter of respondents said that their most recent program-supported project represented the most efficient equipment or configuration possible.

Some responses indicate that, for many respondents, energy efficiency is important for its own sake. However, results show that the emphasis on energy reduction is largely driven by cost reduction, and energy efficiency investments must make financial sense for most respondents. The most common reasons given for why controlling energy use is important referred to return on investment, lifecycle costs, or payback. Two-thirds of respondents described their most recent program-supported project as either the best balance of efficiency and cost or the best efficiency for the amount budgeted, and cash flow was the most commonly mentioned potential barrier to energy efficiency investment.

In addition to the above, energy efficiency sometimes takes a back seat to other considerations: four of five hospital respondents stated that energy efficiency is a primary consideration but also noted that ultimately patient care and power reliability has to be their preeminent concern; in schools, responses to failed equipment during the school year may involve a temporary, if less efficient, fix if they can be carried out faster than a more efficient upgrade.

The Role of Contractors on Program Participation

Results point to a strong role played by contractors, vendors, and other external consultants in the upgrade decisions of program participants. Nearly three-quarters of in-depth respondents and about two-fifths of brief interviewees reported that contractors, vendors, or consultants are involved in those decisions. Nearly three-quarters of brief interviewees said that a contractor recommendation is a sufficient reason to select an energy efficient option, and about half of them said they were influenced by contractor recommendation in their most recent program-supported upgrade.

The Role of Strategic Energy Management

Interview results generally support the view of PMC staff that strategic energy management planning has not yet been widely adopted within the commercial buildings market. Specifically, the findings show no increase in the assignment of a single staff member responsible for energy

savings, a written sustainability policy, or a written energy management plan. Moreover, only 20% of the respondents' recent program-supported upgrades were done as part of a larger facility upgrade, suggesting a continued piecemeal approach to energy upgrades.

However, some results suggest a trend toward greater strategic energy management. There has been an increase in the reporting of informal energy management, efficiency-related operations and procurement policies, and numerical energy savings goals. Businesses in the large stratum were more likely than those in the small stratum to have a single individual responsible for energy. Open-ended comments from the in-depth interviews suggested some aspects of energy management that are not covered in the above categories: interest in certification, energy planning that covers specific measure types or is limited to certain facilities within a company, and involvement in sustainability-oriented industry associations. These may be fruitful topics for further investigation.

The Role of Competitors

Nearly half of respondents said they were influenced to some degree by the energy efficiency actions of others in their market segment, although only about one-quarter indicated an active interest in what others did. Those who are most interested in what others are doing talk directly to others in their segment or get information through industry or trade associations. Nearly half of the in-depth respondents reported that they are ahead of the curve in energy efficiency, but that belief was unrelated to whether or not they paid attention to what others in their market segments are doing.

The Role of the Program

As expected, some respondents interacted with the program mainly through contractors, while others had more direct interaction, often from early in the planning process. The level of interaction appeared to differ somewhat by segment. When asked if the Energy Trust incentive provided economic benefits to their company beyond that of buying down the cost of equipment, somewhat fewer than half of the in-depth participants said that it had; for some, the incentive helped them expand their energy efficiency projects or retain employees. Participants generally were satisfied with their experience, and nearly three-quarters of previous participants said that their earlier experience influenced them to participate again.

MARKET ANALYSIS

An analysis of current program reach into the high-priority segments showed that program presence varies widely among those segments. From this analysis, the greatest market presence is in the office segment, with 26% of the total Oregon office floor space affected. Second highest is the grocery segment (21%), followed by hospital (16%), lodging (9%), restaurant (6%), school (5%), and retail (2%). These findings are consistent with program staff observations that the

hospital and grocery segments are well penetrated, but also indicate that all segments have large potentials for acquiring additional savings.

There was good agreement between our rankings of market presence and trade allies' judgments of market penetration for the office, grocery, lodging, and schools segments, but not for hospitals and restaurants. The lack of agreement on hospitals may reflect the small number of hospitals relative to businesses in the other market segments, making it difficult for any particular trade ally to gain an accurate sense of the degree of market penetration. The lack of agreement on restaurants may reflect a high incidence of restaurant inquiries into the program (reported by trade allies) and may also partly reflect unreliable estimation of program presence because of a low percentage of *FastTrack* records with building size data in this segment.

We also developed a coefficient that represents the relative untapped potential for new savings in each of the seven high-priority segments by taking into account the program's current market presence, the savings acquired, and the market energy use in each segment. This new metric could be used to track its performance over time within each of the market segments.

The analysis of repeat participation shows a reasonably constant rate of about one in seven or eight customers participating again the next year. When a broader horizon for repeat participation is considered, we see that about one-fifth of customers participated in one of the following two to three years.

CONCLUSIONS AND RECOMMENDATIONS

1. **Conclusion:** There remains yet a large potential for increasing program participation by adding new customers. The program still relies heavily on trade allies, who play a strong role in upgrade decisions, and who have commented in two successive evaluations that they would like program marketing brochures or other materials to give to customers.
   Recommendation: Develop program brochures and other marketing materials to provide to trade allies to distribute to their customers. As the program continues expanding outreach to new contractors and vendors, provide them with those materials as well.

2. **Conclusion:** Trade allies continue to request that incentives be expanded to a wider range of energy efficient equipment, most notably LED lighting. Feedback from trade associations and some participants supports a desire in the market for incentives for LEDs. Much of the equipment they mentioned is covered under custom application if cost-effective, suggesting that many trade allies are either unaware of the flexibility of the custom application track or may find the custom application process too complicated. In either case, some opportunities for savings may be lost.

   Recommendation: Investigate creating prescriptive incentives for a wider range of equipment or developing a simplified, small-project custom track.

3. **Conclusion:** Feedback from all sources suggests that cost continues to be the largest barrier to investment in energy efficiency.

Recommendation: Investigate ways to expand cost-effective financial assistance, such as reduced interest loans, allow phased participation over time following an established plan, and expand segment-targeted promotion of low-cost, no-cost energy efficiency measures.

Recommendation: Provide additional training to trade allies on how to convey the long-term cost benefits of energy efficiency to their customers. At the same time, incorporate more information on cost benefits of energy efficiency in marketing and the program's direct outreach to the commercial market and possible expand the amount of marketing and outreach conducted.

4. **Conclusion:** Some results suggest that trade or industry associations may play a growing role in promoting energy efficiency. Many businesses are interested in and influenced by the energy efficiency measures undertaken by other businesses in their industry segment, and much of the information about what other businesses are doing comes through trade or industry associations. Such associations may be a way to reach decision-makers that have proven to be difficult to reach through other means.

   Recommendation: Expand interaction and coordination with trade and industry associations, including placing advertisements or articles in association newsletters, joining and supporting association events, and providing technical assistance to support associations' information dissemination activities.

5. **Conclusion:** There remains a general belief that "split incentives" are a barrier to energy efficiency investments in leased commercial property. However, evidence from both the commercial and multifamily residence market shows that property owners believe that offering energy efficiency features is a good way to keep tenants and reduce vacancy rates, which is consistent with recently published research.[1] At least two program participants interviewed in this evaluation demonstrated a similar belief.

   Recommendation: Target trade allies that perform tenant improvements in leased spaces to leverage funds that are already earmarked for improvements.

   Recommendation: Energy Trust should conduct research to investigate the potential value to building owners of offering energy efficiency to tenants in the commercial market in Oregon.

[1] Eichholtz, P., Kok, N., and Quigley, J.M. 2009. *Doing Well by Doing Good? Green Office Buildings*. *http://www.escholarship.org/uc/item/4bf4j0gw*. Berkeley, Calif.: Center for the Study of Energy Markets, University of California Energy Institute, University of California, Berkeley.

MEMO

Date: December 13, 2010
To: Board of Directors
From: Brien Sipe, Evaluation Project Manager
Spencer Moersfelder, Business Sector Manager
Subject: Staff response memo: 2009-2010 Existing Buildings Process Evaluation

In 2009 the Existing Building program began delivering services via an innovative targeted approach based on commercial segments with high energy intensities, or those industries that have traditionally been underserved. Research Into Action was hired to conduct the evaluation, with an emphasis placed on in-depth interviews with the various parties involved in the program. General satisfaction levels and free ridership were captured via the 'faster feedback' mechanism (report available on Energy Trust's website). Study findings provided some, but still limited insights about the segments examined, with future research likely to focus on fewer segments at a time and explore delineations within market segments.

Treating 'vertical' market segments as distinct entities rather than an aggregate 'commercial sector' has allowed the program to develop tailored approaches to encourage participation across the spectrum of commercial businesses. In order to bring in more energy savings, the program will need to continue to expand both its depth and breadth in the marketplace. Achieving deeper savings with existing customers will offset the cost of attracting and influencing the marginal customer. In addition to addressing the 'vertical' market segments, the program is discussing how to address the following 'horizontal' market segments: 1) Projects driven by relationships 2) Lighting projects driven by Trade Allies 3) Non-lighting projects driven by Trade allies. While certain segments are highly influenced by contractor recommendations, other business groups rely more on trade organizations to learn about opportunities to improve efficiency and lower their operating costs. Regardless, the program can develop better sales tools that can be used by program representatives and trade allies as well as materials that can influence participants without a sales agent.

The efficacy of this approach comes amid a time of increasing program goals and a priority placed on cost-containment. Disaggregation of the commercial market into segments, and subsequent market and program tracking for elements such as $/unit savings and technical study follow-through rates, will allow the program to commit its resources in the most effective way possible to continue meeting aggressive savings goals. Decisions to pursue individual markets can be made based on the cost of realizing savings in a market weighed against the budget available to achieve overall program goals.

Evaluator Interviews with key staff at Energy Trust and the PMC identified good overall communication and coordination between the agencies. One example of highly successful collaboration is the re-design and implementation of a pilot steam trap replacement program in dry cleaners served by Northwest Natural in Washington. The new approach yielded high levels of gas savings at a much reduced cost than the original approach used in Oregon. This effort will continue in Washington and the model will be applied to the industry in Oregon.

Areas identified for ongoing discussion and future research include:

- Examining low uptake of energy efficiency in the retail sector
- Exploring the disconnect between customers reporting they are strongly influenced by contractors and contractors who report always recommending EE equipment, yet low uptake of EE in some segments.
- Given the reported influence of contractors on customer decision making efficient equipment, providing additional support to contractors via additional marketing materials.
- Examining the influence of the new commercial code on building upgrades and identifying ways in which the program can support customers in reaching the new codes.
- Research approaches to encourage participants to engage in more comprehensive retrofits, or assist them in developing phased approaches to EE upgrades to accommodate budgets.

- Non-participant market assessment: given the propensity for repeat participation, extending the program reach to new customers could allow for more certainty of project volume in subsequent program years.
- Continued focus on making program participation easier.
- How to better sell projects using the business case for energy efficiency.

1 INTRODUCTION

The Energy Trust of Oregon launched the Existing Buildings program in February 2003. The goal of the program is to achieve electric and natural gas energy savings and to transform energy use in commercial markets by providing financial and service incentives to qualifying participants. The program is open to all Oregon customers of PacifiCorp, Portland General Electric, Northwest Natural Gas Company, and Cascade Natural Gas Corporation. The program acquires cost-effective electric and gas savings through prescriptive and custom incentives for a broad range of energy efficient equipment and measures in existing non-residential buildings and facilities.[2] Facilities eligible for incentives under this program include, but are not exclusive to, all types of office, educational, retail, foodservice, lodging, hospital, and governmental facilities.

PROGRAM SUMMARY

The program is market-driven and builds on existing market relationships, working through a network of trade allies to identify and deliver energy-saving lighting and mechanical projects for end-use customers. Lockheed Martin, Inc. serves as the program management contractor (PMC) for program implementation.

Energy Trust has identified 22 segments within the commercial market and has prioritized 10 of those for program intervention. In 2006, the program began directly targeting end-users in the restaurant, lodging, office building, healthcare, and institutional segments. The program also has coordinated with various other organizations promoting energy efficiency to leverage the effectiveness of its own marketing and outreach. The purpose of this new targeted-segment approach is to address segment-specific needs. More recently, additional priority market segments have been identified, either because of high energy use intensity in buildings within those segments or because the segments previously have been underserved.

Program services, including financial incentives, are provided to program participants who implement energy efficiency measures in their facilities. Specific program services include:

- **Energy studies**: the program contracts with energy experts to examine a participant facility's energy use and to identify ways to save energy. These experts are known as allied technical assistance contractors (ATACs) who produce technical analysis studies of participants' facilities.

[2] Multifamily buildings of five units or more are considered to be "non-residential" and are also eligible for participation in this program.

- **Contractor connections**: the program maintains a trade ally network of suppliers and installers of energy efficient equipment, and can recommend an appropriate contractor to participants for each project.
- **Project oversight**: program representatives review the technical analysis studies and evaluate contractor proposals to verify the energy savings estimates are accurate, the project is cost-effective, and the installation costs are reasonable.
- **Post-installation inspections**: the program conducts post-installation inspections to provide quality control for trade ally work.

The program also provides prescriptive and custom financial incentives for energy efficiency projects, which are categorized as lighting, mechanical, food-service, and building-envelope. Standard incentives are pre-determined financial incentives offered for prescriptive measures, and do not require a technical analysis study. Standard incentives are available for a wide variety of lighting equipment, electric motors, premium air-conditioning units, gas-fired equipment, and food-service equipment. Qualifying energy savings are either pre-determined or require simple calculations.

Custom financial incentives are provided on a case-by-case basis, and are determined by a formula which uses a percentage of the "incremental cost" of installing the measure. Additionally, custom incentives are limited by the estimated annual energy savings, cost-effectiveness, and return on investment or "simple payback period" from energy savings. Savings are based on engineering estimates or on the installed equipment and its operating parameters.

EVALUATION SUMMARY

Research Into Action Incorporated was awarded a contract in January 2010 to conduct a process analysis of the Existing Buildings program to reflect the current strategy and to provide real-time in-progress feedback to Energy Trust. This evaluation covered review of program processes and progress through analyses of program documents and interviews with eight members of the program and PMC staff, representatives of four key trade organizations and four equipment distributors, 26 trade allies, and 95 program participants. The interviews with the participants identified decision-making processes and market trends and concerns. The evaluation focused on program activities in seven of the targeted market segments:

- Office buildings
- Retail facilities
- K-12 schools
- Hospitals

- Lodging establishments (hospitality industry)
- Restaurants and food service
- Grocery stores

Initially, the evaluation was intended to include interviews with targeted nonparticipants identified by the PMC. From a list of 12 organizations provided by PMC staff, we (together with Energy Trust evaluation staff) eliminated five as not appropriate for the evaluation. We were not able to obtain cooperation from the contacts for any of the remaining seven organizations.

2 STAFF EXPERIENCES

This chapter describes the Existing Buildings Program based on in-depth interviews with former and current program and implementation staff. In the months preceding our interviews, both the Energy Trust Program Manager and the PMC Program Manager departed and were replaced. We conducted interviews with the former Energy Trust Program Manager and with the current PMC Program Manager, and with five current program implementation staff who work with the seven market segments on which this evaluation focused. Copies of the interview guides are included in Appendix A.

Overall, staff described approaches to the various market segments that are tailored not only to the unique needs and circumstances of each segment, but also to the circumstances of the individual businesses within each segment. That customized approach becomes evident in the course of this chapter's discussion of program communications, data tracking, marketing, and barriers to greater adoption of energy efficiency measures.

Communication

Our interviews probed the frequency and adequacy of program communications between Energy Trust and PMC staff, communications among and between implementation staff, and staff communications with end-use customers. Communications with end-use customers are addressed in the section on program marketing.

Communication between Program and Implementation Staff

Staff reported frequent and generally effective program communication between Energy Trust and the PMC. Implementation staff reported monthly meetings with the former Program Manager and communication "two or three times a week" with the new Program Manager. Other implementation staff reported the ability to talk with Energy Trust staff whenever there is a specific need to do so.

However, implementation staff suggested three enhancements to Energy Trust communications that would be helpful to them. One of these contacts reported, "It would be helpful to receive earlier notice of some things. Energy Trust tends to call at the last minute."

Another contact suggested "a once a month blurb on what's new and exciting [at Energy Trust]" in addition to program information.

Energy Trust staff are aware of these concerns. Program staff noted that last-minute communication with the PMC sometimes is unavoidable, arising from the identification of internal needs that require immediate action rather than from delaying notification. Program staff

are planning to address the second concern through special presentations at monthly all-staff meetings with the PMC.

Of greatest concern regarding communication between the two organizations is implementation staff's report that it does not "always know what Energy Trust wants regarding marketing. There are mixed messages, with different people within Energy Trust having their own conventions and approaches." That contact suggested a single point of contact at Energy Trust for marketing directions, a change that has been implemented since that interview was conducted.

An added complication for program marketing according to implementation staff is Energy Trust's relatively greater distance from end-use customers, resulting in Energy Trust's not always being aware of the "realities of Oregon markets." The contact added, however, that "Energy Trust is receptive to alternative suggestions to its marketing approaches."

Communication within the PMC

Implementation staff contacts believe that program communication between them is effective and sufficient. With the new program leadership at the PMC, formal staff meetings have become more frequent, from monthly to weekly meetings. The weekly meetings are two-part, and include all staff for one part and just the business development team for the second part. Every two weeks, all of the teams, including the management team, meet separately following the all-staff meeting. Business development managers also described daily and as-needed communication with the lead business development manager and between all program-implementation staff.

Another recent innovation that has improved the flow and management of information for the implementation contractor is the creation of a lead business development (market segment) manager to whom the other business development managers report. Among other things, the lead acts as the gatekeeper for projects as they come in, assigning projects to a particular staff person when a project's segment is not clear. Segment managers also communicate with each other to coordinate areas where segments overlap. For example, hospitals, retirement centers, and schools all have food-service components, so the business development managers for those segments talk to each other and to the business development manager for restaurants to discuss and coordinate common issues. Similarly, retirement centers can have healthcare components with issues in common with hospitals.

Despite the above improvements in internal communication, one contact voiced concern that internal communication at the PMC has not yet developed to the point that it fully supports conceptualizing and developing new initiatives.

Data Tracking

Since the last program cycle, there have been improvements to the procedures related to project documentation. Specifically, staff reported "better protocols around electronic data entry and hard-copy record keeping, including a list of project activities with a place for initials inside the

cover of each project file, with a final disposition summary at the top." Work has also been done to eliminate (discard) redundant paperwork. When projects are received, reviewed, and released for payment, the hard copy is handed to another person who compares it to the electronic record in the *FastTrack* database.

Nonetheless, program and implementation staff indicated that data management, and the *FastTrack* database in particular, remain the most problematic area for the Existing Buildings Program. One contact reported, "Everyone knows the current tracking system is broken." According to implementation staff, the database is "too cumbersome to have outreach staff [business development managers] learn and use for themselves." Another contact reported that, as the volume of projects has increased from roughly 1,400 projects in 2008 to approximately 2,100 projects in 2009, "managing projects with prompts and flags around due dates doesn't exist right now." According to that contact, "This is the biggest issue facing the program."

Program staff specifically reported difficulty identifying customers who had a walk-through a few years ago but did not go farther with the program or customers who completed a small project a few years ago. Identifying these customers would allow the PMC to follow up with them to try to convert the walk-throughs into projects or see what they can do to get those who did small projects to do larger ones. For more recent walk-throughs, this limitation is partially addressed by the implementation contractor's having a staff person who makes regularly scheduled "touches" with these businesses.

Energy Trust is currently planning to upgrade its current data tracking software, which may address some of the above concerns.

Marketing

Initially, program marketing for the Existing Buildings Program was almost exclusively the responsibility of trade allies, and trade allies remain a critical component of program marketing. However, over time, the program has increasingly augmented the trade allies' marketing efforts. In 2008, the implementation contractor hired a marketing manager. In January 2009, Energy Trust hired an outside marketing contractor for all commercial segment marketing and for the target markets in particular. The targeted approach opened awareness of specific trade groups to whom to direct marketing activities and of industry-specific marketing materials. Finally, the PMC established several business development managers who meet directly with customers as well as with dealers, trade associations, and legal, architectural, and engineering consultants for the various targeted segments. As a result, the marketing activities of implementation staff have substantially augmented trade ally marketing.

Marketing by the Program

Program marketing by implementation staff consists almost exclusively of direct outreach. Staff descriptions of program marketing reveal a thoughtful, individually tailored approach to each

targeted segment and to diverse businesses within a given segment. As one contact reported, "There is not one single approach."

Rather than attempt to impose a one-size-fits-all approach on the targeted segments, business development staff identify where purchasing decisions are made: locally, regionally, or nationally. Staff establish relationships with customers to learn what their interests, constraints, values, budgets, and other unique characteristics are. As examples of variations between segments, business development staff have learned and recognize:

- Equipment purchases in the restaurant segment are driven largely by equipment dealers, requiring an emphasis on outreach to those dealers over outreach to the restaurants.
- There are a handful of large chains in the grocery segment (each of which may have unique equipment design or purchasing policies), and at the same time, there are many small grocery stores requiring direct outreach.
- Nursing and retirement homes receive too much mail to approach them through mailings, and are unlikely to make appointments, so the best way to approach them is through cold calls.
- Schools involve many people in their decision-making meetings and require advance appointments.
- Relatively few trade allies serve the lodging industry, requiring greater staff outreach to that segment.

When asked how the Existing Buildings Program is presented to businesses, one contact captured this one-on-one approach by responding, "It's more important to ask questions and learn what the contacts want to do than it is to provide a generic description of the program."

Staff also reported they may talk with different people in an organization regarding different aspects of a project. For example, they may talk with maintenance staff for an compressor installation where existing equipment is inadequate, and talk with the business's engineers to discuss energy savings and payback. Staff also work closely with trade allies who serve their segments to obtain leads and to take advantage of the insights the trade allies can provide about businesses' needs and abilities to undertake a project.

As with marketing to end-use customers, implementation staff tailor their marketing efforts to complement the involvement of trade allies in a given project. For example, a contact reported greater reliance on trade-ally marketing and project management for smaller projects with prescriptive measures than for larger projects. On the other hand, another contact reported a "very large project that came in through a trade ally." For that project, that contact assumed a supporting role for the project while the trade ally managed the project.

Marketing by Trade Allies

The extent of program marketing by trade allies "varies greatly" among the trade allies according to implementation staff. One contact reported, "Trade allies are somewhat ambivalent about the program. They recommend it because it's there, or to up-sell, but the program isn't keeping them in business." Reports by trade allies, described in the following chapter, confirm the staff assessment of the modest role the program plays in trade allies' overall business.

