

# **Energy Trust New Buildings Program**

## **Process Evaluation Report**

**FINAL**

Prepared by

**PWP, Inc.**

**October 2010**

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## Executive Summary

This report presents the findings of the process evaluation of the Energy Trust of Oregon's New Buildings (NB) program for 2009, focusing on program goals and achievements since a new program management contractor (PMC) took over in at the beginning of that year. The NB program provides financial incentives and technical assistance to owners who install energy efficiency measures in new commercial construction and major renovation projects. During the 2009 program year, incentives were paid for about 1,350 different measures installed at 211 sites.

The goals of the 2009 NB Program process evaluation activities were to obtain feedback on program design and implementation that can be used to improve the implementation of the current program to help it more effectively and efficiently deliver energy efficient new buildings and improve customer satisfaction. Evaluation activities included a combination of secondary data and program document review; on-site and telephone interviews with two Energy Trust and seven NB program staff; and interviews with 49 program participants and 30 non-participants.

Key findings reported in this report are summarized below.

- Program application forms and instructions are comprehensive and clear, while the application process appears to capture needed participant and measure data. However, the need for data creates a perception among a few participants and somewhat more potential participants that the process is difficult, especially among smaller architecture firms and owners working with them.
- The Energy Trust website plays a key role in providing information about the NB program, and more than half of participants downloaded their program application, but it is perceived as somewhat difficult to use to find specific information, particularly on covered measures and incentive levels.
- The organization of program Outreach Managers by market sector seems to be very effective in reaching almost all large and even medium sized players, but small owners/architects and some projects in other segments may be missed, based upon the results of the non-participant survey.
- The overwhelming majority of participants use the Standard track because this path is most appropriate for a majority of projects; respondents who were aware that there were different tracks were all satisfied with their choice of track.
- Market penetration of the NB program is high, although the 90% market share calculated may reflect projects started in earlier years and finalized in 2009. Accounting for the larger 2008 and 2007 markets yields an estimated market penetration of 65%.

- Sources of information about the NB program for participant and non-participants reflect the influence of design professionals and highlight the need to continue outreach and education to this group, particularly “second-tier” and one-person firms that may find it more difficult to attend AIA or other sessions where they could learn about the program.
- Among participants, there were generally high levels of program satisfaction across the board, including the ease of applying, required efficiency level, and amount of the rebate as well as program communications and responsiveness of staff.
- Some participants expressed concern about the length of time to get applications approved and the difficulty of tracking the status of the application; someone suggested an online application and tracking process. Some participants also expressed concern about amount of data required to support the application (e.g., entire model runs). Most respondents were satisfied with the length of time required to receive their incentive.
- Overall participant satisfaction with the program was 4.4 on a 5 point scale. Other than “higher incentives,” the only suggested changes included online application linked to the Oregon Business Energy Tax Credit (BETC), online application tracking, more assistance for applicants who lack technical resources, continued outreach to architects as well as public agencies.
- Most participants who were familiar with earlier incarnations of the NB program commented favorably on the program as currently implemented, citing easier application, more streamlined process, more measures covered and the very responsive staff.
- The free ridership rate calculated using the Energy Trust algorithm based upon survey responses was 35.2% based on results from 43 respondents.
- About three-fourths of participants said they typically strive to exceed code on their new construction projects, with several citing a commitment to move toward net-zero buildings and others stating their goal is to exceed code by 20-30%.
- About half of non-participants said their standard practice is to exceed code, although fewer had the specific aggressive goals mentioned above.
- For both groups, first cost and payback continue to be significant barriers; conversely, the NB program could encourage adoption of efficient design by demonstrating the cost-effectiveness of targeted measures – with or without an incentive. For example, non-participants rated information on payback more useful even than incentives in encouraging efficient design.
- Among non-participants, more than one-third were not at all aware of the NB program, while several others were only slightly familiar with it. Among those who were familiar,

program paperwork is perceived as a barrier, and assistance with program or tax paperwork is seen as a valuable program feature.

- Most architects and owners are aware of the new Oregon Energy Code, but most do not have a clear understanding of its requirements other than knowing they will need to make changes to everything from the envelope to lighting to mechanical systems.