Business development staff also noted that program marketing – or more accurately in the case of trade allies, the use of the program to market their products and services – varies by type of trade ally. For example, staff reported lighting trade allies market the program "to a much greater extent" than do other types of trade allies. Staff also reported there is a greater tendency among "insulation contractors to use the program as a sales tool to sell higher value insulation," and for vendors of radiant heat to promote the program "because radiant heat is so expensive."

In any case, staff believe trade ally marketing is important. As one contact said, "To succeed, the program has to use this dual approach [marketing through both implementation staff and trade allies]. Relying on either trade allies or staff alone limits participation."

Program Market Penetration and Barriers

Implementation staff reported that the healthcare and schools (K-12) segments have the greatest awareness of, and participation in, the program. In conversions to energy efficient lighting, the grocery segment has also been well penetrated according to implementation staff. Retirement communities and auto dealerships (not high-priority segments) are reportedly among the segments least familiar with the program.

Staff also reported barriers that make it more difficult to reach certain segments. For example, persuading prospects in the office segment to undertake energy efficiency projects faces the hurdle of split incentives. That is, office-building tenants have little interest in making long-term improvements to the building or its equipment, rather than owners who themselves have no responsibility for paying the building's utility bills.

Efficiency projects in schools face the hurdle of a shortage of funds for maintenance and upgrades. Staff also reported confusion in that segment about the interplay and use of SB 1149 School Program funds and Energy Trust incentives for projects. Schools are required first to use SB1149 funds, which are managed through the Oregon Department of Energy (ODOE), for equipment and facility improvements. Working together, Energy Trust and ODOE have identified process barriers that have effectively limited the potential for the Existing Buildings Program to penetrate the schools segment and are holding discussions to streamline the process.

A hurdle reported for higher education (also not a high-priority segment) is that some "larger state campuses are self-direct customers." Staff reported, "On a given campus, some buildings can be on an industrial rate schedule [self-directed], while other buildings aren't." For the

healthcare segment, the economy was cited as an unknown, and therefore, as a prospective barrier to energy efficiency projects.

Coordination with NEEA

Implementation staff coordination with the activities of the Northwest Energy Efficiency Alliance (NEEA) has occurred recently only in the healthcare segment. Although the Existing Buildings Program "does not currently embrace maintenance issues," staff described "building a joint partnership with NEEA's BetterBricks program to address operations and maintenance for healthcare." For such healthcare projects, NEEA will allocate resources to perform measurement and verification, and the Existing Buildings Program will implement the projects in the organizations. According to staff, "The hospital will get more robust documentation and a more robust realization rate as a result of this combined approach."

Staff also described another promising area in which the Existing Buildings Program and NEEA can work together on projects in other segments. That area is retro-commissioning. As envisioned, NEEA will provide project guidelines, the Existing Buildings Program will implement projects, and NEEA will measure project savings and provide post-project training to sustain the savings.

One particular initiative adopted by NEEA, strategic energy management planning, has not yet been widely incorporated into the Existing Buildings Program. In 2009, the program began to promote this idea to prospective participants, and at least with the government segment, strategic energy management planning is "a big part of the discussions." To encourage businesses' use of strategic energy management planning, a protocol for tuning up rooftop units has been adopted, development of benchmarking software and development of protocols for monitoring and for ongoing maintenance are underway, and the program is looking at ways to understand the nuances of identifying energy savings from behavioral changes.

However, businesses with whom implementation staff have discussed strategic energy management planning have had limited receptiveness to the concept.. Staff contacts reported a number of specific hurdles to the adoption of strategic energy management planning, including:

- "Most facility managers haven't been taught about this, and their boss, who sits in a different office, telling them to do it isn't enough."
- "Funding and upper management buy-in are difficult."
- "Green teams have great intentions but aren't necessarily empowered to make decisions."
- "It's not part of the customers' business culture."
- "Clients don't use this terminology."

Other reported impediments to greater diffusion of the concept include the absence of incentives for such planning and the absence of strategic energy management planning from staff job descriptions. These comments are substantiated by findings from participant interviews, in which few respondents reported taking a strategic approach to energy management. If Energy Trust believes strategic energy management planning is an important avenue to greater savings, then it may be necessary for the program to investigate ways to achieve more substantive contact with top decision makers to convey the value of this approach and to support its implementation.

3 TRADE ALLIES AND DISTRIBUTORS

This chapter describes the program-related experiences of a sample of 26 trade allies active with the Existing Buildings Program during 2009 and four equipment distributors serving the commercial market in Oregon. We obtained the trade ally information through interviews with representatives of the trade ally organizations that were most active in the program, as those were most likely to have a broad base of experience upon which to draw to answer our questions. The goal was not to conduct a random sample of trade allies; therefore, estimation of confidence and precision is not appropriate. The equipment distributors we interviewed were drawn from a list of distributors mentioned by program staff and trade allies. Copies of the interview guides are included in Appendix B.

METHODS

Trade Allies

The sampling objective for the survey of trade allies was to speak to representatives of the most active trade ally organizations distributed across the program's seven key market segments.

From a list of all 2009 projects supplied by Energy Trust, we identified a list of all unique vendor organizations together with the number of Existing Buildings projects in each high-priority segment that each one had carried out in 2009. This allowed us to create a matrix showing the 10 most active trade ally organizations by each market segment. We identified a minimum of seven and a maximum of 14 such organizations for each segment. Some organizations were active in multiple segments.

To assure representation from each of seven segments that were the focus of this evaluation, we set interview quotas in each target segment. The quotas were three interviews each for the restaurant, grocery, lodging, hospital, and school K-12 segments; quotas for the retail and office segments were five interviews each, reflecting those segments' greater share of program participation and of the overall market.

All quotas were met (Table 3.1). However, one of the five interviews with contacts representing the office building segment was interrupted near the end of the interview by a dropped cell phone connection. We were unable to re-establish contact with that trade ally during the interview period.

Table 3.1: Trade Ally Interviews by Segment

SEGMENT	ACTIVE TAS IDENTIFIED	QUOTA	COMPLETE	PARTIAL	TOTAL
Retail	11	5	5	0	5
Office	13	5	4	1	5
Restaurant	9	3	3	1	4
Grocery	10	3	3	0	3
Hospital	7	3	3	0	3
Lodging	12	3	3	0	3
School	14	3	3	0	3
All Segments	49[a]	25	24	2	26

[a] Some TAs were active in multiple segments; therefore the number of active TAs in each segment do not sum to the total number of active TAs.

Within each segment, we randomly ordered the active trade allies and placed calls through each list until we either met the quota for a given segment or recorded a final disposition for each organization. Table 3.2 shows the final dispositions for call attempts.

Table 3.2: Final Dispositions for Trade Ally Interviews

DISPOSITION		RESPONDENTS
ELIGIBLE		
Complete	**Complete**	24
	Partial	2
Contacted	**Quota Met Before Call Returned**	15
	Refused	2
Subtotal		43
NOT ELIGIBLE		
Disconnected or Wrong Number		4
Duplicate		1
Business or Contact No Longer Available		1
Missing Contact Information		1
No Answer		1
Subtotal		8
Total		51

In addition to the interviews with these trade allies, we attempted to interview six equipment distributors. We were able to interview four of them during the survey period. We had identified three of these four distributor contacts as HVAC equipment distributors and the remaining one as a lighting-equipment distributor. However, one interviewed HVAC distributor had discontinued selling HVAC equipment in 2008. The responses of the three other interviewed distributors (two HVAC and one lighting) are interspersed at appropriate points throughout this chapter.

About two fifths (11 of 26, 42%) of the interviewed trade allies serve only one of the seven high-priority market segments. The other contacts serve from two to five of the seven segments. The most frequently mentioned segment served by the trade allies was K-12 schools. About two fifths (42%) of the interviewed trade allies reported they work with that market segment. The next most frequently mentioned segment was lodging served by roughly one third (31%) of the trade allies. Grocery stores were served by the fewest of these trade allies (Table 3.3).

Table 3.3: Segments in which Interviewed Trade Allies Work (Multiple Responses Allowed)

SEGMENT	COUNT	PERCENT
Schools	11	42%
Lodging	8	31%
Offices	7	27%
Restaurants	7	27%
Retail	7	27%
Hospitals	6	23%
Grocery	5	19%
All Segments	26	100%

Distributors

We obtained the names of distributors active in the Oregon commercial market from program staff, trade allies, and some representatives of industry organizations. From the information those sources provided, we identified the market segment that each distributor serves. We checked the resulting list of distributors against the list of Existing Buildings trade allies and eliminated those that were listed as trade allies. Doing so allowed us to focus our conversations with companies that do mainly wholesale work.

We then sorted the remaining distributors by the number of segments they work with and attempted to conduct interviews with up to five distributors, with the goal of covering the complete range of target segments. We were able to complete interviews with four distributors, covering all seven target segments.

Of the four distributor representatives we spoke with, three indicated that they were already quite familiar with Energy Trust and the other said he knew something about Energy Trust. Three reported that 98% to 100% of their business is wholesale, and the fourth put that percentage at 85%. Three of the four distributors sell HVAC equipment, two each sell refrigeration and lighting (one of whom sold only lighting), and one each sells plumbing, motors and controls, and variable frequency drives.

TRADE ALLIES' PROGRAM ACTIVITIES

Energy Trust Market Penetration

As described in the section on program and implementation staff experiences, program marketing by trade allies varies considerably. This is consistent with trade allies' reports: most of the work done by the interviewed trade allies consists of projects that do not go through Energy Trust. More than one-half (54%) of the trade allies reported their Energy Trust work is one-fifth or less of their total business (Table 3.4). Of the six trade allies with the largest portions of Energy Trust work (more than 40% of their projects) five were electrical or lighting contractors.

Table 3.4: Energy Trust Projects as a Portion of Trade Allies' Work

EXISTING BUILDINGS PORTION	COUNT	PERCENT
1% through 20%	14	54%
21% through 40%	6	23%
41% through 60%	2	8%
61% through 80%	2	8%
81% through 99%	1	4%
100%	1	4%
Total	26	100%

The trade allies reported that few of their customers ask about incentive programs for commercial buildings. Roughly three-quarters (73%) of the trade allies reported one-fifth or less of their customers make such inquiries (Table 3.5). Anecdotally, some contacts suggested one reason few customers ask about the program is that the contacts themselves take the initiative in bringing the program to their customers' attention.

Table 3.5: Portion of Trade Allies' Customers Who Ask about Existing Buildings Program

PORTION OF CUSTOMERS	COUNT	PERCENT
None	4	15%
1% through 20%	15	58%
21% through 40%	2	8%
41% through 60%	3	12%
61% through 80%	1	4%
81% through 99%	0	0%
100%	0	0%
Don't Know/Refused	1	4%
Total	26	100%

We asked trade allies which of the segments they serve represented Energy Trust's greatest penetration. The specific question was: "Of the market segments in which you work, for which ones would you say Energy Trust has reached the greatest percentage of businesses?" We did not ask respondents to rank all of their market segments in order of program penetration – just to name one or more that had the greatest penetration. It is difficult to draw strong conclusions from their responses, given that only 14 contacts reported working in multiple segments, the combinations of market segments varied among respondents, and three of the 14 could not answer.

Nevertheless, we were able to obtain some suggestive results from examining the pattern of all segment-by-segment comparisons found in the responses. Each of the 11 contacts who reported working in multiple segments and could answer the question identified a single segment with the greatest penetration. Two of those contacts reported working in four segments, yielding three comparisons for each contact (i.e., the segment with greatest penetration compared to each of the other three segments, for each of those contacts). One contact reported three segments, yielding two comparisons. Finally, eight contacts each reported two segments; each of those contacts therefore produced a single comparison.

The 11 contacts thus produced a total of 16 paired comparisons. The results of those comparisons are summarized in Table 3.7. Overall, the restaurant segment had the highest percentage of comparisons showing greater perceived program penetration, followed by office, grocery, lodging, school, and hospital. (The two respondents that reported working both in retail and at least one other segment could not say which segment showed greater program penetration.)

Table 3.6: Perceived Program Penetration: Comparison among Segments

SEGMENT	NUMBER OF COMPARISONS	COMPARISONS SHOWING GREATER PENETRATION		GREATER PENETRATION COMPARED TO	LESS PENETRATION COMPARED TO
		COUNT	PERCENT		
Restaurant	6	5	83%	School, Lodging, Hospitals	Grocery
Office	4	3	75%	Hospital, School	School
Grocery	6	4	67%	Lodging, Restaurant, School	School
Lodging	4	1	25%	School	Grocery, Restaurant
School	10	3	30%	Grocery, Office	Restaurant, Office, Grocery, Lodging
Hospital	2	0	0%	-	Restaurant, Office

The pattern of head-to-head comparisons is generally consistent with the overall rankings of segments shown in the above table. Of 16 comparisons, there were only five in which perceived program penetration in some segment was judged to be greater than in another segment listed higher in the table (grocery showed higher penetration than restaurant once, schools higher than grocery twice and higher than office once, and lodging higher than schools once).

Some head-to-head comparisons appeared inconsistent with the overall results, however. In three direct comparisons, the program was judged to have greater penetration into the restaurant segment than the school segment and in two comparisons, it had greater penetration into the school segment than the grocery segment; but in the only direct comparison between the grocery and restaurant segments, the program had greater penetration into the grocery segment (whereas the preceding results suggest it should have had greater penetration in the restaurant than grocery segment). This may suggest somewhat greater relative penetration into the grocery segment than suggested by the rankings shown in the above table.

Generally, then, the feedback from trade allies suggests greatest perceived program penetration into the restaurant, office, and grocery segments and poorest penetration into the lodging, school, and hospital segments. These results provide no information on penetration into the retail segment.

Level of Customer Program Interest by Segment

Similarly, we asked trade allies which of their targeted segment customers are most likely to ask about the Existing Buildings program. The considerations that made it difficult to draw strong conclusions about perceived program penetration are relevant here as well. Again, however, some results are suggestive. While there are similarities to the results regarding perceived penetration, there are differences as well.

Again, 16 direct comparisons can be made between pairs of segments. However, two contacts who reporting serving two segments each reported equal levels of program interest in the two segments (schools and restaurants; schools and office). Of the remaining 14 comparisons, restaurant customers were most likely to have asked about the program in comparison with other segments, followed by office and retail, hospital and school, and finally grocery and lodging (Table 3.7).

Table 3.7: Customers Inquiries about the Program: Comparison among Segments

SEGMENT	NUMBER OF COMPARISONS	COMPARISONS SHOWING GREATER OR EQUAL PROGRAM INTEREST		GREATER OR EQUAL PROGRAM INTEREST COMPARED TO	LESS PROGRAM INTEREST COMPARED TO
		COUNT	PERCENT		
Restaurant	8	7	88%	School, Lodging, Hospitals, Grocery	Retail
Retail	3	2	67%	Restaurant, Grocery	Hospital
Office	2	1	50%	School	Hospital
Hospital	4	2	50%	Office, Retail	Restaurant, School
School	6	2	33%	Hospital, Lodging	Restaurant, Office
Grocery	2	0	0%	-	Restaurant, Retail
Lodging	2	0	0%	-	Restaurant, School

Again, the pattern of head-to-head comparisons is generally consistent with the overall rank order of segments, particularly among the restaurant, office, school, and lodging segments. Restaurant customers were almost always deemed to be more inquisitive about the program than school, grocery, or lodging customers. In two comparisons, office customers were more likely or equally likely to ask about the program, compared to school customers. School customers were judged more inquisitive than those in the lodging segment in one direct comparison.

Some comparisons offer a more nuanced view, however. Although the restaurant segment generally appeared to represent a higher level of program interest than the retail segment, retail customers were judged to be more likely than restaurant customers to ask about the program in the only head-to-head comparison between those two segments. Moreover, hospital customers were judged more inquisitive than retail and office customers in two comparisons, and customers from those two segments were believed to be more interested in the program than those from restaurants and school; however, restaurant and school customers were judged more inquisitive about the program than hospital customers.

In general, the comparisons – limited as they are in number – suggest that the greatest level of program interest lies in the restaurant, retail, and office segments; the lowest level of interest lies

in the grocery and lodging segments; and hospital and school segments represent intermediate or mixed levels of interest.

CUSTOMERS' AWARENESS OF ENERGY EFFICIENCY

Recent Changes in Energy Efficiency Awareness

We asked respondents if they had noticed any changes in the past couple of years in customer awareness of energy efficiency or in their demand for energy efficient equipment. A large majority of the trade allies (22 of 26, 85%) reported that their customers' awareness of energy efficiency had increased during the past two years. We asked those respondents to describe how that increased awareness or demand had been demonstrated by customers.

The largest group of responses did not elaborate beyond a general assertion of greater demand for energy efficiency or interest in energy efficient equipment. Economic concerns and a greater demand for incentives to offset the costs of efficient equipment were the next most frequently mentioned experiences suggesting greater energy efficiency awareness or demand (Table 3.8).

Table 3.8: Indicators of Increased Customer Awareness of Energy Efficiency

INDICATOR	COUNT	PERCENT (N=22)
Greater Demand/Interest in Efficient Equipment	10	45%
Greater Economic Concerns	4	18%
Greater Demand for Incentives	4	18%
Greater Interest in Being Green	3	14%
Greater Understanding of "Payback"	1	5%
Interest in Solar Energy	1	5%

The interviewed equipment distributors echoed the trade allies' reports of increased energy efficiency awareness among their customers. All four respondents said that there was more current demand for energy efficient equipment than in previous years – one pegging the increase at 30% compared to five years previous – and two explicitly mentioned greater demand for renewable technology. One of those respondents indicated that the increase in demand for energy efficiency has been coincident with an overall decline in construction and equipment replacement. Keeping in mind the trade allies themselves are the distributors' customers, these responses are not surprising.

As with their responses about the program's penetration of the seven high-priority segments, the trade allies' assessments of which segments are most aware of energy efficiency are not definitive, but they are suggestive. In this case, there were 16 pairs of segments served by the

same trade ally, in each of which one segment was identified as having the greatest energy efficiency awareness. (In addition, one contact served two segments – office and schools – and another served three segments – office, schools, and grocery – that they identified as having equal levels of awareness.)

Schools appear to be among the entity types with the highest level of energy efficiency awareness in the high-priority segments. Of the 16 "unequal" comparisons, nine involved schools. In eight of those comparisons (89%), school customers were judged to be more aware of energy efficiency than those in the grocery, lodging, restaurants, hospital, and office segments. Retail was the only other segment where the majority of comparisons with other segments showed greater energy efficiency awareness (Table 3.9).

Table 3.9: Awareness of Energy Efficiency: Comparison among Segments

SEGMENT	NUMBER OF COMPARISONS	COMPARISONS SHOWING GREATER ENERGY EFFICIENCY AWARENESS		GREATER AWARENESS COMPARED TO	LESS AWARENESS COMPARED TO
		COUNT	PERCENT		
School	9	8	89%	Grocery, Hospital, Lodging, Office, Restaurant	Restaurant
Retail	3	2	67%	Grocery, Restaurant	Hospital
Restaurant	6	3	50%	Hospital, Lodging, School	School, Retail
Hospital	4	2	50%	Office, Retail	School, Restaurant
Lodging	4	1	25%	Grocery	School, Restaurant
Office	2	0	0%	-	School, Hospital
Grocery	4	0	0%	-	School, Retail, Lodging

The high number of comparisons involving schools reflects the higher number of contacts who work with them. As described earlier, more contacts reported working with schools than with any other segment, with almost twice as many contacts reporting working with schools than with hospitals. Nevertheless, school customers consistently were judged to have greater energy efficiency awareness than those in several other segments.

The grocery, office, and lodging segments were judged to represent the lowest levels of energy efficiency awareness – between those three segments, only one of 10 comparisons was favorable,

and in that one comparison, lodging was judged to have higher energy efficiency awareness than grocery. All three of those segments were judged to have less awareness than the school segment.

The interviewed trade allies offered evidence of various segments' greater awareness of energy efficiency:

- **For schools**, contacts commented on the employment of professional facility managers and design consultants and their interest in building-management systems, efficient furnaces, and SEER ratings for air conditioning units as well as the funding availability for efficiency upgrades in schools. One contact reported that the "economic recovery" act pays 100% of the cost of the repair or replacement of energy-saving equipment, and another reported schools' greater energy efficiency awareness is "because of the SB 1149 Schools Program."

- **For hospitals**, one contact reported, "[energy efficiency] always comes up, and they always want the most efficient thing they can afford. As evidence of hospitals' greater awareness of energy efficiency, contacts also reported doing "a lot of controls upgrades" and installations of variable frequency drives for hospital customers. To describe the kinds of energy efficient equipment in which his hospital customers are interested, one contact reported they "ask about almost everything."

- **For lodging**, a contact mentioned most of his lodging customers "have already started to change to CFLs."

- **For restaurants**, the availability of Energy Star appliances over the last five years, and Energy Trust's work in this segment were mentioned.

- **For retail**, customers' interest in "what they have to do to qualify for incentives."

Distributors noted that energy-efficient equipment in greater demand by their customers includes high-efficiency heat pumps (15 SEER), ductless heat pumps, high-efficiency gas furnaces, and LED lighting, even though "it's still not very cost-effective." One HVAC distributor offered some interesting insights about the increased interest in energy-efficient equipment. That contact suggested recent (2009) large percentage increases in purchases of certain equipment (high-efficiency heat pumps and gas furnaces) reflect in part, the decline in new construction, "which uses entry-level gear." Energy Trust incentives were also credited with spurring the percentage increases in sales of high-efficiency equipment. However, that contact also reported the volume of sales of high-efficiency air conditioning units (above 13 SEER) has not changed during the last three years.

TRADE ALLIES' MARKETING OF ENERGY EFFICIENT EQUIPMENT

As noted previously, most of the work done by the interviewed trade allies was not supported by Energy Trust incentives. To shed light on this, we asked trade allies about customer specification

of energy efficient equipment and how they marketed efficient equipment to those who did not specify it.

Customer Specification of Energy Efficient Equipment

Relatively few of the trade allies' customers specify energy efficient equipment. About one-half (46%) of the contacts reported that one-fifth or fewer of their customers specify energy efficient equipment, with half of these contacts (roughly one-quarter of the sample) reporting no customers specified energy efficient equipment during the past year (Table 3.10).

Table 3.10: Portion of Customers Who Specify Energy Efficient Equipment

PORTION OF CUSTOMERS	COUNT	PERCENT
None	6	23%
1% through 20%	6	23%
21% through 40%	2	8%
41% through 60%	1	4%
61% through 80%	1	4%
81% through 99%	1	4%
100%	4	15%
Don't Know, Not Applicable, Refused	5	19%
Total	26	100%

Because of the relatively low number of trade allies in each segment and the fact that some trade allies work in multiple segments, it is difficult to get a clear picture of how much the level of customer specification of efficient equipment might vary among segments. To simplify this question, we simply looked at the percentage of trade allies serving each segment (range is three to 11) who said that one-fifth or fewer of their customers specified energy efficient equipment.

Across segments, the percentage of respondents said that one-fifth or fewer of their customers specify energy efficient equipment ranged from 33% to 60%. There was no apparent relationship between the percentage saying few customers specify energy efficient equipment, from this analysis, and the trade allies' judgments about either the relative level of energy efficiency awareness or the relative level of interest in the Existing Buildings program among segments, discussed above.

Trade Ally Recommendations of Energy Efficient Equipment

Of the 22 trade allies who reported that their customers who do not always specify energy efficient equipment, 20 (91%) talk to their customers about the Existing Buildings program as a

way to persuade them to purchase energy efficient equipment and 13 (59%) reported they always recommend equipment that qualifies for an Energy Trust incentive for such customers (Table 3.11). The 20 contacts who talk about the program incorporate descriptions of payback, including reduced first costs (incentives and tax credits) and reduced life-cycle costs (energy and maintenance savings) into their discussions. Two of the trade allies reported they never recommend Energy Trust qualifying equipment to their customers who do not specify energy efficient equipment.

Table 3.11: Portion of Projects for which Trade Allies Recommend Energy Trust Qualifying Equipment

PORTION OF PROJECTS FOR WHICH QUALIFYING EQUIPMENT RECOMMENDED	COUNT	PERCENT
None	2	9%
1% through 20%	0	0%
21% through 40%	1	5%
41% through 60%	2	9%
61% through 80%	1	5%
81% through 99%	2	9%
100%	13	59%
Don't Know/Not Asked/Refused	1	5%
Total [a]	22	100%

[a] The four contacts whose customers always include energy efficient equipment in their projects were not asked this question.

Customer Response to Attempts to Up-Sell Them to Energy Efficient Equipment

The 20 contacts who attempt to up-sell energy efficient equipment reported wide variation in their customers' responses to their efforts. Customers' responses range from "99% acceptance of the recommendations" for efficient equipment to "90% of the owners won't go for it" if efficient equipment cannot be installed for the same price as the least expensive, otherwise serviceable equipment.

Nine of the 17 contacts who described customer responses indicated that most of them accept their recommendations; the majority of those nine indicated that the acceptance was fairly easy, although a few that it might take some effort. Three respondents said that most customers responded negatively to the up-sell effort. We do not know what approach or terminology these trade allies used in attempting to convince customers to purchase more energy efficient equipment – it is possible that the customers were reacting negatively to the approach or simply to the idea of purchasing any equipment with a higher up-front cost. This may be worth pursuing in further research with trade allies and program participants and non-participants.

In any case, many contacts reported that concerns about cost are common among their customers. Three said that the up-sell was easy if the money was available, two specifically referred to the current poor economy, and one, who otherwise indicated generally good acceptance, went on to state that the only difficult thing is overcoming the resistance to the initial cash outlay. As one contact reported, "Customer response [to his efforts to up-sell them to energy efficient equipment] is very, very good, but it still comes down to whether they have the money."

Eight contacts reported their customers' economic concerns often cannot be overcome, with two contacts reporting they do not try to overcome these concerns. Contacts reported two other situations that also limit their ability to sell energy efficient equipment. These situations are architects' specifications and customer loyalty to a particular brand of equipment, reported once each. Both of these reports were from contacts who serve the retail segment, although one of them also serves the office segment.

Consistent with the earlier discussion of the relative level of energy efficiency awareness among the seven market segments, four of the 14 trade allies who work with more than one segment reported schools are more likely to be responsive to efforts to up-sell them to energy efficient equipment. Each of these four contacts reported working with one other segment: lodging, hospitals, restaurants, and grocery stores, respectively.

A contact who works with the lodging industry and grocery stores reported the lodging industry is "much more open to discussing energy savings." Another contact, a lighting trade ally who works with the lodging, schools, grocery, and restaurant segments, suggested restaurants are the least likely customers to be up-sold, at least regarding lighting, because they are "usually using incandescent and want true color." Otherwise, the contacts reported no differences between the segments regarding their responses to the contacts' efforts to up-sell customers to energy efficient equipment.

Submission of Incentive Applications

The trade allies reported applications for Energy Trust incentives are submitted for most of their customers' projects that are eligible for such incentives. Most (14 of 26, 54%) of the trade allies reported applications are always submitted for their customers' eligible projects (Table 3.12). Because of the low level of variability in the percentage of applications submitted for eligible projects, the data are inconclusive regarding which segments are most or least likely to apply for incentives.

Table 3.12: Portion of Projects for which Eligible Customers Applied for an Incentive

PORTION OF ELIGIBLE PROJECTS WITH INCENTIVE APPLICATIONS	COUNT	PERCENT
None	0	0%
1% through 20%	0	0%

PORTION OF ELIGIBLE PROJECTS WITH INCENTIVE APPLICATIONS	COUNT	PERCENT
21% through 40%	1	4%
41% through 60%	0	0%
61% through 80%	0	0%
81% through 99%	7	27%
100%	14	54%
Don't Know/Not Asked/Refused	4	15%
Total	26	100%

Trade Ally Recommendations of Non-Qualifying Equipment

About one-half (14 of 26, 54%) of the contacts said that they occasionally recommend equipment to their customers that does not qualify for Energy Trust incentives (Table 3.13). These occasions typically reflect exigent circumstances or practical realities of the related projects. The 14 trade allies who reported recommending equipment that is ineligible for incentives work roughly equally in all of the seven market segments on which this evaluation focused.

Table 3.13: Portion of Projects for which Trade Allies Recommended Non-qualifying Equipment

PORTION OF PROJECTS FOR WHICH NON-QUALIFYING EQUIPMENT RECOMMENDED	COUNT	PERCENT (N=26)
None	10	38%
1% through 20%	10	38%
21% through 40%	3	12%
41% through 60%	1	4%
61% through 80%	0	0%
81% through 99%	0	0%
100%	0	0%
Don't Know/Not Asked/Refused	2	8%

Heating and cooling equipment was the most frequently mentioned type of non-qualifying equipment recommended by these contacts, mentioned by 14 contacts. Five contacts reported instances in which they have recommended ineligible lighting equipment. Other non-qualifying equipment recommended by the contacts included ice machines, and unspecified restaurant equipment.

We distinguished two categories of circumstances in which the contacts recommended non-qualifying equipment for their customers' projects: 1) the customers' "best interests"; and 2) inherent project limitations.

Customers' "best interests" included achieving greater energy efficiency than could be obtained with equipment that qualified for an Energy Trust incentive. This was mentioned for both heating and cooling and lighting equipment. Specifically, one contact has recommended non-qualifying inverter-compressor (variable speed drive) heat pumps because of their greater efficiency. Three contacts mentioned recommending light emitting diode (LED) lighting for customers' projects even though, according to one contact, "rebates for them are very limited." All three of these contacts expressed dissatisfaction with the limited availability of rebates for LEDs.

Customers' "best interests" relative to heating and cooling equipment also included local climatic conditions as well as considerations of the need for structural upgrades to accommodate higher efficiency equipment. One contact does not recommend heat pumps "in extremely cold climatic conditions such as in eastern Oregon." Another contact reported that the larger footprint (greater weight) of higher efficiency rooftop units sometimes makes it impossible to sell the most efficient unit without structural upgrades. According to that contact, "This comes up often."

Two other contacts described situations in which they believed it was in their customers' best interest not to recommend eligible lighting equipment. These situations included times when energy efficient fixtures would result in inadequate lighting ("usually outside fixtures"), mentioned twice, and the use of motion sensors in high traffic locations, mentioned once.

Regarding other ineligible equipment these contacts recommend to their customers, one contact reported, "There are applications where a customer may need more ice from an ice machine than the energy efficient version can provide."

Some of the above reasons given for recommending non-qualifying equipment – for example, beliefs that certain equipment types (such as LEDs) do not qualify for Energy Trust incentives, that energy efficient rooftop HVAC units weigh more than standard equipment, that efficient outdoor lamps provide inadequate lighting, or that efficient ice machines produce less ice than standard types – may reflect contractor misinformation or misunderstanding. In addition, the fact that fact that heat pumps are not recommended in extremely cold conditions should not prevent a contractor from recommending other types of qualifying heating equipment. It may be useful for Energy Trust and the PMC to investigate the reasonableness of some of these objections and attempt to develop responses to them.

There were eight mentions of inherent project limitations that prompted contacts to recommend non-qualifying equipment: two contacts each mentioned customers' budget limitations, architects' specifications, and situations where the needed for an immediate solution did not allow time to comply with Energy Trust's incentive requirements; one contact each mentioned customer specifications for a particular brand of equipment and unspecified engineering requirements.

Availability of Qualifying Equipment

Most of the contacted trade allies typically have little difficulty obtaining energy efficient equipment. During the preceding year, roughly three-fifths (15 of 26, 58%) of them did not have to go to special effort to obtain any of the equipment they sold that qualified for an Energy Trust incentive. However, 10 other contacts (38%) sometimes found qualifying equipment not to be readily available for a portion of the projects for which they sold equipment during the previous year (Table 3.14). Three of those ten contacts had sometimes not included qualifying equipment in their projects for that reason. Non-qualifying equipment included in projects because energy efficient equipment was not readily available included HVAC and lighting equipment for projects in the hospital, lodging, and retail segments.

Table 3.14: Portion of Projects for which Special Effort Required to Obtain Qualifying Equipment

PORTION OF PROJECTS FOR WHICH QUALIFYING EQUIPMENT NOT READILY AVAILABLE	COUNT	PERCENT
None	15	58%
1% through 20%	9	35%
21% through 40%	0	0%
41% through 60%	1	4%
61% through 80%	0	0%
81% through 99%	0	0%
100%	0	0%
Don't Know/Not Asked/Refused	1	4%
Total	26	100%

About one-quarter (7 of 26, 27%) of the trade allies we interviewed reported that certain energy efficient equipment has become more readily available during the past two years. Three of these contacts specified LED lighting. Two contacts mentioned heating and cooling equipment. These contacts also mentioned "certain ballasts" and on-demand water heaters once each.

Again echoing these trade allies, the distributors unanimously reported they have experienced no difficulty obtaining any types of energy-efficient equipment from manufacturers. However, there were reports of difficulty selling high-efficiency equipment simply because it is more expensive.

Desired Incentive Changes

Roughly two-thirds (18 of 26, 69%) of the contacts expressed a desire for additional incentives to help them to sell energy efficient equipment. Most frequently suggested were incentives for LED lighting (four contacts), including "all PAR series" LEDs. Other types of lighting suggested for

incentives were eight-foot T8s, high-intensity-discharge lighting, and induction lighting, especially for lodging facilities, mentioned once each. Two additional lighting incentives were suggested for situations in which "adequate lighting" replaces inadequate or inappropriate lighting. One suggestion was for incentives for de-lamping over lit-spaces. The other suggestion was that incentive calculations for retrofitting inadequately lit spaces should be based upon the energy savings that would have been achieved if the space had been adequately lit with the pre-existing lighting equipment.

Regarding heating and cooling equipment, incentives were suggested for inverter driven heat pumps, demand-control ventilation, air conditioning units smaller than six-ton, and for energy-management systems.

Two suggestions for incentives for commercial cooking equipment were also offered: 1) incentives for "combi ovens," combination steam and convection ovens used by larger restaurants and by hospital and school kitchens, and 2) incentives for gas ranges. Other suggested incentives, mentioned once each, were prescriptive incentives for variable frequency drives (VFDs), and incentives for ENERGY STAR televisions, fuel switching, pipe wrapping, and six-mil vapor barriers. Another contact reported, "There are more than 100,000 items in the [restaurant] industry. There is probably some refrigeration that should receive incentives, and some refrigeration that shouldn't be receiving incentives." Finally, three contacts simply suggested larger incentives.

Many of the measures they mentioned – all of the lighting measures, demand-control ventilation, energy management systems, and VFDs – already are covered, in some cases only through custom incentives. This suggests that some trade allies are not aware of the flexibility the program offers.

However, the program does not yet cover some of the equipment types that were mentioned: HVAC units smaller than six tons, combi ovens, gas ranges, and six-mil vapor barriers. Program staff reported that prescriptive incentives for combi ovens are in development but have not been found to be cost effective. No reasons were given for why the other mentioned equipment types are not covered.

Other Desired Program Changes

Most of the contacts (17 of 25, 68%) also had suggestions for other services or program changes that would help them to sell more energy efficient equipment.

Two suggestions relating to marketing assistance each were made by two respondents:

- Customer referrals or job leads (two mentions).
- Promotional brochures, perhaps customizable, for the contacts to give to their customers (two mentions).

Five suggestions related to program processes:

- Faster payment of incentives ("six to eight weeks is too long").
- Shorter turnaround time for projects ("not more than two weeks").
- Expanded time for completing projects that are pursuing "enhanced incentives."
- Electronic forms that can be emailed to customers.
- Disqualification of mechanical contractors from eligibility to do audits to avoid conflicts of interest.

Five suggestions were directed to program outreach and communication:

- More frequent (bi-monthly) communication with trade allies that specifically describes currently qualifying equipment.
- Direct communication, about the program, by program staff with trade allies' customers.
- A more user-friendly website.
- Friendlier staff responding to telephone calls.
- More program staff to do more outreach.

Four suggestions were made regarding tools and training:

- A more compelling, graphic presentation of the energy analysis results of customers' facilities than engineers' spreadsheets provide.
- Trade ally training or case studies focused on retirement centers.
- More timely spreadsheet changes from program year to program year so such changes are known and given to trade allies before the first of the year.
- A start-to-finish flow chart of program steps and responsibilities.

Finally, one suggestion related to a new customer service:

- An equipment tune-up and maintenance program to help customers understand the value of energy efficiency.

Renewable Technologies

After a portion of the trade-ally interviews had been completed, we added questions about renewable technologies to the survey. Eleven contacts were asked these questions. Of these 11

contacts, three reported receiving information on renewable technologies through the Existing Buildings program. None of those three contacts desired additional information on that topic from the program. However, three other contacts variously expressed desires for information about photovoltaic generation, solar water heating, and wind power. Six of these 11 contacts reported renewable technologies do not "pertain to what we sell" or are not their "niche," including one of the three contacts who reported receiving information on renewable technologies.

Renewable technology equipment comprises only negligible amounts, if that, of the sales of the interviewed distributors.

BARRIERS

Among the barriers preventing the trade allies' customers from doing more energy efficiency upgrades than they currently do, the contacts most frequently mentioned their customers' funding limitations or the cost of the equipment. More than one half (56%) reported one of those two intertwined circumstances. Next most frequently mentioned was a related barrier, the state of the economy (Table 3.15).

Table 3.15: Barriers to Purchases of Energy Efficient Equipment

BARRIER		COUNT	PERCENT (N=25)
Funding/Cost of Equipment		14	56%
The Economy		5	20%
Lack of Customer Knowledge	**Of Efficient Equipment**	2	8%
	Of the Program	2	8%
	Of Prospective Savings	2	8%
Other		5	20%

Other barriers mentioned once each by the contacts included:

- A mindset to look only at first costs.
- Split incentives (customers are building tenants not owners).
- Customer inertia.
- Inadequately trained building managers.
- The trade ally's time.

The trade ally who mentioned his time as a barrier elaborated, “At least 95% of my recommendations have been implemented.”

The trade ally who reported inadequately trained building staff as a barrier referred to building management staff, not operations and maintenance staff. Considering this barrier along with the other barriers categorized as lack of customer knowledge, lack of customer knowledge of some aspect of the program or equipment was the second most frequently mentioned barrier to increased energy efficiency activities (7 of 25, 28%).

One-third (8 of 24, 33%) of the contacts suggested solutions to overcome the barriers that comprise the general barrier of lack of customer knowledge. In addition to general suggestions for more advertising, marketing, or education, contacts offered more specific approaches including direct mail to end-use customers (two mentions), more staff “boots on the ground” to increase “door-to-door contact” (one mention), and a monthly staff presence in the contact’s store to talk to end-use customers about the program (one mention).

Seven contacts (29%) suggested approaches to overcome the barriers of limited funding or higher first cost. Three of these contacts suggested a financing program, three others suggested higher incentives, and one suggested offering more and easier rebates for LEDs.

Most contacts indicated that the above barriers applied equally to the various market segments they work in.

PROGRAM SATISFACTION

In spite of their many suggestions for program changes and additional program services, the interviewed trade allies are generally satisfied with the Existing Buildings Program. Twenty-two (88%) of the respondents reported the type and amount of contact they have with the program is appropriate. One of the three trade allies who was not satisfied with the type and amount of their program contact is located in a small community in the southern Willamette Valley, requiring travel to Portland to attend meetings and training. That trade ally would like more in-person visits from the program to assist with invoices and information about program changes.

The other two contacts are located in the Portland area. Both expressed dissatisfaction with the responsiveness of the program, to emails in one case, and with information on custom projects (by telephone and email) in the other case, although the latter contact added the type and amount of in-person contact he receives from the program is adequate.

All but two of the interviewed trade allies expressed satisfaction with their program contacts, and most of them (18 of 24, 75%) are highly satisfied (a rating of 4 or 5 on a five-point scale) with their contacts (Table 3.16). The two trade allies who were not satisfied or had low satisfaction (a rating of 1 or 2 on a five-point scale) are the one in the small, southern Willamette Valley community and the contact who reported difficulty in obtaining information on his custom projects. However as occurred previously, the latter contact mitigated his concern by commenting the situation has improved since he brought the difficulty to the PMC’s attention.

Table 3.16: Satisfaction with Program Aspects (N=24)

SATISFACTION METRIC	SATISFACTION RATING (5-POINT SCALE)			
	1 OR 2	3	4 OR 5	DON'T KNOW
Program Contact	2	3	18	1
Program Information	2	3	19	0
Range of Equipment	0	7	16	1
Incentive Application Process	2	5	16	1
Training Offered	3	5	14	2
Tools for Estimating Savings	1	11	9	3
Program Overall	1	6	17	0

Most of the contacts (19 of 24, 79%) were highly satisfied with the program information they receive. However, two contacts reported dissatisfaction with that information. One of these two contacts reported receiving neither information nor training from the program. That contact also mentioned his contact with the program "is mainly through customers." The other dissatisfied contact is the one from the small, southern Willamette Valley community.

The earlier description of the contacts' suggestions for additional types of incentives notwithstanding, all of the contacts were at least "moderately satisfied" (a rating of 3 on a five-point scale) with the range of equipment for which incentives are available, and most of them (16 of 24, 67%) expressed high satisfaction with the current range of equipment.

Two of the interviewed trade allies were dissatisfied with the program's incentive application process. One of these two contacts elaborated the paperwork for custom projects is the basis for his dissatisfaction, but added "for prescriptive projects, it's ok." For the other contact, the quantity of equipment items ("100,000 products") available in his market segment makes it difficult for his staff to know and distinguish which equipment is eligible for incentives. This is the contact who suggested the program needs more staff to serve the trade allies.

Three contacts expressed dissatisfaction with the training they have been offered through the program. One of these contacts, mentioned earlier, reported receiving no training information. Another of these three contacts, a large, sophisticated electrical contractor, reported the training is too elementary; and the third contact is the southern Willamette Valley trade ally also described earlier.

Satisfaction with the program-provided tools for estimating energy savings was the lowest among the various indicators. Specifically, this metric had the lowest portion of "highly satisfied" responses with only nine (38%) of the contacts reporting high satisfaction. However, only one contact reported dissatisfaction with the program-provided tools. The single trade ally who reported dissatisfaction with these tools was unhappy because "Energy Trust does not provide tools for estimating savings from insulation."

A contact who reported dissatisfaction with five of the seven foregoing measures of satisfaction was the only contact to report dissatisfaction with the program overall. In contrast, 17 contacts (71%) reported high satisfaction with the program overall.

4 TRADE ASSOCIATIONS

A number of industry or trade associations exist to serve the various segments of the commercial buildings market. These are typically membership organizations that provide market-related information to their members through printed media as well as meetings and other forums for information exchange. An objective of this evaluation was to investigate whether and how such organizations serving the commercial buildings market in Oregon promote energy efficiency within their membership or have an interest in doing so.

We interview representatives of membership organizations for several of the target segments of the Existing Buildings Program. A copy of the interview guide used is included in Appendix C.

METHODS

We attempted to contact and interview representatives of a major membership organization for each of the program's seven target segments. We selected the following organizations:

- The National Retail Federation.
- The Oregon Lodging Association.
- The Oregon Restaurant Association.
- The Northwest Grocery Association.
- The Oregon School Boards Association.
- The Oregon Association of Hospitals and Health Systems.
- The Building Owners and Managers Association (BOMA).

We were successful at completing interviews with contacts for the Oregon Lodging Association, the Oregon Restaurant Association, the Northwest Grocery Association, and BOMA Portland. However, we found that the BOMA representative already was working closely with the program PMC and indicated that they could not give us any information that had not alreadybeen shared with PMC staff; therefore, we did not complete an interview with that contact.

We did contact a representative for the Oregon School Board Association and were able to ask the first question from the interview, but were unable to complete the interview. Therefore, we contacted and completed an interview with a representative of the Confederation of Oregon School Administrators.

Thus, in the end, we were able to obtain some information from associations representing the lodging, restaurant, grocery, and school segments. However, we were unable to contact a representative from the National Retail Federation or the Oregon Association of Hospitals and Health Systems, despite numerous attempts with both organizations. We also tried unsuccessfully to reach a second association in the lodging industry, the Asian American Hotel Owners Association.

RESULTS

The Organizations and their Segments

The four organizations whose representatives we interviewed have memberships ranging from 253 (grocery) to over 3,000 (restaurant). Information on the organizations is summarized in Table 4.1.