## **Recommendations**

While the NB program is running smoothly and effectively working with many owners, design professionals and trade allies, there are opportunities to extend its coverage to the segments of the market that have limited exposure to the program, and to address concerns expressed by some participants. Recommendations include:

- Conduct outreach to small design firms with just one to three architects, particularly those who work with design-build contractors, to inform them about the NB program and the BETC.
- In explaining the program, emphasize ease of participation, and offer help with program application forms for organizations that lack internal resources to handle the process.
- Consider an online application process, including tracking the progress of applications and potentially using online communications to address problems with the application.
- Supplement incentives and design assistance with information on costs and returns on the most popular measures; this may seem self-evident for more sophisticated users, but many of the smaller firms simply do not know where to find this data.
- Based on the high importance participants in the Small Commercial Pilot attach to Earth Advantage Certification, consider some kind of public recognition device for new buildings that participate in the program – something less than certification but more than just the incentive, along the lines of a sticker or plaque that can be placed on the building saying “this building participated in the Energy Trust New Buildings program.”
- While the new Code will make it more difficult to achieve incremental efficiency gains through the NB program, the program should emphasize its new (2011) requirements in the context of the new Code, explaining, for example, what specific measures or technologies can be used to meet the new code and what specific measures or technologies can be used to exceed it and qualify for an incentive.

## MEMO

**Date:** October 7, 2010  
**To:** Board of Directors  
**From:** Sarah Castor, Evaluation Project Manager  
Jessica Rose, Business Sector Manager, New Buildings Program  
**Subject:** Staff Response to the 2009-2010 New Buildings Program Process Evaluation

PECI became the New Buildings Program Management Contractor (PMC) in 2009, inheriting the existing program design. They have since brought the program to a new level of maturity and recognized changing customer and market delivery needs. Based on the 2009-2010 Process Evaluation, the New Buildings program is working well. Overall participant satisfaction is high, and many commented that the program has become easier to work with in recent years. Providing customers with close communication with outreach managers was also helpful. Both participants and nonparticipants emphasized a need for an even more streamlined process, paperwork that is less time-consuming and more information on measure costs and savings.

The program has responded to many needs identified in the evaluation through a program-level redesign. The overall goal of the redesign is to lift barriers customers face and provide strategic focus to support customer decision making that will drive widespread adoption of high-performance buildings. For customers who enter the program in the design and development stages, a rewarding comprehensive approach will be available, while customers who are moving quickly will have a fast track approach. Feedback from past evaluations was incorporated into the new design. We expect these changes to address some of the recommendations made by the evaluator and recognize that some have been incorporated into the redesign.

Evaluation recommendations:

- *Streamline requirements and paperwork by reducing iteration over the lifecycle of the project*

Project enrollment will take place over the phone with an email to the project owner confirming enrollment, rather than as a paper form submitted by the customer who then awaits confirmation. Incentives will be gradually built into the project file as the project undergoes the development cycle.

To address a need for reduced iteration on technical reviews of calculated savings, the program recently introduced two tools – HVAC and Lighting calculators - into the market to streamline and standardize various calculation methods across the industry. This is expected to expedite the technical review process and in particular help customers taking a fast track approach. These changes also improve the program's technical analysis and verification of savings. Outreach Managers will be trained on the calculators to better assist participants in the application process.

- *Consider an online application process and tracking system*  
Energy Trust will be converting to a new program tracking and customer relationship management system. During this time, we will explore options for communicating and sharing status with participants via the web. Online incentive tracking is currently available for residential customers and we hope to expand this to commercial customers, though information needs may be more complex and extensive for this group.
- *Conduct outreach to small design firms*  
PECI will conduct outreach to small architectural firms and design-build firms, while continuing to work with established market players. One of the anticipated outcomes of the Small Commercial Efficiency pilot is the adoption of a simplified whole-building approach that will be broadly accepted among small firms making it easier to work within this market sector.
- *Supplement incentives and design assistance with information on costs and payback time*  
Energy Trust developed a tool called "*Pencil It Out*"<sup>TM</sup> to help participants with the financial aspects of decision making. This tool can help participants project energy cost savings and evaluate the overall investment in energy efficiency using four values: Total Building Area, Cost, Financial Incentive and Estimated Energy Savings. Pencil It Out automatically displays the Building Owner Total Investment and Annual Net Present Value of future cash flows, including the Business Energy Tax Credit. This tool will be incorporated into projects more frequently to help inform decision-making.
- *Consider a form of public recognition for participants*  
Public recognition has been identified in the 2011 Marketing Plan as a key area of focus to push market demand for high-performance buildings as

we work to grow the supply. Specific initiatives include big check presentations for small businesses; leveraging the well-recognized labels that participants earn such as LEED, Earth Advantage, and ENERGY STAR; and nominating participants and firms for a variety of energy champion awards and green building awards.

- *Emphasize new (2011) program requirements in the context of the new Code explaining, for example, what specific measures or technologies can be used to meet the new code and what specific measures or technologies can be used to exceed it and qualify for an incentive*  
Rather than focusing on incentives for individual measures, incentives for new projects required to meet the 2010 Oregon Energy Efficiency Specialty Code have been tiered to encourage increased efficiency above the new code and support savings that are much more difficult to achieve, especially on the electric side. Modeled projects taking the comprehensive path will be eligible for a tiered incentive that increase for every percent beyond code achieved and kicks in at 15% beyond code.