Table 4.1: Summary of Included Organizations

ORGANIZATION	MEMBERS		MARKET SEGMENT PENETRATION
	DESCRIPTION	COUNT	
The Oregon Lodging Association	Owners	700	25%
The Oregon Restaurant Association	Owners	3,400	47%
The Northwest Grocery Association	Owners	253	-
Confederation of Oregon School Administrators	School administrators	2,500	85%-90%

We asked contacts if they had information about the total building area or energy usage of their segments. None of the contact was able to give such information.

We also asked contacts about their familiarity with Energy Trust. The contacts for the restaurant and lodging associations said that they were very familiar with Energy Trust and had interacted regularly with Energy Trust staff, details of which are discussed below. The representatives for the grocery and school administrators associations indicated low levels of familiarity – they had heard of Energy Trust but were not certain of what it does. This suggests a possible new avenue for introducing the program to those two segments.

Membership Services

All contacts described their respective organizations as existing to provide information for and represent the interests of their membership. They all said that they perform legislative lobbying for their market segments, but none indicated that the lobbying was related to energy issues.

All organizations provide information to their memberships through a variety of channels, including conferences and other events and meetings, websites, electronic newsletters and other email notices, and print letters. The restaurant and lodging organizations provide energy- and sustainability-related information and through these channels, while the contacts for the grocery and school administrators organizations did not describe any such activities. This reflects what the contacts said about their familiarity with Energy Trust, noted above.

Two of the organizations – for the lodging and school segments – provide on-line forums where their membership can exchange information and ideas. The lodging association provides such a forum on its website as well as through a LinkedIn® group; however, the contact for that organization said that she had not seen any energy-related postings on their website forum. The contact for the school administrators organization said that the membership forum was not energy focused, but could be.

Membership Interests and Trends

Consistent with the above, the restaurant and lodging contacts reported active interest in energy and sustainability issues within their respective memberships. Both contacts reported emphases on energy-saving lighting measures as well as saving water (e.g., through low-flow faucets in the restaurant segment). While the lodging contact said that her membership "all know to change out light bulbs," the restaurant contact indicated that the focus in that segment is on ballasts. The restaurant contact also noted that ENERGY STAR® equipment is popular, but that "it must make business sense" to install it.

Both the restaurant and lodging contacts reported an interest in renewable energy within their segments. The restaurant contact mentioned a well-known fast-food chain and a craft brewery that rely on wind power. The lodging contact referred to a winery with a bed-and-breakfast inn that is "trying to get off the grid."

Another trend mentioned by the lodging contact was an interest in green or sustainability certification among its members. Although the grocery contact did not provide details on membership interests or trends, she reported a "sustainability mindset" in that segment.

We asked if there might be regional differences within Oregon in businesses' energy-related interests. The restaurant contact said that there was more interest in Eugene and Portland than in the rest of the state; the other contacts did not know of any regional differences.

Associations' Promotion of Energy Efficiency and Renewable Energy

As noted above, the restaurant and lodging associations provide energy- and sustainability-related information to their memberships. For the restaurant association, this has included providing "re-purposing" information, promotion of electronic vehicles, and providing general energy efficiency information through the various electronic and print channels. Such information includes a semi-regular ("almost once a month") article that Energy Trust provides

for the association's newsletter. Energy Trust also sends a representative to attend both the restaurant and lodging associations' events.

The lodging contact similarly reported a range of efforts to promote energy efficiency or renewable energy. The association features members that have successfully implemented efficiency or renewable energy features in its newsletter. Association staff attend Energy Trust events. The association also has produced a list of 11 guidelines to sustainability, which are featured on the American Hotel and Lodging Association (AHLA) website, and has a "Green Resources" page on its own website, with links to other on-line sustainability resources.

None of the contacts knew whether their members seek energy efficiency information from their association. When asked where their members get information on energy efficiency and renewables, the restaurant contact indicated Energy Trust and the utilities. The lodging contact mentioned the AHLA website and other on-line resources. The AHLA may thus be a valuable channel for reaching the lodging segment.

Barriers to Investing in Energy Efficiency

All of the contacts indicated that cost – or perceived cost – is a barrier to making energy efficiency investments. The lodging contact noted that larger hotels "will do as much as they can that's low cost" but they "have to come up with a plan to implement anything that would [involve] a significant up-front [cost]." That contact said she did not see many motels under the 50-room size getting involved in energy efficiency investments. "They all know to change out light bulbs and try to save water, but money blocks larger program participation."

The grocery contact specifically referred to the current poor economy and said that smaller groceries are having a little more difficulty in this economy.

The issue for schools is different than for other segments, as public schools must raise a levy to carry out significant equipment investments. They are therefore dependent on public willingness to raise taxes for the investments, which has been difficult to obtain.

The restaurant contact differed somewhat from the others by stating that "there is a mentality that being organic and sustainable is more expensive," which prevents energy efficiency investments. That contact thought that belief may not be true, "but businesses don't know that" and suggested that the real problem may be "lack of info about options or incentives that compel [restaurant owners] to change over."

Suggestions for Energy Trust

We asked contacts how Energy Trust could more effectively generate program participation in their segments. The lodging contact's comments focused on promoting entry-level activities: educating the industry about the range of things they can do "right away at low cost." Another comment was to tailor marketing and outreach to businesses of differing sizes, providing different messages, for example, to individual vacation rentals and 700-room hotels. According

to this contact, such targeted messaging can be done most easily through electronic communication.

The restaurant and grocery contacts focused on having Energy Trust maintain a presence in the associations' publications, including both articles and advertisements. The restaurant contact also mentioned continued Energy Trust assistance with association events.

5 PARTICIPANTS

This chapter describes participant experiences with the Existing Buildings Program in 2009. The overarching goal of the participant contact was to generate detailed data on how business and building owners and managers make decisions about investing in energy efficiency. A particular objective was to identify the degree to which decisions about individual projects are made apart from or as a part of a larger energy management plan.

We collected data in two phases. We initially conducted in-depth interviews with 42 participants representing seven target market segments: hospitals, groceries, restaurants, offices, retail, schools, and lodging. The in-depth interviews provided qualitative data to provide rich information about how participants decide to make energy efficiency decisions for their buildings.

The in-depth interviews generated specific questions that we then explored in briefer interviews with 53 participants representing all segments of the commercial market. The briefer interviews combined open-ended brief-response questions and close-ended questions and covered the entire range of project sizes and segments in the program.

METHODS

In-depth Interviews

The in-depth participant interviews were allocated among the seven target segments, with a goal of conducting at least four interviews in each target segment. We aimed to conduct somewhat more interviews in those segments that PMC staff indicated represented areas of good program penetration (hospitals and K-12 schools) and those with relatively higher 2009 program participation (offices and lodging).

The goal was to conduct the in-depth interviews with participants representing larger numbers of projects and savings, but not necessarily to use only the largest participants. We also wanted to leave a good distribution of participants to be drawn for the briefer interviews. Therefore, we listed all participants by primary segment of participation[3] in order from greatest to least total within-segment savings. Interviewers called through the top approximately 20 names in the list for most segments until they completed the allocated number of interviews.

[3] For most participants, all projects were within the same segment. However, for some participants responsible for projects across multiple facilities of a large retail or grocery organization, one project may have been identified as falling in the “office” segment while another was listed in the “grocery” or “retail” segment.

We used an interview guide that covered general decision-making, organizational capacity, energy related decision-making, and program influence. All questions were open-ended, and interviews took an average of approximately 50 minutes. We coded responses from each interview using the qualitative analysis software Nvivo 8. A copy of the interview guide is included in Appendix D.

Brief Interviews

A goal of the sample design for brief participant interviews was to stratify the sample into large and small buildings to allow some exploration of how decision-making about energy efficiency – and other factors affecting decision-making – differed for those two groups. However, the program database did not include building size on some 35% of the projects; other variables, such as energy savings, did not provide a good proxy. Identifying building size through screening questions would increase the length of the interview and the cost of the data collection.

The solution was to stratify based on the mean building size of the various segments, with mean building size calculated from the program database records with those data. We identified two strata – one comprised of those segments with a mean building size of at least 40,000 square feet (the "large" stratum) and one, of those segments with a mean building size of less than 40,000 square feet (the "small" stratum). Table 5.1 shows the two strata, with the mean building size, number of sites with 2009 projects, and number of 2009 projects for each segment.

Table 5.1: Participant Strata

SEGMENT	MEAN SIZE (SQ. FT.)	NUMBER OF SITES	NUMBER OF PROJECTS
LARGE BUILDING STRATUM			
College/University	311,846	20	28
Hospital	196,229	13	15
Hi Rise Residential	128,000	2	2
Other Health	96,458	31	32
Schools K-12	63,377	88	60
Assembly	54,233	17	22
Gym/Athletic Club	46,117	7	9
Grocery	43,742	126	141
Office	42,379	212	239
Lodging	39,991	96	123
Subtotal		612	671

SEGMENT	MEAN SIZE (SQ. FT.)	NUMBER OF SITES	NUMBER OF PROJECTS
SMALL BUILDING STRATUM			
Warehouse	27,681	97	102
Manufacturing	27,310	5	5
Retail	24,402	131	135
Institution/Government	21,188	58	61
Church	14,083	52	59
Auto Services	6,548	32	34
Restaurant	3,926	288	277
Laundry/Dry Cleaners	2,671	65	67
Data Center	---	1	1
Miscellaneous	31,826	53	51
Subtotal		782	792

Within each stratum, we sampled at the participant level, using a weighted randomization approach. We generated a random number for each unique participant and then multiplied that number by the number of projects listed for that participant. We then ordered the list of participants from largest number to smallest and selected the first 157 participants. This gave a greater chance of selection to those participants with more projects listed in the database. The result is the same as sampling randomly from all the projects rather than participants; however, this method avoids the risk of drawing the same participant multiple times in the sample.

We used a structured interview guide that covered the same general topics as the in-depth guide, but used a combination of close-ended questions and open-ended questions designed to elicit brief responses; development of the questions for the brief guide was informed by the responses given in the in-depth interviews. In-depth questions that did not appear meaningful to respondents or otherwise did not glean useful information were not reformatted for the brief interview guide. A copy of the interview guide is included in Appendix D. A crosswalk table indicating the correspondence between the in-depth and brief interview guides is included as Appendix E.

Brief interviews took an average of approximately 30 minutes. We analyzed the close-ended data with SPSS software; we content-coded the brief open-ended responses and tabulated the coded responses in an Excel spreadsheet.

DISPOSITIONS

We attempted contact with 124 of the 585 unique program participants to conduct the in-depth interview and were able to complete interviews with 39 participants, and partial interviews with

three others, for a total of 42 interviews. The sampling method for the brief participant interviews produced a list of 158 contacts, 77 in the large stratum and 60 from the small stratum. We were able to conduct 53 interviews, 29 from the large stratum and 24 from the small stratum. Table 5.2 summarizes the dispositions of the in-depth and brief participant contacts.

Table 5.2: Final Dispositions for Participant Contacts

DISPOSITION		RESPONDENTS				
		IN-DEPTH	BRIEF			TOTAL
			LARGE STRATUM	SMALL STRATUM	SUB-TOTAL	
ELIGIBLE						
Completed	**Retail**	5	-	-	-	5
	Office	8	-	-	-	8
	Restaurant	6	-	-	-	6
	Grocery	6	-	-	-	6
	Hospital	5	-	-	-	5
	Lodging	6	-	-	-	6
	School	6	-	-	-	6
	Total	**42**	**29**	**24**	**53**	**95**
Attempted, quota met before completed		74	41	32	73	145
Refused		3	6	0	6	9
Subtotal		***119***	***76***	***56***	***132***	***251***
NOT ELIGIBLE						
Missing phone number		0	0	1	1	1
Disconnected or wrong number		2	0	0	0	2
Out of office during survey period		2	0	2	2	4
Did not pass screening		1	0	0	0	1
Called for other Energy Trust survey		0	0	1	1	1
Contact no longer at job		0	0	1	1	1
Language barrier		0	1	0	1	1
Subtotal		***5***	***1***	***4***	***5***	***10***
TOTAL		**124**	**77**	**60**	**137**	**261**

The brief interviews had no segment-specific quotas. Table 5.3 show the distribution of completed brief interviews across the various segments, by sample stratum. We interviewed participants from 12 segments. For nine of the 12 segments, the number of completed interviews represented from 3% to 5% of the total number of participants listed for that segment – and the mean across segments was 4%. Three segments (College/University, Church, and Institution/Government) were relatively over-represented. However, only three to four participants were interviewed in each of those three segments; it is likely that weighting the results to adjust for the extra respondents from those segments would have had a negligible effect on the results.

Table 5.3: Brief Participant Interviews by Segment

SEGMENT	SAMPLE	POPULATION[1]	PERCENT
LARGE STRATUM (AVERAGE BUILDING SIZE >= 40,000 SF)			
Office	17	380	4%
Lodging/Hotel/Motel	4	73	5%
Grocery	2	37	5%
Schools K-12	2	31	6%
College/University	4	17	24%
Other Large[2]	0	56	0%
Subtotal – Large Stratum	***29***	***594***	***100%***
SMALL STRATUM (AVERAGE BUILDING SIZE < 40,000 SF)			
Restaurant	6	204	3%
Warehouse	4	91	4%
Retail	4	90	4%
Church	4	53	8%
Institution/Government	3	44	7%
Auto Services	1	28	4%
Miscellaneous	2	77	4%
Other Small[3]	0	45	0%
Subtotal – Small Stratum	***24***	***632***	***100%***
TOTAL	**53**	**1,226**	**4%**

[1] The population is the number of unique participants in the list with savings primarily in a given segment. Although some program participants had savings across more than one segment, a single segment provided a clear majority of savings for each participant.

[2] The Hospital, Hi-Rise Residential, Other Health, Assembly, and Gym/Athletic Club segments.

[3] The Manufacturing, Laundry/Dry Cleaners, and Data Centers segments.

RESULTS

We present results organized under four main topic headings: 1) respondent characteristics; 2) organizational capacity and general decision-making; 3) the role of energy efficiency in decisions; and 4) influences, other than financial incentives, on energy efficiency investments. Under each of the last three topics, we first present the results from the in-depth interviews, and then present the brief interview results. This allows us first to discuss the qualitative responses to in the more exploratory in-depth questions that informed the subsequent, more direct quantitative or brief response questions, and then to follow up with the often more detailed quantitative data.

Since a primary objective of this evaluation was to obtain detailed qualitative data from a reasonably large sample of in-depth interviews, high levels of confidence and precision were not expected from the quantitative data generated from the brief interviews. Nevertheless, based on a population of 1,226 contacts, the sample of 53 brief interviews provides 10% precision with at least 85% confidence; in most cases, the results have at least 11% precision at 90% confidence and in some cases, they have at least 10% precision at 90% confidence.[4] The confidence and precision for the "large" and "small" strata of the brief interviews is less, but the sample still provide at least 13% precision at 80% confidence and at least 17% precision at 90% confidence.

We tested the differences between the "large" and "small" strata on all responses with *chi-square*. We also tested the differences among particular subgroups to answer questions of specific interest. We report cases where we found statistical significance. It should be noted, however, that the sample size does not provide a high level of statistical power for finding significant group differences.

Respondent Characteristics

Respondents came from a variety of organization types and installed a broad range of measures. Table 5.4 provides key characteristics of interviewees. A large majority of respondents represented businesses that were independently owned, not part of a chain or franchise, and owned the property they occupied. Just over half represented for-profit businesses, with most of the rest split between non-profits and public/governmental entities. The respondents themselves performed a variety of roles: facilities/maintenance staff and property managers each made up about one-fifth of the respondents; the rest consisted of owners, top corporate officers, engineers, operations and general managers, finance staff, and miscellaneous other personnel. The most common measure types installed by the respondents were lighting, food equipment, and HVAC.

[4] Confidence and precision levels are typically calculated for the case where P = .50 (50% of respondents give a certain response), since this is the case where the variance for proportions is greatest and so confidence and precision estimates are most conservative. For any cases where P is no more than .39 or at least .61, the precision will be 10% at 90% confidence.

Table 5.4: Respondent Characteristics

CHARACTERISTIC	IN–DEPTH (*N* = 42)		BRIEF (*N* = 53)		ALL (*N* = 95)	
	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT
ORGANIZATION TYPE						
Independent	30	71%	38	75%	64	70%
Franchise	8	19%	5	10%	12	13%
Chain	4	10%	5	10%	8	9%
Unknown	0	0%	2	4%	1	1%
BUSINESS RELATIONSHIP TO PROPERTY						
Owns property	20	48%	41	76%	61	63%
Manages property	9	21%	3	6%	12	13%
Leases property	6	14%	5	10%	11	12%
Other	5	12%	4	4%	9	7%
Unknown	2	2%	0	0%	2	2%
OWNERSHIP STRUCTURE						
For-profit	26	62%	26	49%	52	55%
Non-profit	10	24%	11	21%	21	22%
Public	4	10%	14	26%	18	18%
Undetermined/Other	2	5%	2	4%	4	4%
RESPONDENT'S ROLE						
Facilities/Maintenance	9	21%	14	26%	23	20%
Property Manager	8	19%	2	4%	10	18%
Owner/President/CEO/COO	6	20%	10	19%	16	13%
Engineer	4	10%	5	9%	9	9%
Operations and Gen. Mgrs.	4	10%	8	15%	12	9%
Finance	3	7%	4	8%	7	7%
Other, miscellaneous	5	12%	8	13%	13	12%
Unknown	3	7%	0	0%	3	3%
MEASURE GROUPING						
Lighting	12	29%	16	30%	28	29%
Food equipment	7	17%	8	15%	15	15%
HVAC	10	24%	4	8%	14	14%
Custom	5	12%	10	19%	15	16%
Ceiling Insulation	3	7%	3	6%	6	7%
Study	5	12%	12	24%	17	18%

In most cases, the differences between the in-depth and brief interview respondents were not statistically significant. However, some differences do exist:

- In-depth respondents were more likely than brief interview respondents to have installed HVAC equipment (24% vs. 8%).
- Brief respondents more likely than in-depth respondents to own the property where the Energy Trust project was completed (76% vs. 48%).
- Brief respondents were more likely than in-depth respondents to represent the public segment (26% vs. 10%).

Organizational Capacity and General Decision-Making

We asked in-depth respondents to describe the decision-making process relating to facility upgrades, including their role in that process. We specifically asked who is involved in decision-making and what their roles are, including external resources such as consultants, contractors, or other outside actors**.** We asked about the level of communication among the contributors to the process, how outside actors help with decisions, the approval process and how that may differ by project type, size, or budget, and whether the communication that occurs is sufficient to produce a fully informed decision.

Parties Involved in Facility Upgrade Decision

Through responses to several open-ended questions about decision-making in building upgrades in the in-depth interviews, we identified a wide range of actors involved in decisions. We coded open-ended responses into 16 types of actors, ranging in frequency from 18 mentions of the business owner or president, down to one mention of a bond project manager. Through a more focused set of questions, we identified a similar range of actors in the brief interviews.

Table 5.5 shows the combined range of responses from the in-depth and brief interviews, with some of the original 16 categories of actors combined. As would be expected, the most commonly mentioned group were the owners or corporate or franchise officers, mentioned by about three-fifths of respondents. About half mentioned vendors, contractors, or unspecified outside consultants. About one-third mentioned engineers or architects, with a similar portion mentioning in-house maintenance or facilities staff. One-quarter or fewer mentioned operations staff and actors specializing in financial activities. Other actors were mentioned by fewer than one-fifth of respondents.

Table 5.5: Decision-Making Actors

CATEGORY	SMALL STRATUM		LARGE STRATUM		TOTAL	
	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT
Owner, officer, board	20	57%	37	62%	57	60%
Vendor, contractor	19	54%	30	50%	49	52%
Maintenance, facilities	10	29%	23	38%	33	35%
Engineer, architect	5	14%	27	45%	32	34%
Operations[1]	5	14%	20	33%	25	26%
Finance[2]	5	14%	16	27%	21	22%
Property manager	4	11%	10	17%	14	15%
Energy Trust	4	11%	3	5%	7	7%
Other	1	3%	4	7%	5	5%
Total	35	100%	60	100%	95	100%

[1] Administrators, operations managers, general managers.

[2] Business managers, finance officers, and, in one case, a "bond project manager".

Large versus Small Strata

We classified each of the in-depth interview participants into the small or large stratum based on the interviewee's market segment. This allowed us to compare responses for the two strata in the combined in-depth and brief interview data.

Respondents in the two strata differed on only one category of decision-maker. Not surprisingly, a significantly higher percentage of respondents from the large stratum than those from the small stratum (46% vs. 14%) mentioned engineers and architects. Respondents from the large stratum also tended to mention a greater variety of categories of decision-makers – they reported up to six categories (median = three), while those from the small stratum reported up to four categories (median = two). Although small, this difference was statistically significant by Mann-Whitney U, $p = .016$.

The brief interview, but not the in-depth interview, asked respondents to identify who had final decision-making authority. The decision-making authority most frequently rested in one of two function groups. Twenty-five of the 47 respondents (53%) said the owner, company executive, or oversight board ultimately made the decisions, while 11 respondents (23%) said that decisions were largely made among facilities, maintenance, or engineering staff (including property managers; Table 5.6).

Table 5.6: Locus of Ultimate Authority, Brief Interviews

CATEGORY	SMALL STRATUM		LARGE STRATUM		TOTAL	
	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT
Owner, officer, board	17	74%	8	33%	25	53%
Technical staff[1]	1	4%	10	42%	11	23%
Operations[2]	2	9%	4	17%	6	13%
Other or unknown	3	13%	2	8%	5	10%
Total	23	100%	24	100%	47	100%

[1] Facilities, maintenance, and engineers

[2] Includes general managers

[3] CFO, business managers

Differences clearly exist between strata. In the small stratum, decisions were more likely to be made at the ownership or executive level (17 of 23, 74%); in the large stratum, they were more likely to be handled by the facilities or maintenance staff (10 of 24, 42%). In both the large and small stratums however, three of four respondents report that owners or technical staff have the ultimate authority in making decisions.

High-Priority Segments

We examined the types of decision-makers mentioned by key market segment in the combined in-depth and brief interview data. Of the 53 brief interviews, 34 were conducted with participants in one of the high-priority segments. Therefore, the combined results include 75 respondents: 25 from offices, 12 from restaurants, nine each from lodging and retail, eight from grocery, seven from schools, and five from hospitals. Table 5.7 shows the percentage of respondents in each segment reporting the inclusion of each type of actor in decisions. Because of the small number of respondents representing most of the segments, caution should be used in interpreting these results.

Table 5.7: Involvement of Actor Types by Segment

	PERCENT INDICATING INVOLVEMENT OF EACH ACTOR TYPE BY SEGMENT						
	HOSPITAL	SCHOOL	RETAIL	OFFICE	LODGING	GROCERY	REST.
Owner, officer, board	60%	63%	78%	56%	70%	88%	83%
Vendor, contractor	40%	50%	56%	60%	30%	38%	50%
Engineer, architect	80%	25%	22%	56%	40%	13%	8%
Operations	0%	100%	0%	8%	40%	63%	25%
Finance	100%	63%	0%	4%	30%	13%	8%
Facilities, maintenance	100%	88%	33%	28%	30%	0%	8%
Property management	0%	0%	33%	40%	0%	0%	8%
Energy Trust	0%	13%	0%	0%	10%	0%	8%

The responses suggested that facility upgrade decisions in the various segments involve differing combinations of actors, with the hospital and schools segments appearing to be unique and the others forming clusters. Hospitals rely very largely on in-house maintenance or facilities staff, engineers, and finance staff. In schools, decisions involve a range of actors: operations, maintenance/facilities, finance, and, somewhat less frequently, vendors/contractors, and oversight boards.

The retail and office segments seemed to form a cluster, with decisions most frequently involving the owner or corporate/franchise officers and vendors/contractors. In fact, those in these two segments appear to rely on vendors and contractors more so than any other segments; those in the office segment tend also to get input from engineers or architects. While both the retail and office use maintenance/facilities staff to some degree, they do less so than hospitals and schools. Almost unique to these two segments is the involvement of property management companies, which were mentioned by one-third of the retail and two-fifths of the office respondents.

Finally, the lodging, grocery, and restaurant segments appeared to form a cluster. A large percentage of respondents from each of these three segments reported that the owner or corporate/franchise officers were involved in making decisions; grocery and lodging respondents also frequently mentioned operations staff, while restaurant respondents were more likely to mention vendors and contractors.

Another way to summarize these results is by type of actor:

- Owners, corporate/franchise officers, or some sort of oversight board are frequently involved in decision-making in nearly all high-priority segments.
- Vendors and contractors are most frequently involved in decision-making in the office, retail, and restaurant segments.

- In-house maintenance and facilities staff are most frequently included in decisions in the hospital and schools segments.
- Company finance staff are also most often involved in hospitals and schools.
- Operations staff frequently contribute to decision-making in the schools and grocery segments.
- Engineers and architects are consulted frequently in hospitals and offices.
- Property management companies are involved almost exclusively in the retail and office segments.

Interviewees' Roles

The interviewees for this evaluation were typically those individuals listed as the program's primary project-level contact. Therefore, it is important to understand their roles in the decision-making process. We assessed in-depth interviewees' roles through open-ended questions. Based on the responses they provided, we asked the brief interview respondents several questions about their roles in decision-making.

By and large, we spoke with individuals involved in facility upgrade decisions. Fifty-one respondents (56%) had some level of sign-off authority, although most of those had some limit to their sign-off authority (Table 5.8). In addition, most respondents provided some type of technical or cost input, or both.

Table 5.8: Role in Decision-Making, Brief and In-depth Interviews

ROLE	COUNT AND PERCENT OF RESPONDENTS REPORTING EACH ROLE (MULTIPLE RESPONSES ALLOWED)[1]					
	SMALL		LARGE		TOTAL	
	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT
Sign-off authority	22	69%	29	49%	51	56%
No limit	12	38%	6	10%	18	20%
Limited	10	31%	23	39%	33	36%
Decision-making within an approved budget	10	31%	25	44%	35	39%
Technical input	14	44%	30	53%	44	49%
Cost input	12	38%	22	39%	34	38%
Total	32	100%	57	100%	89	100%

[1] Column percentages do not sum to 100% since multiple responses are allowed.

Participants who provide technical input were less likely than those providing cost input to say they had unlimited sign-off authority (6% vs. 44%), although they did not differ in limited sign-off authority or authority to direct a project within an approved budget.

Not surprisingly, the interviews showed several differences in decision-making between the two strata – the one comprised of segments with larger facilities and the other comprised of segments with smaller facilities. Only 10% of participants in the large stratum reported having unlimited authority to sign off on expenditures compared to 38% of those in the small stratum; the difference was statistically significant. This finding underscores an inherent challenge: the program does not have direct contact with the ultimate decision-makers in the businesses that generate the most savings, and the immediate project-level contacts have to go through additional approval channels to install efficiency measures.

There was no clear pattern of differences among the high-priority segments in terms of the interviewee's role.

Decision Processes

We found it difficult to elicit detailed descriptions of decision-making processes in the in-depth interviews, and we therefore revised our approach to getting this information in the brief interviews. In the following subsections we describe the information we were able to obtain in each set of interviews and then how we were able to combine that information to examine differences between strata and segments.

Responses from In-Depth Interviews

Based on interviewees' responses, we classified each business's decision-making as simple, complex but informal, or complex and formal. A complex process involved multiple parties to reach a decision, while a simple process involved one or two primary decision-makers. The distinction between the formal and informal processes reflected the degree to which the respondent indicated that the decision-making followed a specific prescribed pattern or was based on informal discussion among the decision-makers.

Most (35 of 42, 83%) in-depth participants described a complex process, about three-quarters of whom (three-fifths of all in-depth respondents) indicated that the process followed a formal pattern. Some of those with complex processes provided some additional details about the process. Eight respondents (19% of in-depths) indicated that the decision process spans multiple levels within a corporate structure – for example, a need is identified by local facility staff but the upgrade must be approved at the corporate level, located elsewhere. This response was most common among franchise operations and large chains.

Five respondents (8% of in-depths) reported that part of the process was review by a specific committee or oversight board. Two of those respondents were from schools, two were from groceries, and one was from a retail business.

Eighteen respondents (43% of in-depths) said that the approval process may vary based on the amount and complexity of the upgrade. Thirteen of those mentioned that cost was an explicit consideration. Nine respondents from organizations that own or manage large complex properties such as office buildings, hospitals, groceries and retail facilities reported that under a certain dollar amount, they or their staff could make upgrade and equipment decisions. This dollar amount ranged from as little as $500 for one grocery respondent to as much as $50,000 for one office respondent. Other respondents did not have a dollar amount threshold but suggested there is more of a continuum involved. The smaller the dollar amount, the fewer people are involved in the decision. The more expensive an upgrade, the more people are involved.

Fewer people may be involved in an upgrade decision when a piece of equipment fails even if it is quite expensive. One respondent stated that "it depends on whether …it's an immediate need or something that goes down straight away… [that] goes… through less review and scrutiny."

Nearly three-quarters of respondents (31 of 42, 74%) said that contractors, vendors, or consultants were involved in some manner in upgrade decisions. Most of those (28, or 67% of respondents) described assistance with identifying savings opportunities or the appropriate equipment. Ten respondents (24%) said that contractors or other outside consultants helped with calculation of energy savings, payback, or incentives. Other types of assistance mentioned included advising on equipment life and pricing.

Respondents generally reported that communication among the people involved in the decision was adequate and that the amount of communication matched the cost and complexity of the project. Only two respondents – one office and one lodging respondent – reported insufficient communication to make a fully informed decision, but the other respondents reported they are able to communicate with internal or external people that help inform the decision.

Even among those reporting formal decision processes, communication is not always formal. Formal communication typically pertain to large projects that involve capital budget meetings and working with corporate-level energy managers. Respondents reported informal communication through phone calls and emails for relatively simple upgrades or equipment replacement.

Responses from Brief Interviews

Based on the difficulty in-depth interview respondents had giving a detailed description of the decision-making process, we attempted to get at that information differently in the brief interviews. We asked those respondents instead how the decision-maker weighs the input from various sources.

This question elicited a range of responses. Fifty of the 53 respondents provided sufficient detail to categorize the process as either simple or complex; the other three were not directly involved in the decision-making and could not provide any details. As in the in-depth interviews, the majority of respondents (39 of 50, 78%) described complex decision-making. In addition, 20

respondents (40%) reported that the decision-maker relies on input from various outside sources, such as vendors, contractors, engineers, or other consultants.

Twenty-one of the 50 respondents (42%) who knew about how the decision-maker weighs input mentioned various criteria that go into the decision. The most common response referred to payback or return-on-investment (ROI) consideration (15 of 50 respondents, 30%). Seven (14%) mentioned project cost without specific reference to payback or ROI. Other considerations mentioned by two to four respondents were (from most to least frequent): technical needs (e.g., lighting level, noise, reliability, ease of maintenance), availability of financial assistance, high energy efficiency (mentioned apart from cost savings), and practicality (e.g., the impact of the upgrade on the ability to provide ongoing service).

Stratum and Segment Differences

We combined the data on decision process (complex or simple) from the in-depth and brief interviews to allow comparisons across strata and segments. Not surprisingly, a higher percentage of respondents from segments with larger facilities reported complex decision-making, compared to those from segments with smaller facilities (Table 5.9).

Table 5.9: Type of Decision Process by Stratum, Brief and In-depth Interviews

TYPE OF PROCESS	SMALL		LARGE		TOTAL	
	COUNT	PERCENT	COUNT	PERCENT	COUNT	PERCENT
Simple	10	29%	7	12%	17	18%
Complex	22	63%	52	87%	74	78%
Unclear	3	9%	1	2%	4	4%
Total	35	100%	60	100%	95	100%

Across the seven high-priority segments, restaurants had the lowest percentage of complex decision-making (6 of 11, 55%). However, owing to the small sample sizes, the difference was statistically significant only in comparison with schools (9 of 9, 100%) and office (21 of 24, 88%).

We noted similarities in the descriptions of “complex” decision-making in the office, retail, hospital, grocery, and school segments. Most respondents in those segments reported a standardized process, with a technical team that identifies possible efficiencies, a financial person or team that evaluates the cost of the efficiencies in comparison to an annual budget, and an owner or ownership group that makes the ultimate decision.

Beyond the above similarities, responses from the office participants indicated additional complexity. Office buildings tend to be managed facilities with multiple layers of input that inform energy efficiency decisions. All eight of the in-depth office respondents worked for some type of property management firm, and they each indicated that energy efficiency investments

were complex decisions involving owners, property managers, and outside consultants. Most of those respondents described their role as performing a cost-benefit analysis in response to a request from an engineer or contractor, and then making recommendations to the owner based on the analysis. Whereas groceries and school respondents tended to be employees of the grocery owner or school board respectively, office property managers are contracted employees of the office-building owner and serve as facilitators in the decision making process.

The lodging and restaurant segments differed somewhat from the other segments in terms of how complex decision-making was described. The in-depth data suggest large hotels located in downtown areas have full-time facilities staff that look at everything from building maintenance to installing efficiency measures. Those large hotels have relationships with contractors and consultants that help them manage the energy use of their facility. The hotels are part of a larger corporate management organization that provides input on, but does not dictate, what equipment and/or measures to purchase and how to spend their capital budget.

As noted, the restaurant segment had the lowest percentage of respondents that described complex decision-making. The restaurant participants that did so are associated with a chain or franchise, which dictates whom they can purchase from and what equipment they can purchase. Furthermore, key decision-makers about efficiency and building upgrades are often not on site for those restaurants, in contrast with the other segments that often have property managers, engineers, or others key parties located on site. Large national companies or regionally based multi-franchise owners make decisions for franchise and chain restaurants with almost no input from local operations staff.

Typical respondents that reported simple decision-making included the owners of small retail properties or local restaurants, a small family-run convenience store, and individual franchise properties in the lodging segment where decisions about equipment purchases are made within the confines of franchise rules. The above characterization of complex and simple decision-making is summarized in Table 5.10 by segment.

Table 5.10: Characterization of Complex and Simple Decision-Making by Segment

SEGMENT	COMPLEX DECISION-MAKING	SIMPLE DECISION-MAKING
Retail	Formal process: On-site technical team provides input to financial team, which does cost-benefit analysis and reports its recommendations to owner/ownership group for decision	Individual owner makes all decisions in limited number of retail facilities
Offices	Multilayered, formal process involving property management firm, together with owners and outside consultants: technical team provides input to financial team which does cost-benefit analysis and reports its recommendations to owner/ownership group for decision	Not seen
Restaurants	Large national chains with structured processes and contracts with specific suppliers and vendors. Decision-making primarily happens off site	Small local or regional chains with no corporate HQ or facilities or financial staff
Grocery	Large local or regional operations that have staff dedicated to facility operations and work with ownership and local contractors to make final decisions	Family member makes all decisions in family-run convenience store
Hospitals	Formal process: On-site technical team provides input to financial team, which does cost-benefit analysis and reports its recommendations to owner/ownership group for decision	Not seen
Lodging	Large hotel chains with corporate management team, full-time facilities staff and ongoing relationships with energy management consultants and contractors	Ownership of single franchise properties, with final decision about equipment purchase constrained by franchise rules
Schools	Formal process: School district based technical team provides input to financial team, which does cost-benefit analysis and reports recommendations to principal/ superintendent/ school board	Not seen

General Energy Management Processes

The in-depth and brief interviews addressed several issues pertaining to general energy management, specifically the importance of controlling energy costs, the approach to energy management, the sufficiency of organizational energy management resources, and the role of competitors' practices in energy management.

Importance of Controlling Energy Costs

To ascertain how important energy is in decisions about facility upgrades, we asked in-depth respondents what role energy use plays in decisions, how important energy costs are relative to other costs, and how much energy costs could be controlled through energy efficiency. Their

responses to these questions are summarized below. Based on those responses, we devised a single question for the brief interviews, which is discussed in the following subsection.

Responses from In-Depth Interviews

Respondents generally report that energy use plays a significant role in decisions. All but three in-depth respondents indicated that energy plays an important role. Most of those respondents elaborated on how or why energy use is significant.

Fifteen responses compared energy costs to other considerations or provided an overall ranking of energy's importance. Of those, two indicated that energy has a top priority – one said that significant energy saving would "pop a project to the front" of the line. Eight of the 15 respondents who compared the importance of energy costs to other considerations put only one thing ahead of energy costs. Three of those eight mentioned other ongoing operational costs (e.g., payroll, mortgage). The other five mentioned project-specific considerations, such as providing a comfortable environment, initial project costs, the proven reliability of energy efficient products, the difficulty of getting the most efficient product compared to a readily available one with slightly less efficiency, and current exigencies (e.g., fixing a leaky roof or repaving a parking lot). Other respondents simply said that energy was one of the top expenses or rated highly.

Nine respondents referred to the impact of energy costs on lifecycle equipment costs or specifically to payback issues – for example: "You know the energy cost determines, for an energy project, the return on investment. So the return on investment is how much money you can save. So it's key." At least one of those respondents indicated that payback periods have moved from five years into the "8 or 12 year range." Four referred specifically to increasing energy costs as a reason that controlling those costs is important.

Eight respondents indicated that energy efficiency or sustainability is a motive, independent of costs. Two mentioned tenancy considerations (e.g., reducing vacancy) as a motive for controlling energy costs.

Most in-depth respondents had difficulty saying how much energy costs could be controlled through energy efficiency. Ten did not answer the question at all. Of the remainders, eight gave estimates ranging from a low of about 10% to a high of "at least 50%"; however, six of those eight put the figure at 20% or lower. Seven respondents indicated that the possibility of additional energy cost reduction is limited because of what they have already done. Of those, five were among those who estimated additional savings of 10% to 15%, and two were not explicit about how much more could be saved.

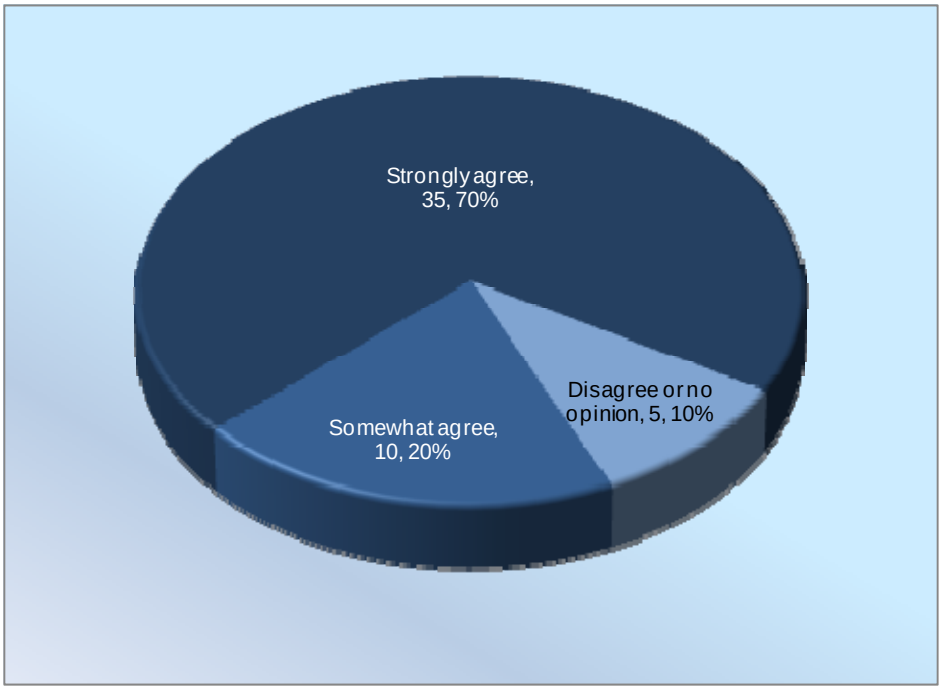
Responses from Brief Interviews

Clearly, respondents have a difficult time quantifying the amount of potential energy cost reduction and the importance of controlling energy costs versus other business expenses. In the brief interviews, then, we tried a different approach to get at the general issue underlying those

questions – "Are additional efficiency investments worth the effort?" We simply asked respondents how much they agreed or disagreed with a single statement: "Additional investments in energy efficiency at that facility would be worth the cost and effort."

Of the 53 respondents, 30 strongly agreed with the statement and 10 somewhat agreed (Figure 5.**1**). Only three respondents disagreed that additional investments would be worth the cost and effort. Thus, even if respondents have difficulty quantifying the relative value of energy efficiency compared to other priorities, they generally believe that investing in energy efficiency is worth their time and resources. Results did not differ by stratum.

Figure 5.1: Agreement that Additional Investments Are Worth the Cost and Effort, Brief Interviews



Energy Management Policies and Activities

The in-depth and brief interviews explored participants' energy management policies and activities. We attempted to identify specific policies, the existence of organizational energy managers, and when and how energy efficiency enters into upgrade decisions.

Responses from In-Depth Interviews

The in-depth interviews included several questions exploring participants' energy management policies and activities. We started with a very open question asking respondents to describe their

company or organization's plans or approach for achieving higher energy efficiency. We further asked whether there was a single individual who is responsible for evaluating or planning energy use (and if so, who that individual was). To get additional insight into the degree to which participants execute an energy management plan, we asked whether the consideration to use energy efficient equipment is done on a project-by-project basis or as part of a more general energy efficiency plan.

These questions elicited a wide range of responses. Eighteen (43%) of the 42 in-depth respondents reported some degree of energy management, although the level of formality and type of activity involved varied. Five respondents reported some written mission statement or policies addressing energy efficiency; one of those five reported franchise requirements to install certain energy efficient equipment, and another reported having a Green Seal Silver certification. Four respondents stated that their company had explicit energy reduction goals or, in one case, an energy efficiency budget.

Nine respondents (21% of the sample) described a variety of types of limited energy planning. These included longer-range plans that extended to particular equipment types (mostly lighting, but also laundry facilities in one lodging segment participant); plans for energy efficiency projects that extended over multiple buildings; a "master plan" had been developed for some buildings but not others; or a policy of actively searching out energy efficiency technologies. (Most respondents indicated that they usually sought the energy efficient solution when a need arose, but only two indicated a proactive search for technologies.)

Eight respondents said that there was a particular person or group (in the case of two respondents) who was responsible for energy management – typically that was the respondent, although in other cases it was a corporate officer.

Other miscellaneous responses referred to energy efficiency planning done at the design and engineering stage, a focus on educating employees about energy efficiency, and involvement in a sustainability-oriented industry association.

The respondents describing energy management efforts came from all key market segments – five from the office segment, three from retail, and two from each of the other segments.

Responses from Brief Interviews

In the brief interviews, we asked respondents whether their company or organization had any of a list of specific energy-related policies or procedures in place:

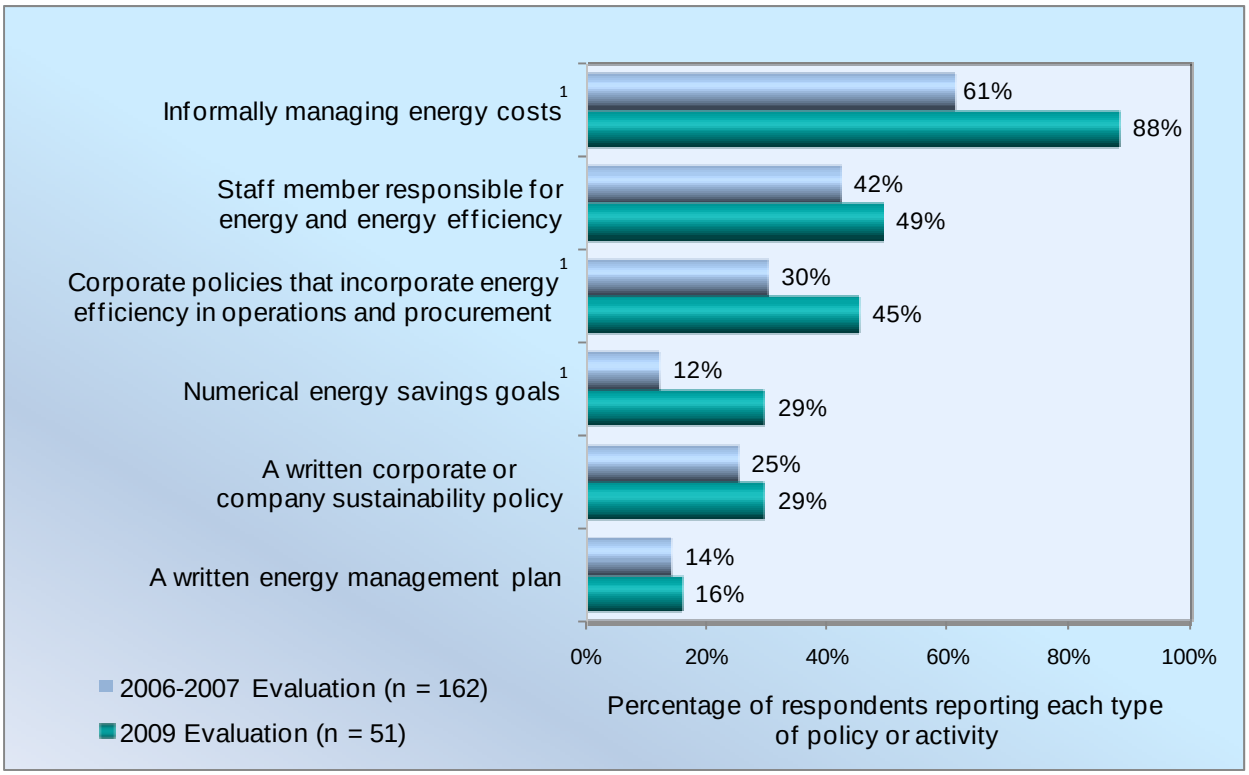
- A written corporate or company sustainability policy.
- Staff member responsible for energy and energy efficiency.
- Corporate policies that incorporate energy efficiency in operations and procurement.
- A written energy management plan.

- Numerical energy savings goals.
- Informally managing energy costs through behavior changes such as turning off the lights and turning down the heat.

In general, brief interview responses reflected those from the in-depth interviews, with the largest group of respondents indicating informal efforts to manage energy costs and few reporting formal policies such as written management plans or numerical goals. The results are shown in

Figure, which compares the current results to those obtained in the evaluation of the 2006-2007 program.

Figure 5.2: Energy Efficiency Policies or Activities, Brief Interviews



[1] Percentage difference between 2006-2007 and 2009 is statistically significant by *chi-square*.

The results appear to suggest that at least some types of energy management have increased over time, but the possibility that at least some of the difference reflects differences in the survey methodologies of the two evaluations cannot be discounted.

The specific prompts incorporated in this question (as opposed to the open-ended nature of that in the in-depth interview), however, appeared to have elicited a higher percentage reporting a

written company policy and staff members with specific energy-related responsibilities. The results are similar in many respects to those obtained in the previous program evaluation, although the current results show higher reporting of informal management of energy costs, specification of energy efficiency operations and procurement policies, and numerical energy savings goals.

We followed up by asking how energy efficiency fits into the organization's day-to-day business operations and planning. Many respondents offered general comments indicating that it was or was not a day-to-day priority. About one-fifth of respondents indicated that energy efficiency is not a day-to-day priority.

Given the response differences that likely arise from method differences in this case, we opted not to combine the in-depth and brief responses to examine stratum differences. Only one statistically significant difference was seen between the large and small strata among the brief interview responses. Respondents from the large stratum were almost twice as likely as those from the small stratum to report that their company or organization had a specific staff member responsible for energy.

Role of Energy Efficiency in Upgrade Planning

The in-depth and brief interviews attempted to identify when and how energy efficiency enters into upgrade decisions.

Responses from In-Depth Interviews

To get additional insight into the degree to which participants execute an energy management plan, we asked when and how energy efficiency enters into the project planning process; whether the company had ever done an upgrade just to achieve higher efficiency, when there were no other reasons to change the equipment; and what circumstances had resulted in upgrades that used standard efficiency equipment.

Many respondents had difficulty providing detailed responses to those questions. Nevertheless, 13 respondents (31% of the 42) indicated that energy efficiency always or almost always is considered from the beginning of any discussion of an upgrade. Sample comments include:

> "It's usually right up front."
>
> "It is part of the process from the beginning."
>
> "I think, you know, right away and throughout."
>
> "It has become an integral part of the decision making process, certainly."
>
> "It's always on high consideration. So it's discussed early on, even when preliminary ideas are being spun about."
>
> "I think it would be at the beginning. Energy efficiency and green projects are what comes to mind more often than not."

> "I think it is kind of given, you know if we order something, #1 you look at cost, #2 you look at the payback period, and #3 you look at the availability. And fortunately over the last few years, the higher efficiency stuff has become more and more available on a quick ship."
>
> "Any time we have an opportunity to do upgrade we do an energy analysis and always choose EE."

Of the 13 who reported that energy efficiency is integral to upgrade planning, four each were from the office and hospital segment, two each were from schools and groceries, one was from retail, and none were from restaurants or lodging.

In-depth respondents generally reported seeking out a more efficient option when faced with an equipment upgrade in all cases except specific instances where efficient equipment or measures were not available in a timely manner. For instance, four of five hospital respondents stated that energy efficiency is a primary consideration but also noted that ultimately patient care and power reliability has to be their preeminent concern. They will purchase less than efficient equipment if they need something that is critical to patient care and their preferred efficient option is not available when they need it.

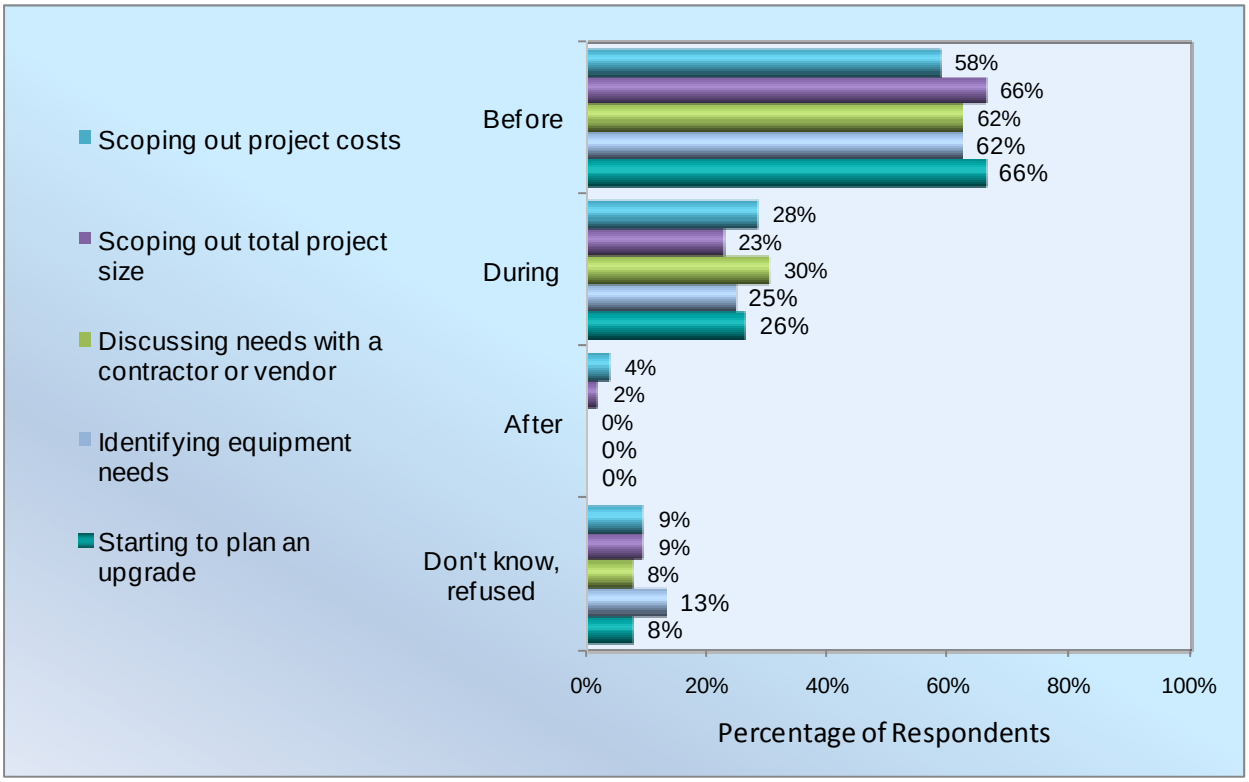
Similarly, if something breaks in a school during the school year and doing the most efficient upgrade would be burdensome on the functions of the school, the school may install less efficient equipment to carry it through the school year and then do the more efficient upgrade over a holiday or summer break when the school is not as heavily utilized. One school respondent also noted that the school may not install the most efficient option in a building slated for major renovation or demolition in their master plan.

Responses from Brief Interviews

In the brief interviews, we attempted to get more quantitative responses to the question of when energy efficiency enters into facility upgrade decisions. We asked respondents whether they typically considered energy efficiency before, during, or after each of five phases of planning and carrying out upgrades: 1) scoping out project costs; 2) scoping out total project size; 3) discussing equipment needs with a contractor or vendor; 4) identifying equipment needs; and 5) starting to plan the upgrade.

As Figure shows, three-fifths to two-thirds of respondents said that energy efficiency is on the table before they begin any of the above activities. Nearly all of the rest (other than those who did not know the answer) said that energy efficiency came under consideration during the phase in question. These results did not differ significantly by stratum.

Figure 5.3: Point When Energy Efficiency Is Considered, Brief Interviews



We also asked how often energy efficiency enters into decision-making. Nearly half (24 of 49, 49%) said that energy efficiency always enters into their decision-making. Another 15 (31%) said that it usually does. The remaining respondents either said that it sometimes does or they could not answer (seven and three respondents, respectively). Results did not differ by stratum.

The differences in the way this topic was addressed in the in-depth and brief interviews did not permit combining the results.

Ability to Make Informed Decisions about Energy Efficiency Investments

It is possible that some businesses and other organizations may be prevented from making some energy efficiency investments because they lack sufficient internal resources to make fully informed decisions about those investments. If so, this could be a barrier to achieving maximum savings, even among those businesses and organizations that already have demonstrated a desire to reduce energy consumption.

Responses from In-Depth Interviews

To investigate this question, we asked in-depth interviewees whether their business had sufficient in-house staff and expertise to evaluate energy efficiency need and inform investment

decisions and, if not, how they got the information needed to make such decisions. We also asked about the point at which representatives from the Existing Buildings Program become involved in upgrade planning and what role they have in that planning.

Of the 42 in-depth respondents, one-third said that they could rely wholly on in-house staff to make decisions about energy efficiency investments (Table 5.11). Twenty-five respondents – three-fifths of the total – said that they rely to some degree on external resources, such as contractors, vendors, or other consultants. Between the in-house staff and such external resources, about four-fifths of respondents said they usually had sufficient input to make informed decisions. The remaining fifth either explicitly said that they did not have sufficient input or did not provide codable responses. The distribution of responses was similar across the high-priority segments.

Table 5.11: Use of Resources in Energy Efficiency Investment Decisions

	COUNT	PERCENT
Rely wholly on in-house staff	14	33%
Use external resources	25	60%
Sufficient input to make informed decisions	34	81%
Energy Trust involved early in process	18	43%
Energy Trust involved only in rebate application	11	26%
Respondent's contractor deals with Energy Trust	14	33%

As the above table shows, somewhat fewer than half the respondents said they involve the program early in an upgrade process – most specifying that they contact Energy Trust when they are scoping out a project. About one-quarter of respondents, however, involve the program only after they have selected equipment and are ready to apply for a rebate.

A majority of respondents from the office, grocery, and retail segments said they involved Energy Trust early in efficiency upgrade projects. In the hospital and lodging segments, the respondents were more likely to say they approached Energy Trust only when they were ready to apply for the rebate. Although these findings are based on very small samples within each segment and should be interpreted with caution, it may be worthwhile to investigate them more fully with larger samples.

Responses from Brief Interviews

Because of the reliance on contractors and other outside assistance noted among the in-depth interviewees, we explored this issue in more detail in the brief interviews. We asked whether respondents consider energy efficiency only if a contractor recommends it and whether they

always consider it if a contractor recommends it: the first question addresses the necessity of contractor recommendation; the second addresses the sufficiency of contractor recommendation.

As Table 5.12 shows, contractor recommendation of energy efficiency was sufficient for nearly three-quarters of respondents – that is, they always install an energy efficient option if a contractor recommends it. However, relatively few respondents indicated that contractor recommendation is necessary – in other words, most of the respondents will select an energy efficient option even if a contractor did not specifically recommend it. Results did not vary by stratum.

Table 5.12: Necessity and Sufficiency of Contractor Input on Energy Efficiency Investment

NECESSITY/SUFFICIENCY	COUNT	PERCENT
Sufficient	36	73%
Necessary	4	8%
Necessary and sufficient	2	4%
Neither necessary nor sufficient	8	16%
Total	49	100%

[1] Percentages are based on a total of 49 respondents who answered these questions. However, the individual counts do not sum to 49 as one person was in both the "sufficient" and "necessary and sufficient" category.

Influence of Competitors on Decision-Making

There is growing evidence that many businesses believe that a "green" image gives them a competitive advantage. An Internet search on the terms "energy efficiency" and "company image" turned up over 5,000 hits, with most of the initial hits promoting that very idea. We investigated whether participants' energy efficiency investments were motivated at least in part by such concerns.

In both the in-depth and brief interviews, we asked respondents in what ways their energy investment decisions had been influenced by what other similar businesses or organizations had done. Forty-one of 92 respondents (45%) said that they were influenced to some degree by what others in their market segments did. The tenor of comments varied, however, with some suggesting more active efforts than others to learn what others are doing. Examples of those indicating active efforts include:

> "We are influenced to borrow a good idea. …you know, we attend different conferences and attend lunches that have speakers, because we love to pick up those ideas…." (Office)

> "Yeah, we do. We do have lot of time to hobnob with other folks but, you know, there are trade groups, [like] the Oregon Building Official Association, [where] you meet a lot of folks, and there is the Oregon Facilities Management Association. So you kind of have some idea about what people are doing, not as much as we would like. You have to try to keep abreast of trade magazines … and those sorts of things to see what others across the country are doing and what seems to work well and what doesn't." (School)

> "Yeah, I think we are always looking at reading the different trade magazines and things like that and seeing what's kind of new in the industry." (Lodging)
>
> "It does make a difference if other quick service restaurants are pursuing energy efficient options." (Restaurant)

Comments indicating less active interest include:

> "I don't know if I would say influence or informed. If we know that the chief of the completing buildings has done a certain project with a certain company and it has worked out well, then we are more likely to play upon that. So we use competitor's experience where we can get it." (Office)
>
> "You know, we are involved in other groups and we are not necessarily influenced by what somebody else has done unless what they have done can demonstrate the level of energy savings or dollar savings that we could achieve within our own organization. Other than that, we are not really going out to see, we are not trying to keep up with other like businesses or other businesses out in the community by any means." (Hospital)
>
> "I don't think we do it from the standpoint of keeping up with anybody. But I think we pay attention to what is happening and because we can learn from it." (Office)

About one-quarter of respondents gave comments suggesting active effort to learn what others are doing. Among those, 17 (18% of respondents) said that they speak directly with others in their market segment. Ten (11%) said that they get information on what is happening in their segment through industry or trade association meetings or publications. Other sources of energy efficiency related activity were consultants and information from the federal government.

No statistically significant differences were seen between the large and small strata.

Some companies may say they are not influenced by what others do because they perceive of themselves as being ahead of the curve in energy efficiency. We specifically asked in-depth respondents if they generally try to stay ahead of the curve on energy efficiency or follow trends. Results were split, with 19 (45% of in-depth respondents) stating or suggesting they were leaders, 13 (31%) indicating they followed trends, and the remaining 12 (29%) not identifying themselves in either group.

The supposition that those who view themselves as ahead of the curve are not influenced by others was not supported. Those self-identifying as ahead of the pack were about equally likely to say they were influenced by what others were doing compared to those who did not self-identify that way.

Project-Specific Decision-Making

To provide more concrete information about energy efficiency investment decisions, we asked respondents about a specific recent efficiency project. We were interested in determining the degree to which specific projects were done on their own or were part of a larger facility upgrade, what led them to choose energy efficient equipment, what factors went into planning the upgrades, and what barriers they encountered.

Strategic Approach

One of the goals of the participant interviews was to assess the degree to which program participants follow a strategic approach to energy management. One way to address that question is to ascertain whether particular projects were part of a larger facility upgrade or were done on their own. Approaching upgrades in a systematic fashion may offer additional opportunities for program involvement.

Of the combined in-depth and brief interview sample, 19 respondents (20% of the combined sample) said that the specific energy efficiency project was performed as part of a larger facility upgrade. It thus appears that a large majority of projects are still done on a project-by-project basis.

Reasons for Performing an Energy Efficient Upgrade

We asked respondents of the in-depth interviews what led to the decision to perform the equipment upgrade or installation projects they undertook. As Table 5.13 shows, nearly two-thirds of the respondents identified energy savings as their reason for doing the project. Half of those did not mention any cost-related issues (e.g., payback, reduced energy costs); whether that was because cost was not really an issue or because those respondents assumed that it was understood cannot be determined from the responses.

Table 5.13: Reason for the Upgrade, In-depth and Brief Interviews

REASON FOR UPGRADE (MULTIPLE RESPONSES ALLOWED)	IN-DEPTH		BRIEF	
	COUNT	PERCENT	COUNT	PERCENT
Save energy	27	64%	35	70%
Company policy to reduce energy use	0	0%	12	24%
Save energy – no mention of cost	13	31%	7	14%
Better equipment or performance	14	33%	3	6%
Contractor/vendor recommendation	6	14%	0	0%
Other	6	14%	10	20%
Total	42	100%	50	100%

One-third of in-depth respondents said that they did the upgrade to get better equipment or improve performance. For the brief interviews, we revised the question to focus more on the reason for selecting energy efficient equipment. We asked those respondents what led them to the decision to use energy efficient equipment rather than standard equipment *once they had decided to do an equipment replacement or upgrade* – that is, we wanted to make clear that we were not asking why they decided to do an upgrade, but why they decided to do it with energy efficient equipment.

As with the in-depth interviews, the most common response was to attain energy savings. Of those who mentioned energy savings, seven (14% of all respondents) did so without reference to cost-related issues. However, 12 respondents (24% of all respondents) said that it was a company policy or philosophy to reduce energy use.

Only three brief interviewees mentioned quality of equipment as a reason for choosing energy efficient options, all of whom indicated that the main reason for choosing the equipment was energy savings. Two of those said that the lighting quality was improved with the energy efficient lighting, while the third said that the new equipment was better for maintenance and repairs.

A variety of responses categorized as "other" included increasing safety with better lighting, instructions from higher-level management to do the project, request from a tenant for better insulation because of specific work-related needs, extending equipment life (by adding controls), and receiving the incentive.

The Project Planning Process

In examining the critical factors in planning an upgrade project, we sought to answer two questions of particular interest: 1) How much energy savings were participants seeking to achieve relative to the maximum amount possible? 2) How did participants weigh the costs and benefits of the efficiency projects against other possible competing investments?

Ten of the brief interview participants had undertaken a program-supported energy study at their facility but had not yet gone forward with an upgrade project in 2009. Those respondents are excluded from questions about the project planning process; the sample *n* for those questions is 43.

Responses from In-Depth Interviews

We asked in-depth interviewees whether they believed that, in terms of meeting their equipment needs, the project they undertook was the best of all possible options, the first option that met their minimum requirements, or somewhere in between. If they said it was somewhere in between, we asked them to indicate where it was on the continuum from minimum to best option.

About half of the respondents had difficulty with that question. Of 21 who gave a codable response, 10 indicated that it was the best possible option. Most did not qualify their answers, although one noted that the project was the best option "given our situation." Another qualified that it was the best "of all options priced"; he would have preferred installing LEDs, but they are not cost effective.

One respondent provided a detailed explanation of the role the program played in helping him choose the best option:

> …the equipment we had was like 45 years old, to us anything would have been better but talking with the Energy Trust and the consultants and what not, it was not just saying, hey we are going to replace this stove with another stove, it taught us to look closer at the equipment and taught us I think to go ahead and question our contactors and our consultants about what this equipment would actually do for us and what it will do in the future. So I think that education helps out there and it did change some of the decisions that we have made.

Eight respondents reported that the project represented an "in-between" option, but most of those put it closer to the "best" option than the minimum. Several of those respondents qualified their response by indicating that initial cost kept them from installing more efficient equipment.

The remaining respondents had difficulty answering the question because they just did not know. For instance, one retail respondent did the efficiency work that his tenant required. The tenant needed a better-insulated building to accommodate his paint shop so the building owner did what was required to keep the tenant satisfied. The respondent did not know if it was the best option for energy savings. However, it was the best option for him to keep a reliable tenant.

We asked respondents what other investment priorities competed for funds with their most recent Energy Trust project. Respondents had a hard time answering the question because they were not privy to decisions made at the larger corporate level regarding other investments the organization could make. Even many respondents who were key financial decision makers could not generalize how energy efficiency competed for funds with other projects. Competing investments "depend on who you talk to [in the school district]," according to one school respondent. "One person in facilities may be interested in replacing carpet and the school board may have other ideas of what to do with school money." A grocery respondent stated "it's not weighing one thing against another. At times it involves 5, 6, 7, 8, 9, 10 different factors. So it is not a quick, easy snap decision."

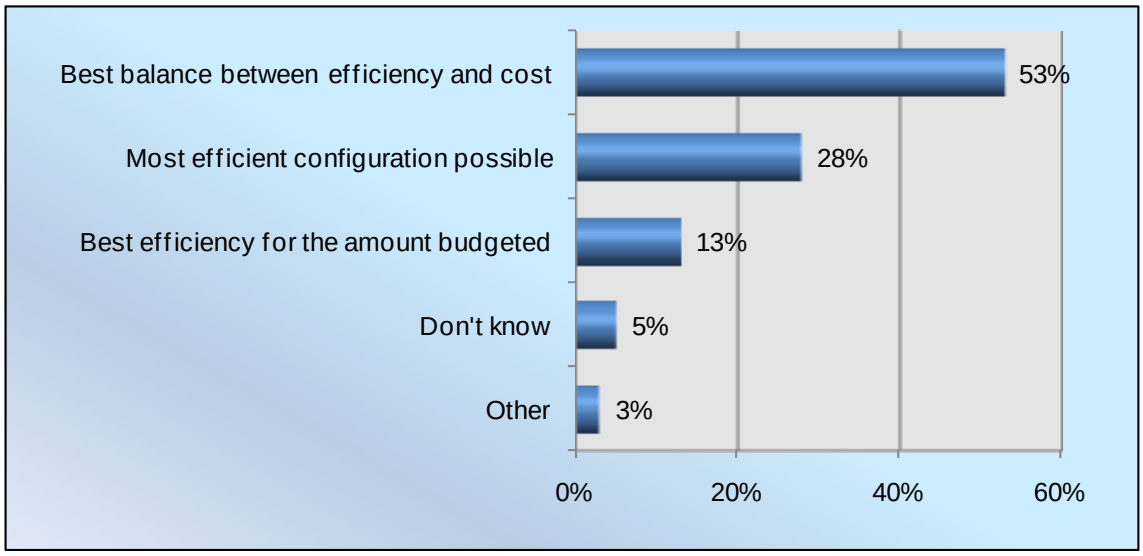
Responses from Brief Interviews

Many of the in-depth respondents had difficulty characterizing how well their project met their equipment needs. Therefore, we attempted to address that topic in the brief interviews by asking which of three options describes the equipment they chose for the project:

- It was the most efficient equipment or configuration available.
- It provided the best balance between efficiency and cost.
- It provided the best efficiency for the amount budgeted.

Figure 5.4 shows that more than half of the respondents thought the equipment provided the best balance between efficiency and cost and about one in seven said the project provided the best efficiency for the amount budgeted. These findings are consistent with open-ended responses in both the in-depth and brief interviews, which frequently emphasized that while reduction of energy consumption is valued, any project to achieve that must make sense from a cost perspective.

Figure 5.4: Description of Purchased Energy Efficient Equipment, Brief Interviews (n=43)



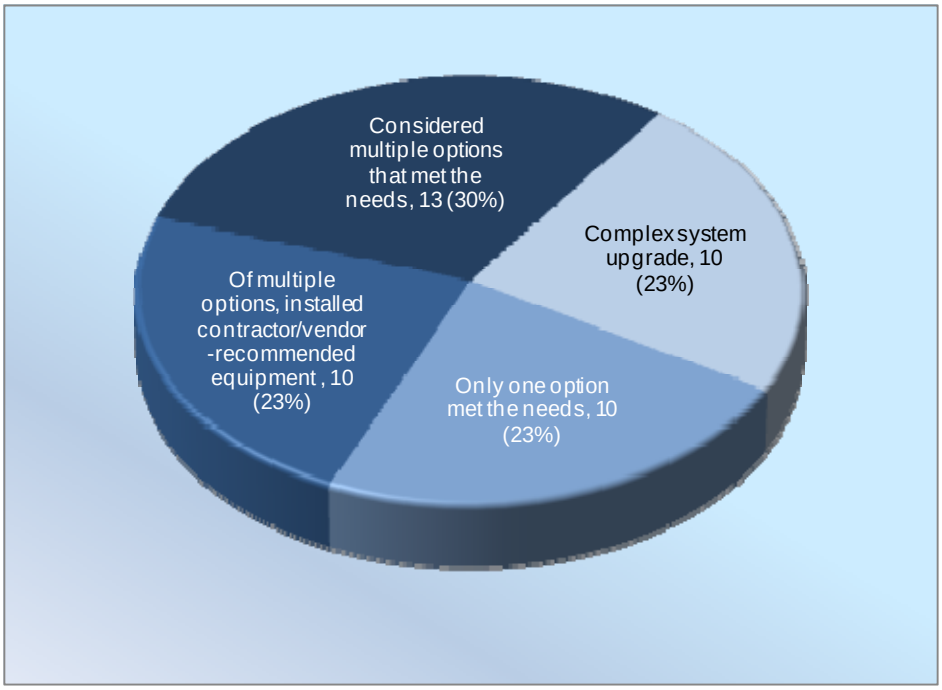
About one-quarter of respondents described their equipment as the most efficient configuration possible. These findings are consistent with what we found in the in-depth interviews, where about one-quarter of the interviewees said that the project represented the best equipment option.

To provide insight into the level of decision-making complexity facing participants, we asked the respondents to characterize their project as either a relatively simple equipment replacement or upgrade or a system upgrade that required considering various equipment types or configurations. To further define the level of decision-making complexity, we asked those who did simple upgrades which of three options best described the complexity of their project:

- There was only one equipment/design option that met their needs.
- There was more than one type of equipment/design options that met their needs and they installed the equipment that a contractor or vendor recommended.
- There were multiple types of equipment that met their needs and they considered various equipment types or models (for example, various efficiency levels).

Figure 5.5 shows the number and percentage of respondents characterized by each of the resulting four levels of complexity: a complex system upgrade or a simple upgrade at one of the three levels of complexity. Approximately three-fourths of the respondents described their project as a relatively simple upgrade, consistent with the percentage saying the upgrade was done on its own rather than as part of a larger facility upgrade.

Figure 5.5: Level of Complexity of Decision



Of those who did a simple upgrade, responses were nearly evenly distributed over the three levels, with just slightly more respondents saying they considered multiple equipment options than giving the other responses.

Note that two responses (only one option, and selected contractor-recommended option), covering 46% of the responses, suggest no real contemplation of equipment options on the part of the participant, other than an initial decision (if one was made) to use energy efficient equipment.

Barriers to Carrying out the Project

We asked the in-depth interviewees about any potential barriers other than competing investments that could have stopped or slowed the equipment upgrade or installation projects. Twenty-four respondents, mostly from the large stratum, suggested possible barriers. The most common barrier referenced was cash flow issues.

Other possible barriers, mentioned by four or fewer respondents, included re-assigning other ongoing projects a higher priority, inadequate staff resources to carry out a project, timing issues (such as the unavailability of a product), and company politics.

Program Influence and Benefits

We investigated the influence that the non-financial aspects of program participation had in participants' decision-making. We asked respondents about their previous participation and how it had influenced their current participation, about the benefits of participation other than buying down the cost of a specific project, and about the types of program assistance respondents had received and what influence that assistance had had on them.

Past Participation

Twenty-five of the 42 in-depth respondents had participated previously in the program. Of those, 18 (72%) said that their previous participation had influenced them to participate again. When asked what it was about the previous experience that had influenced them, six respondents referred to the financial assistance. Five made nonspecific positive comments about the program and five others commented positively about the process. Four referred to aspects of the program's technical assistance, such as having a technical study, using proven technologies, and providing assistance with savings validation. Other isolated comments praised the program representative and the program's help in saving energy.

Economic and Other Benefits

It was of interest to the program to learn whether participants perceive any value of participating other than the immediate buy-down of project costs. In particular, given the economic climate of 2009 and 2010, of interest was whether program incentives provided more general economic benefits to Oregon businesses, such as helping them retain employees or supporting broader investments.

Eighteen in-depth participants mentioned some benefits, most of them economic. The largest group of comments, nine in all, spoke to general economic benefits, e.g.:

> Anything that's a financial gain to the company makes the company stronger
>
> Savings not spent on operating expense just goes back and is available for reuse
>
> Freed up money to have more capital on hand
>
> The incentive helps the overall bottom line … helps offset costs … may help keep our bottom line in the black … went to the general fund … puts the money back into general fund

Five respondents did say that the Energy Trust incentive helped them invest in other projects or expand the incented one. Three respondents explicitly cited employee retention as a benefit. One, representing a franchise operation, indicated that program participation had helped multiple franchise locations retain employees. One retail respondent remarked on a benefit, not of the incentive, but of the incented equipment: the new lighting that was installed does not wash out labels on products sitting on top shelves, which previously had been a problem.

Finally, five respondents cited non-economic benefits of program participation. Three of those suggested that the energy efficiency investment resulted in greater customer satisfaction, and

three (one of those citing customer satisfaction) commented on greater satisfaction within the business.

Program Assistance Received

Many respondents reported minimal direct contact with a program representative other than a contractor or vendor who marketed the program to them – this is not unexpected, given that more than 75% of all Existing Building projects are from prescriptive or standard applications that are directly supported by trade allies. Fifteen of the 42 respondents had sufficient contact to describe some sort of non-financial assistance that the program provided. About half of those described some type of technical assistance, most commonly (six respondents) in helping them identify qualifying equipment. Other types of technical assistance were identifying opportunities for savings, auditing installed equipment, and calculating savings. Six respondents said they mainly received administrative assistance.

Eighteen of the 42 in-depth respondents (43%) credited the program with their decision to install energy efficiency equipment. Those 18 respondents were distributed across the target segments. Those who claimed they would have installed the same measure without influence from the program indicated they have always been interested in saving on their energy bills and that the program "is just the icing on the cake."

More information about program influence will be available in the forthcoming report about results from the Faster Feedback project covering the second quarter of 2010.

Respondent Suggestions for Energy Trust

The last thing we asked respondents in both the in-depth and brief interviews was to suggest actions Energy Trust should take to work with participants better and to attract more participants.

Working Better with Participants

Generally speaking, participants reported being very satisfied with Energy Trust. While 26 of the in-depth respondents offered suggestions for how Energy Trust could work better with them, these suggestions were often ancillary to comments such as "I think they do a pretty good job" and "[the program] worked very well for us." Only about one-quarter of the brief interview respondents offered any suggestions, and nearly three-quarters reported being satisfied with Energy Trust.

Many of the suggestions that respondents gave were for services that Energy Trust already provides, such as scoping studies and project planning:

> We could always use more recommendations about what area would be best to invest in.
>
> I think we stumbled on the decision to do the BDC upgrade. I think that was one that they could have maybe helped us early on.

> I think it would be beneficial to actually have them work a little bit closer with us on the scoping end of projects. A general look at everything and saying what would be good for us to do, you know, for us coming to them with an idea and then how big the scope of that idea is into an energy efficient project.
>
> Well it would be useful, you know the whole master plan thing….

The above comments all came from in-depth interviewees, who typically represented large projects. One respondent specifically mentioned total building modeling as a potential project-planning service.

Fourteen respondents (seven in-depth and seven brief) suggested more or better outreach to keep businesses informed of program activities, such as through a newsletter. Examples of specific comments:

> I don't know if you guys do this or not but if you signed up for maybe an email update for different programs or stuff. We tend to hear about it from some contractors, which is fine, but at times, it is better if we could maybe hear from you guys directly.
>
> I guess, as technology evolves, education of the business populace from the Energy Trust.
>
> I guess, you know, maybe by providing some continual newsletters kind of things that [the program is] currently working on or looking at or doing … by getting those and reading those, that kind of keeps me abreast of things.

Eleven participants (three in-depth and eight brief interview) suggested that Energy Trust could make participation easier. Specific examples of how to make the process easier included the following:

- More guidance on participation, in terms of more explicit step-by-step instructions and timelines and more detailed coverage of what equipment is covered.
- Post more forms on the Energy Trust website so respondents do not have to ask Energy Trust staff for forms.
- Make the lighting spreadsheet more portable via email as it is too big to send as an attachment.
- Limit how many times the participant has to input the same data on each form.

There was no discernible pattern in how suggestions were distributed across target market segments. It might be noted, however, that one respondent in the lodging segment suggested that Energy Trust add water conservation to the Existing Buildings purview. Water conservation is a growing concern in the lodging industry.[5] If this respondent represents a substantial portion of

[5] See, for example, Schultz, P. W., Khazian, A., & Zaleski, A. (2008). Using normative social influence to promote conservation among hotel guests. *Social Influence*, 3, 4-23.

that segment, it may be worthwhile investigating ways in which the program could support water conservation in that industry.

Encouraging Greater Program Participation

We asked in-depth and brief interview participants how Energy Trust might encourage organizations similar to theirs to participate in the Existing Buildings program. The most common response, by nearly half of the interviewees, was to increase outreach to the market.

Twenty-three respondents (18 in-depth and five brief) suggested there needs to be more advertising and outreach to specific segments. For example, one lodging respondent was specific and suggested that Energy Trust needs to be "visible when people are doing capital improvement projects." Energy Trust needs to be "at the back of [potential participants'] mind [as they consider capital improvement projects]."

Twenty-one respondents suggested that Energy Trust should do more to promote the economic benefits of participation. Of those, 17 in-depth interviewees said that segment-specific demonstrations about energy and money savings could convince other organizations to participate. For instance, one school respondent stated that Energy Trust should "publicize… the results of what they have done for other schools."

Other suggestions, made by three or fewer respondents each, were to make it easier to participate, offer larger incentives, and improve communication with customers. Despite the importance to interviewees of controlling energy costs, only three respondents suggested increasing incentive amounts. This suggests that participants deem the incentive amounts appropriate.

6 SECONDARY ANALYSES OF MARKET DATA

We carried out secondary analyses of available data to supplement the data collected in primary research with market actors. We conducted two types of analyses: estimation of program reach into the various key market segments; analyses of repeat participation from 2006 through 2009.

PROGRAM REACH INTO HIGH-PRIORITY SEGMENTS

To provide as full a picture as possible of the Oregon commercial market, we reviewed published data on the commercial building market and research reports on market behavior. A primary purpose of this activity was to estimate the size of the Existing Buildings program's key market segments as a basis from which to estimate the program's presence in those segments. We use the term "presence" rather than penetration because we can determine only the current degree to which the program is involved in each of the target segments, since the program did not systematically identify the market segment of participant sites prior to 2009. (We discuss this further, below.)

Estimating Market Size

Two publications provided detailed data on the size of various segments of the Oregon commercial building market:

- *Northwest Commercial Building Stock Assessment: Final Report.* Prepared for Northwest Energy Efficiency Alliance by The Cadmus Group, December 21, 2009.
- 2003 Commercial Buildings Energy Consumption Survey (CBECS), conducted by the Energy Information Administration (EIA), released June 2006. Available on line at: http://www.eia.doe.gov/emeu/cbecs.

We also reviewed a variety of online sources, including the websites for the Building Owners and Managers Association (BOMA), various Oregon utilities, the Oregon Department of Energy (ODOE), and the United States Green Building Council (USGBC).

The most useful sources for determining market size and EUI were the CBSA and the CBECS, which both offer estimates of the total square footage of various business segments. The other sources offered reports about specific segments but did not offer data needed to develop an estimate of market penetration.

Using the CBSA, CBECS, and census data, we were able to estimate the size of each segment and the energy use intensity (EUI) of the segment in Oregon. Both CBSA data and CBECS data are only available at the regional level so in order to attain state level estimates we took the proportion of the population that lives in Oregon and multiplied that value by the reported square

footage of the region. Table 6.1shows our estimates for the square footage and energy use intensity of each high-priority segment using both CBSA and CBECS data.

Table 6.1: Oregon Business Segments, Estimate of Building Size, and EUI

ENERGY TRUST SEGMENT	2007 CBSA			2003 CBECS		
	OREGON SQ FT[1]	EUI-ELEC.[2]	EUI-GAS[3]	OREGON SQ FT	EUI-ELEC.[2]	EUI-GAS[3]
Office	132,356,000	17.1	0.26	130,025,881	14.0	0.39
Grocery	24,534,000	42.0	0.54	-	57.0	0.18
Hospital	15,167,000	31.8	0.67	-	18.0	-
Lodging	34,104,000	18.3	0.55	58,283,766	12.0	0.49
Restaurant	12,267,000	44.3	2.34	-	45.0	2.13
School K-12	76,241,000	10.0	0.44	89,382,739	11.0	0.55
Retail	112,404,000	17.5	0.34	51,635,020	16.0	0.36

[1] Total estimated regional area in each segment was multiplied by Oregon's percentage of regional population (29%).

[2] Energy Usage Intensity-Electricity, measured as annual kWh per square foot.

[3] Energy Usage Intensity-Gas, measured as annual therms per square foot.

The CBSA data are not only more current than the CBECS data, but, as seen in the above table, the CBSA data are segmented in a manner that correspond more directly to the Energy Trust market segments.

Estimating 2009 Market Presence

We used the CBSA data to estimate the 2009 market presence of the Existing Buildings program by target market segment. We calculated market presence within each segment as the estimated total floor space in square feet affected by 2009 program participation in that segment, divided by the total Oregon building floor space in that segment. Estimating full penetration into the various target segments would require calculating the total building area by segment for all participating sites over a multi-year period. However, the program began systematically identifying participating sites by segment only recently.

Building size (floor space) is not recorded for every project site in the Energy Trust FastTrack database. Therefore, it was necessary to estimate total floor space affected by the program. Facility size was available for approximately 59% of sites overall, but varied among high-priority segments from 32% for restaurants to 90% for retail.

The absence of complete data on building size was complicated by the fact that the project savings were much higher, on average, for projects with building size recorded than for projects

lacking those data. If building size is correlated with project savings, substituting the mean building size for projects where it was lacking would result in an overestimate of the total floor space affected; since the percentage of missing data on building size varied among market segments, the error in estimated floor space would vary among the market segments.

As noted elsewhere in this report, among those records with building size data the overall correlation between building size and project savings was modest. However, that correlation varied among the key market segments, from .13 for restaurants to .72 for retail. The correlation was statistically significant for all but two segments: restaurants and hospitals. In those segments where the correlation was statistically significant, substituting the mean building size for records missing those data would inflate the estimated reach.

We used linear regression to estimate missing building size from energy savings data within each high-priority segment where the correlation between building size and energy savings was statistically significant (otherwise, we used the segment mean). With a building size value (actual or estimated) for each participating site, we were able to estimate the total building area affected by the program for each segment. Within each segment, we divided the estimated total building area by the CBSA estimate of square footage in Oregon to determine approximate market presence (see Table 6.2).

Table 6.2: Existing Buildings Program Market Presence Estimate by High-Priority Segment

MARKET SEGMENT	ESTIMATED OREGON BUILDING AREA (SQ FT), FROM CBSA[1]	CORRELATION BETWEEN BUILDING AREAS AND ENERGY SAVINGS	PERCENT OF FASTTRACK RECORDS MISSING BUILDING SIZE DATA	ESTIMATED TOTAL BUILDING AREA: ENERGY TRUST PARTICIPANTS	ESTIMATED 2009 MARKET PRESENCE
Office	132,356,000	.31	38%	38,300,009	29%
Grocery	24,534,000	.61	30%	6,284,439	26%
Hospital	15,167,000	ns[2]	27%	2,355,829	16%
Lodging	34,104,000	.44	55%	3,464,841	10%
Restaurant	12,267,000	ns[2]	68%	884,135	7%
Schools K-12	76,241,000	.71	65%	4,114,914	5%
Retail	112,404,000	.72	10%	2,022,643	2%
TOTAL	407,073,000	.23	39%	57,426,810	14%

[1] See Table 6.1.

[2] Not statistically significant.

In 2009, the Existing Buildings Program had the greatest reach into the office and grocery segments and the least reach into the restaurant, schools, and retail establishments. Bear in mind, however, that the percentages for restaurant and schools segments rely to a large degree on estimates of total building area reached in those segments.

Total Market Penetration

We attempted to identify the segment of sites that had participated before 2009. We were able to match 8% of pre-2009 participating sites with a site that participated in 2009 and was identified by market segment; this left 92% of the pre-2009 participating sites with no segment identified. We were able to increase the percentage of pre-2009 sites with segment identification to about 14% by identifying large chains with multiple participations and content-analyzing the names of participating organizations. This still left the great majority unidentified. Using the above approach, it was much easier to identify certain segments, such as restaurant and grocery, which means that the other target segments would be underrepresented in any analysis based on this method. Therefore, it was not feasible to produce reliable estimates of total program penetration into the various segments over a multi-year period.

Comparison with Feedback from Trade Allies and Trade Associations

It is interesting to compare the results of our analysis of market presence with the feedback we received from trade allies and trade associations on program penetration and general level of market segment interest in energy efficiency or the program. Table 6.3 shows how each segment ranked in the trade ally judgments, along with a characterization as “high,”, “medium,” “low,” or “no information” from the trade association interviews.

Table 6.3: Estimated Market Presence Compared to Feedback from Trade Allies and Trade Associations

SEGMENT	ESTIMATED MARKET PRESENCE	FREEBACK FROM TRADE ALLIES			FEEDBACK FROM TRADE ASSOCIATIONS
		PENETRATION	PROGRAM INTEREST	ENERGY EFFICIENCY AWARENESS	
Office	1	2	2	3	no information
Grocery	2	3	6	6	Medium
Hospital	3	6	4	5	no information
Lodging	4	4	7	7	High
Restaurant	5	1	1	4	High
Schools K-12	6	5	5	1	Low
Retail	7	no information	3	2	no information

The table shows good agreement between our rankings of market presence and trade allies’ judgments of market penetration for the office, grocery, lodging, and schools segments, but not for hospitals and restaurants. There was no clear correlation between how segments were ranked

in our analysis of market presence and in trade allies' judgments of program interest or energy efficiency awareness. The office segment shows the greatest level of consistency among the various indicators and in general shows the greatest overall level of market involvement in energy efficiency. In the next and final section of this report, we discuss possible reasons for some of the inconsistencies in the above table within the context of an overall summary of each segment, together with implications for the program.

Program Savings by Market Energy Use

Another way to look at program presence within the various segments is to examine the degree to which each segment's proportion of program savings reflects the potential for energy savings within those segments.

To examine this question, we calculated the ratio between the proportion of total program savings accounted for by each high-priority segment and the total market energy use of those segments. We estimated the latter by multiplying the EUI by the total number of square feet of building floor space for each segment, as given above in Table 6.1. We then divided the resulting large number by 10,000,000 to yield a more manageable number, which we termed the Market Energy Use Coefficient (MEUC), and computed, for each high-priority segment, the ratio between the proportion of program savings and MEUC. Finally, we standardized each ratio by dividing the unstandardized ratio by the mean of the seven ratios. Thus, a standardized ratio higher than one means the share of program savings is greater than would be expected based on the total market energy use and a ratio lower than one means the share of program savings is less than would be expected.

Table 6.4 shows the proportion of 2009 program savings, MEUC, ratio of the two, and the estimated 2009 market presence (from Table 6.2) for each high-priority segment. (The last column in the table is explained below.) As seen in the table, the ratio for the lodging segment is exactly one, indicating that its share of program savings is commensurate with its total amount of energy use. The ratios for grocery and schools suggests that their shares of program savings are large relative to the overall amount of energy use in those segments. On the other hand, the office, retail, restaurant, and hospitals segments have lower shares of program savings than might be expected from the amount of energy use in those segments.

Table 6.4: Existing Buildings Program Savings by Market Energy Use in High-Priority Segments

MARKET SEGMENT	PROPORTION OF 2009 PROGRAM SAVINGS	MARKET ENERGY USE COEFFICIENT (MEUC)[1]	STD. RATIO: PROPORTION OF PROGRAM SAVINGS TO MEUC[2]	ESTIMATED 2009 MARKET PRESENCE (% TOTAL BLDG. FLOOR SPACE)	COEFFICIENT OF SAVINGS POTENTIAL[3]
Office	.14	0.23	0.74	26%	1.73
Grocery	.22	0.10	2.46	29%	0.83
Hospital	.02	0.05	0.52	16%	0.44
Lodging	.05	0.06	0.93	10%	0.60
Restaurant	.03	0.05	0.58	7%	0.54
Schools K-12	.08	0.08	1.23	5%	0.78
Retail	.09	0.20	0.53	2%	2.08
TOTAL	.63				

[1] EUI * Market Size / 10,000,000,000.

[2] ($P_{2009\ program\ savings}$ / MEUC) / ((Σ $P_{2009\ program\ savings}$ / MEUC) / 7).

[3] (MEUC * (100% - Estimated 2009 Market Presence)) / ((Σ MEUC * (100% - Estimated 2009 Market Presence)) / 7).

Note that this method of examining market presence does not produce the same order of segments as the estimate based on percentage of total building floor space. Since this method takes energy use directly into consideration, it may be a more useful indicator of which segments may represent the greatest as-yet-exploited program opportunities.

More useful still may be numbers in the final column, labeled "coefficient of savings potential." We calculated this as the standardized product of two numbers: 1) the MEUC; and 2) 100% minus the estimated 2009 market presence. In other words, the indicator of total market energy use is multiplied by the percentage of the market's floor space that the program did not affect in 2009, and that product is expressed as a ratio of the mean of the product for all seven high-priority segments:

$$Coefficient\ of\ Savings\ Potential = \frac{MEUC * (100\% - Estimated\ 2009\ Market\ Presence)}{\sum MEUC * (100\% - Estimated\ 2009\ Market\ Presence) / 7}$$

By taking into account both the current market presence, the savings acquired, and the market energy use in each segment, this coefficient gives an idea of the relative untapped potential for new savings. For example, while the program savings-MEUC ratio is the same for the retail and restaurant segments, the current market presence is lower for retail than restaurants; hence, the savings potential is much greater in retail. On the other hand, even though the office segment has

the highest current market presence, it also has the largest MEUC; as a result, this segment still has the second-greatest potential for additional savings.

None of the above should be interpreted as a suggestion that the Existing Buildings program abandon any of the high-priority segments, or any other segment. Based on the current market presence data, all segments have large potentials for acquiring additional savings. Moreover, as with the market presence analysis, this analysis would benefit from incorporating historical program participation data, if such data could be provided by segment. However, this analysis suggests a new metric the program could use to track its performance over time within each of the market segments.

ANALYSIS OF REPEAT PARTICIPATION

The previous evaluation of the Existing Buildings included an analysis of repeat participation from 2003 through 2007. That analysis was carried out using the site identification numbers (site IDs) of the participating sites. The analysis was hampered by the fact that the program database does not associate multiple separate sites for a given entity under a single higher-level ID field. As a result, large companies or chains that participated at multiple locations under separate site IDs but under the direction of a single decision maker were not counted as repeat participants in that analysis.

For this evaluation, we developed a high-level customer ID based on a combination of database fields. These are: 1) the name of the customer contact person associated with a project; 2) the contact's telephone number; 3) the project title (typically the name of a building or business); and 4) the side ID. We identified project records as matches based on the following decision rules, applied in order:

1. Records match on site ID.
2. Records match on contact name and either telephone number or project title.
3. Records match on telephone number and project title.

The third decision rule recognizes that the contact person for a given business may change over time.

We applied the same customer ID to all records identified as a match by one of the above decision rules. We then created a list of all unique customer IDs and identified those associated with projects in 2006, 2007, 2008, or 2009.[6] We were then able to identify the number and percentage of unique customers that participated in any combination of years.

[6] We did not go further back in time for two reasons. First, we did not have contact names associated with project records for the 2003 to 2005 project years. Second, applying the above method to the more remote years would

continued…

With this approach, we identified a total of 3,677 unique customers. Of the 2,716 unique customers that participated in 2006 through 2008, 453 (16%) participated again in at least one subsequent year. Data on repeat participation are summarized in Table 6.5.

Table 6.5: Repeat Participation from 2006 through 2009

YEAR	PARTICIPATED THAT YEAR		AND PARTICIPATED IN…					
			…THE FOLLOWING YEAR		…ANY LATER YEAR		…ANY PREVIOUS YEAR	
	COUNT	PCT.	COUNT	PCT.	COUNT	PCT.	COUNT	PCT.
2006	772	100%	84	11%	159	21%	n/a	n/a
2007	1,086	100%	135	12%	205	19%	n/a	n/a
2008	1,127	100%	173	15%	173	15%	185	16%
2009	1,229	100%	327	12%	n/a	n/a	268	22%

The above table shows a reasonably constant rate of about one in seven or eight customers participating again the next year. When a broader horizon for repeat participation is considered, we see that about one-fifth of customers participated again in one of the next two to three years.

likely require more time, as we would begin to see changes in contact names, telephone numbers, and other identifiers.

7 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This section first presents a brief summary of what this evaluation revealed about each high-priority segment, followed by the evaluation's conclusions and recommendations.

SUMMARY OF SEGMENT-SPECIFIC FINDINGS

Office

The office segment was one of several segments where we characterized the decision-making about equipment and facility upgrades as complex, involving a standardized process, technical staff or consultants that identify efficiencies, and financial staff that evaluate costs. Decisions in this segment, along with the retail segment, were most frequently reported to involve the owner or corporate/franchise officers and to rely on vendors and contractors. The office segment (and retail) uses maintenance/facilities staff to some degree, but less so than in hospitals and schools. It was in the "large" stratum of market segments, in which project-level contacts were unlikely to have unlimited sign-off authority.

There were two findings that distinguished the office segment from others, even the retail segment. The first is that engineers and architects appear to play a larger role in decision-making in this segment than in others. The second key distinction is the greater role of property managers – reported by about 40% of the office respondents. Office property managers serve as facilitators in the decision making process, performing cost-benefit analyses and then making recommendations to the owner based on the analysis.

This segment showed the greatest overall level of market involvement in energy efficiency. It was the segment with the Existing Buildings Program's highest 2009 market presence (29%) and showed the greatest level of consistency in the trade ally judgments about market involvement. Specifically, it was second highest in trade allies' judgments of penetration and program interest and third highest in judged energy efficiency awareness. We did not interview a trade association representative for this segment, but that was because the BOMA representative already was working closely with the PMC to promote the program within the office segment. It is worth noting that this market segment has been targeted for market transformation by the Northwest Energy Efficiency Alliance's (NEEA) commercial initiative since 2006.

Retail

The retail segment was much like the office in terms of decision-making about equipment and facility upgrades as complex, also involving a standardized process, technical staff or consultants that identify efficiencies, and financial staff that evaluate costs. It was in the "large" stratum of

market segments, marked by greater likelihood of having a specific staff member responsible for energy but with project-level contacts unlikely to have unlimited sign-off authority.

Like the office segment, decisions in the retail segment were more frequently reported than others to involve the owner or corporate/franchise officers and to rely on vendors and contractors. The retail segment uses maintenance/facilities staff to some degree, but less so than in hospitals and schools. About one-third of respondents in the retail segment reported the involvement of property management companies – less than in the office segment but more than in the other segments.

The retail segment was in the "small" stratum of the evaluation, where respondents were more likely to report having unlimited sign-off authority and were less likely to have a staff member responsible for energy. The retail segment accounted for only four of the 24 brief-interview respondents in the small segment, but examination of those respondents' answers indicates that they were representative of the small stratum: two of the four said they had unlimited sign-off authority, but only one said they had a staff member devoted to energy. Nevertheless, this segment shared characteristics of complex decision-making with the segments that were in the evaluation's "large" stratum. Those that reported simple decision-making within this segment were the owners of small retail properties.

The retail segment showed the lowest level of 2009 program presence among all commercial market segments (2%), but based on trade allies' assessments, it had the second- and third-highest levels of energy efficiency awareness and customer program interest. These findings suggest that this segment, then, is currently under-penetrated. This is reflected in the fact that the *Coefficient of Savings Potential* for retail (see Table 6.4) was the highest of the seven high-priority segments.

Given the low market presence and the mix of complex, large-stratum, and simple, small-stratum, decision-making features in this segment, it might be worthwhile to investigate decision-making within this stratum further.

Schools

Respondents in the schools segment reported complex decision-making, similar to the retail, hospital, grocery, and office segments. Facility upgrade decisions involve a range of actors: operations, maintenance and facilities, finance, and, somewhat less frequently, vendors, contractors, and oversight boards.

All sources agreed that there is a low level of program activity within the school segment. The program's estimated 2009 market presence is 5%, and schools ranked fifth out of the seven high-priority segments in program penetration and program interest based on trade allies' responses. However, trade allies' responses also indicated a high level of energy efficiency awareness in schools and that they are more likely than customers in other segments to be responsive to efforts to up-sell them to energy efficient equipment. As noted in Section 2, program staff also indicated a high level awareness of and participation in the program in the school segment, which would

seem inconsistent with our analyses. However, the staff interview defined "penetration" differently, to include awareness of or intention to participate in the program. As seen above, by that definition, the school segment may be said to have high penetration.

The high level of energy efficiency awareness and interest suggests that the school segment represents potential for program penetration in the coming years. However, that potential may be somewhat limited. The *Coefficient of Savings Potential* for schools was fourth-highest of the seven high-priority segments, reflecting a relatively low EUI despite being the third-largest of the high-priority segments in total floor space.

Interestingly, the high level of energy efficiency awareness and the low level of participation in the Existing Buildings program may both result from the State's SB 1149 program. As noted previously, schools are required first to use SB 1149 funds, which are managed through the Oregon Department of Energy (ODOE), for equipment and facility improvements. Working together, Energy Trust and ODOE have identified process barriers that have effectively limited the potential for the Existing Buildings Program to penetrate the schools segment and are holding discussions to streamline the process.

A significant barrier to energy efficiency investment has always been the fact that public schools must raise investment funds through either a levy or a bond, the former requiring voter approval. They are therefore dependent on public willingness to raise taxes for the investments, which has been difficult to obtain. The recent passage of Measures 66 and 67[7] may allow public schools to make investments that have not been possible in recent years. A further barrier is that schools must use the funding available through the Oregon Department of Energy before they can use Energy Trust funding and they must have an implementation plan in place to use Energy Trust funding.

The above barriers to energy efficiency investment are reflected in the fact that the school administrators organization we contacted does not appear to provide energy- and sustainability-related information to its membership. Nor could the contact speak to the issue of regional differences in interests among membership. Given the structural barriers to energy efficiency investment, it is not surprising that it is not one of the primary services provided by a membership association.

Hospital

Hospital contacts also reported complex decision-making – similar to retail, office, grocery, and school segments. In particular, hospitals rely very largely on in-house maintenance or facilities staff, engineers, and finance staff for facility upgrade decisions.

[7] Measures 66 and 67 were tax measures promulgated, among other things, to protect school funding.

This segment was third in our estimates of 2009 program presence (16%). As noted in Section 2, program staff indicated that the hospital segment was one of two segments representing the greatest awareness of and participation in the program. That judgment is consistent with our market presence analysis for the hospital segment. However, that segment ranked fourth to sixth in trade ally comparisons with other segments on penetration, interest, and awareness. The low trade ally ranking for penetration (sixth) may reflect the small number of hospitals relative to businesses in the other market segments, making it difficult for any particular trade ally to gain an accurate sense of the degree of market penetration. The trade ally rankings for program interest and energy efficiency awareness were closer to our estimated 2009 program market presence.

Another reason to believe that the low rankings derived from trade ally feedback do not indicate the actual level of energy awareness in this segment is the fact that it has been targeted by NEEA's commercial initiative since 2003. According to the most recent market progress evaluation report for that initiative, the hospital segment had been well penetrated.[8]

The *Coefficient of Savings Potential* for the hospital segment was the lowest of all seven high-priority segments. This reflects the relatively high level of program presence, combined with the relatively low total floor space in this segment.

No other hospital-specific information was uncovered in this evaluation.

Grocery

Grocery respondents tended to report complex decision-making. A large percentage of respondents from the grocery segment reported that the owner or corporate/franchise officers were involved in making decisions; these respondents also frequently mentioned the involvement of operations staff.

Our estimates showed this segment to have the second-highest level of program presence in 2009 (23%) and it was third-highest in trade allies' judgments of program penetration. PMC staff indicated a large part of this was in conversions to energy efficient lighting. However, trade allies' judgments suggested that this segment ranked somewhat lower in program interest and energy efficiency awareness compared to other segments.

A possible interpretation of these results is that program presence and penetration into this segment is driven by trade ally and PMC activity rather than active efforts by customers to seek out energy efficiency improvements. This interpretation is consistent with a characterization of

[8] *Final Report: 2008 BetterBricks Overall Market Progress Evaluation Report*, prepared for the Northwest Energy Efficiency Alliance by Research Into Action, Inc., with TecMarket Works, PWP, Inc., Dethman & Associates and Washington State University Extension Energy Program, July 17, 2009. Available on the Northwest Energy Efficiency Alliance website ().

this segment offered in the final report of the 2008 NEEA BetterBricks initiative[9], which found that operators of regional grocery stores tend to be preoccupied with urgent operational issues, making it difficult to be proactive in energy management.

Feedback from the grocery trade association suggests that this may be an area where Energy Trust could work to improve influence in the grocery segment. Although the contact for that association recognized that there is a "sustainability mindset" in that segment, that contact did not provide details on membership interests or trends, did not report that the association provides any energy- or sustainability-related information or assistance, and did not know of any regional differences in interests among membership.

All of the trade association contacts indicated that cost or perceived cost is a barrier to making energy efficiency investments, but the grocery contact specifically indicated that the economy is having a greater effect on smaller groceries.

Lodging

Like the grocery segment, a large percentage of respondents from the lodging segment reported that the owner or corporate/franchise officers were involved in making decisions and also frequently mentioned operations staff. In large, downtown hotels in particular, energy decisions involve full-time facilities staff as well as contractors and consultants with which they have standing relationships. In addition, hotels often are part of larger organizations that provide input on, but do not dictate, upgrade decisions.

While most respondents in this segment reported complex decision-making, some reported simple processes – generally the owners of individual franchise properties. Even in those cases, decisions about equipment purchases must be consistent with franchise rules.

This segment ranked fourth in both our 2009 program presence estimates (10%) and in trade allies' comparisons of program penetration with other segments. Interestingly, the feedback from the lodging association representative indicated a high level of energy-related awareness and activity within this segment, while trade allies' judgments suggested low relative levels of program interest and energy efficiency awareness (although a trade ally who works with multiple segments reported the lodging industry is "much more open to discussing energy savings"). It would seem reasonable that the representative of a trade association representing a given market segment would focus on the success stories within that segment, making the overall level of activity appear higher than it is. As with the grocery segment, the higher level of program presence relative to trade allies' judgments of the general level of program interest and energy

9 *Final Report: 2008 BetterBricks Overall Market Progress Evaluation Report*, prepared for the Northwest Energy Efficiency Alliance by Research Into Action, Inc., with TecMarket Works, PWP, Inc., Dethman & Associates and Washington State University Extension Energy Program, July 17, 2009. Available on the Northwest Energy Efficiency Alliance website ().

efficiency awareness may suggest that the trade allies and PMC are driving the program reach into this area.

Our *Coefficient of Savings Potential* suggests a moderate level of potential for additional savings, relative to most of the other high-priority segments. This reflects a combination of modest current market presence, modest total floor space, and modest EUI. Again, these descriptions are in comparison to the other high-priority segments; compared to all other market segments, lodging likely has a high potential for additional savings.

As with other segments, cost or perceived cost is the major barrier to energy efficiency investment. This affects small properties in the lodging segment in particular. Given the lodging trade organization's familiarity and history of activity with Energy Trust, its active engagement in promoting energy efficiency and renewable energy to its members, and the contact's familiarity with energy-related trends in the segment (such as an interest in sustainability certification), this association seems to represent a good channel for continued Energy Trust efforts to reach the lodging segment. In particular, this representative provided useful suggestions for reaching into this segment, such as promoting "entry level" energy reduction activities and tailoring marketing and outreach activities to businesses of different sizes.

Restaurant

The description of decision-making reported by respondents from the restaurant segment bore some similarities to those of grocery and lodging contacts, with a large percentage reporting that the owner or corporate/franchise officers were involved in making decisions. The restaurant segment differed from those others in two main respects.

First this segment showed the lowest percentage of complex decision-making of all high-priority segments (although the difference was statistically significant only in comparison with the school and office segments). Second, restaurant respondents were more likely than grocery and lodging contacts to say that vendors and contractors play a role in decision-making.

The restaurant segment was the only high-priority segment other than retail that fell in the small stratum, which was characterized by a higher percentage of project contacts with unlimited sign-off authority and fewer businesses with a specific staff member responsible for energy.

Respondents that reported simple decision-making in this segment typically were the owners of local restaurants. Where complex decision-making occurred, it differed from that in other segments. In most cases, the restaurants are associated with a chain or franchise and key decision-makers are often not on site, in contrast with the other segments that often have property managers, engineers, or others key parties located on site. Those individuals make decisions for franchise and chain restaurants with almost no input from local operations staff.

Although our estimates put this segment in fifth place regarding 2009 program presence, at 7% – only about one-quarter the program presence of the office and grocery segments – the trade ally responses suggested that this segment had the highest program penetration and highest level of

customer inquiries about the program. The trade association for this segment indicated a high level of activity, although again that could reflect a focus on the most active part businesses. Note that the restaurant segment had the highest percentage of missing building size data in the program database, and so our estimates of program presence are probably less reliable for this segment than for the others; it is difficult to imagine, however, that the actual program reach could be more than twice our estimate, which would raise its rank from fifth to fourth. It may be worthwhile further investigating the basis for trade allies' perceptions of the degree of program reach into this segment and what implications that may have for their efforts therein.

The *Coefficient of Savings Potential* for the restaurant segment was only slightly lower than that for the lodging segment. Although the total building area in Oregon is barely more than one-third that of the lodging segment and the 2009 market presence was somewhat lower, these factors were balanced out by the high EUI in this segment –the highest of the seven high-priority segments. Thus, there appears to be a moderate potential for additional energy savings in this segment compared to the other high-priority segments.

As was the case with the lodging segment, the trade organization's familiarity and history of activity with Energy Trust and its active engagement in promoting energy efficiency and renewable energy to its members, this association seems to represent a good channel for continued Energy Trust efforts to reach the restaurant segment.

The contact for the restaurant association indicated there was more interest in energy efficiency Eugene and Portland than in the rest of the state. Energy Trust and the PMC might consider efforts to raise awareness and interest in energy efficiency in certain areas outside Portland and Eugene, such as the coastal areas, which serve many vacationers. Such efforts might be in the form either of direct outreach or working with trade allies serving those areas.

As in all other segments, cost or perceived cost is a barrier to making energy efficiency investments. Beyond that, one lighting trade ally who works in multiple segments suggested that restaurants are the least likely customers to be up-sold to more efficient lighting because of the desire for "true color." One possible response to this barrier would be to investigate and promote ways to render better color quality from energy efficient lighting. Another response would be to focus efforts on promoting energy efficiency in non-lighting applications. In this context, it is noteworthy that some trade allies suggested that Energy Trust incentives be extended to cover combi ovens and gas ranges.

CONCLUSIONS AND RECOMMENDATIONS

1. **Conclusion:** There remains yet a large potential for increasing program participation by adding new customers. The program still relies heavily on trade allies, who play a strong role in upgrade decisions, and who have commented in two successive evaluations that they would like program marketing brochures or other materials to give to customers.

Recommendation: Develop program brochures and other marketing materials to provide to trade allies to distribute to their customers. As the program continues expanding outreach to new contractors and vendors, provide them with those materials as well.

2. **Conclusion:** Trade allies continue to request that incentives be expanded to a wider range of energy efficient equipment, most notably LED lighting. Feedback from trade associations and some participants supports a desire in the market for incentives for LEDs. Much of the equipment they mentioned is covered under custom application if cost-effective, suggesting that many trade allies are either unaware of the flexibility of the custom application track or may find the custom application process too complicated. In either case, some opportunities for savings may be lost.

   Recommendation: Investigate creating prescriptive incentives for a wider range of equipment or developing a simplified, small-project custom track.

3. **Conclusion:** Feedback from all sources suggests that cost continues to be the largest barrier to investment in energy efficiency.

   Recommendation: Investigate ways to expand cost-effective financial assistance, such as reduced interest loans, allow phased participation over time following an established plan, and expand segment-targeted promotion of low-cost, no-cost energy efficiency measures.

   Recommendation: Provide additional training to trade allies on how to convey the long-term cost benefits of energy efficiency to their customers. At the same time, incorporate more information on cost benefits of energy efficiency in marketing and the program's direct outreach to the commercial market and possible expand the amount of marketing and outreach conducted.

4. **Conclusion:** Some results suggest that trade or industry associations may play a growing role in promoting energy efficiency. Many businesses are interested in and influenced by the energy efficiency measures undertaken by other businesses in their industry segment, and much of the information about what other businesses are doing comes through trade or industry associations. Such associations may be a way to reach decision-makers that have proven to be difficult to reach through other means.

   Recommendation: Expand interaction and coordination with trade and industry associations, including placing advertisements or articles in association newsletters, joining and supporting association events, and providing technical assistance to support associations' information dissemination activities.

5. **Conclusion:** There remains a general belief that "split incentives" are a barrier to energy efficiency investments in leased commercial property. However, evidence from both the commercial and multifamily residence market shows that property owners believe that offering energy efficiency features is a good way to keep tenants and reduce vacancy

rates, which is consistent with recently published research.[10] At least two program participants interviewed in this evaluation demonstrated a similar belief.

Recommendation: Target trade allies that perform tenant improvements in leased spaces to leverage funds that are already earmarked for improvements.

Recommendation: Energy Trust should conduct research to investigate the potential value to building owners of offering energy efficiency to tenants in the commercial market in Oregon.

[10] Eichholtz, P., Kok, N., and Quigley, J.M. 2009. *Doing Well by Doing Good? Green Office Buildings*. *http://www.escholarship.org/uc/item/4bf4j0gw*. Berkeley, Calif.: Center for the Study of Energy Markets, University of California Energy Institute, University of California, Berkeley.

APPENDICES

A STAFF INTERVIEW GUIDES

B TRADE ALLY AND DISTRIBUTOR INTERVIEW GUIDES

C TRADE ASSOCIATION INTERVIEW GUIDES

D PARTICIPANT INTERVIEW GUIDES

D PARTICIPANT IN-DEPTH/BRIEF INTERVIEW GUIDE CROSS-WALK