# 1. Introduction

This report presents the findings of the process evaluation of Energy Trust of Oregon's New Buildings (NB) program for 2009, focusing on program goals and achievements since a new program management contractor (PMC) took over in at the beginning of that year. The NB program provides financial incentives and technical assistance to owners who install energy efficiency measures in new commercial construction and major renovation projects. The program began in August 2003 and is currently administered for Energy Trust by its program PMC, Portland Energy Conservation Inc. (PECI), which took over the program's administration in 2009. During the 2009 program year, incentives were paid for about 1,350 different measures installed at 211 sites, generating total estimated NB program savings of approximately 23,800 annual MWh and 52,500 annual therms. These savings estimates will be verified by a separate impact evaluation to be conducted in 2011.

To be eligible to receive electric incentives from the NB program, a project must be served by Portland General Electric or Pacific Power. To be eligible to receive natural gas incentives, a project must be served by NW Natural or Cascade Natural Gas. Commercial building project types eligible to receive incentives include office, retail, healthcare, warehouse, storage, restaurant, manufacturing, grocery, hotels, motels, public and private schools or colleges, mixed-use, high-rise multifamily residential (more than 3 stories), and parking garages.

The goals of the 2009 NB Program process evaluation activities were to obtain feedback on program design and implementation that can be used to improve the implementation of the current program to help it more effectively and efficiently deliver energy efficient new buildings and improve customer satisfaction. For the 2009-2010 time frame covered by this evaluation, overall New Building program evaluation activities focused on:

- Providing an estimate of the market penetration of the NB program
- Assessing the effectiveness of marketing, outreach, and communication efforts
- Reviewing and evaluating program implementation and delivery activities, and identifying areas where program processes or marketing need improvement to increase satisfaction and ease of participation
- Exploring current energy efficiency design and installation practices and reasons for not participating, as well as program changes that would encourage participation.

To address a need for reduced iteration on technical reviews of calculated savings, the program recently introduced two tools – HVAC and Lighting calculators - into the market to streamline and standardize various calculation methods across the industry. This is expected to expedite the technical review process and in particular help customers taking a fast track approach. These changes also improve the program's technical analysis and verification of savings. Outreach Managers will be trained on the calculators to better assist participants in the application process.

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- *Supplement incentives and design assistance with information on costs and payback time*  
Energy Trust developed a tool called “Pencil It Out”™ to help participants with the financial aspects of decision making. This tool can help participants project energy cost savings and evaluate the overall investment in energy efficiency using four values: Total Building Area, Cost, Financial Incentive and Estimated Energy Savings. Pencil It Out automatically displays the Building Owner Total Investment and Annual Net Present Value of future cash flows, including the Business Energy Tax Credit. This tool will be incorporated into projects more frequently to help inform decision-making.
- *Consider a form of public recognition for participants*  
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we work to grow the supply. Specific initiatives include big check presentations for small businesses; leveraging the well-recognized labels that participants earn such as LEED, Earth Advantage, and ENERGY STAR; and nominating participants and firms for a variety of energy champion awards and green building awards.

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## **2. Evaluation Methodology**

To address the above goals, the evaluation team analyzed data collected through a combination of secondary data and program document review; on-site and telephone interviews with program staff; and interviews with program participants and non-participants. Each of these data sources is discussed below.

### ***DOCUMENT REVIEW AND SECONDARY DATA***

Review and analysis of the paper trail for the NB program helped provide a thorough understanding of how the program was being implemented and contributed valuable insights to analysis of the effectiveness of program delivery. In addition, the review of program documents was designed to reveal variances between planned and actual implementation. Internal documents also provided the most accurate source of information on quantitative measures of program activity, such as total number of participating projects, number of customers utilizing various tracks, types of products rebated and contact information for owners, designers and consultants.

Secondary data were also used to help provide a picture of the industry structure to support an overview of the market, including an estimate of market penetration developed from commercially available data on non-residential new construction.

### ***PRIMARY DATA***

Primary data were collected directly from program staff and contractors, program participants, and eligible non-participants. The following groups were the subject of primary data collection efforts.

#### ***Program Staff and Contractors***

In addition to conducting more formal interviews with these individuals at the start of the process evaluation to get their insights into program progress, adjustments, and challenges, we maintained regular contact with PMC managers and staff to address specific issues and learn or relevant program updates.

#### ***Program Participants***

Customers and designers who participated in the NB program were asked about overall program satisfaction as well as perceptions of individual program elements that explain that level of satisfaction. In addition, participants were asked about the information sources they used to find

out about the program, communication with program staff, and standard practice in the absence of program participation.

### ***Program Non-participants***

Since the NB program is both well established and well known by many customers and trade allies, it was considered important to investigate reasons why significant numbers of eligible customers would fail to participate in the program, particularly if they were thoroughly familiar with the program. In addition to identifying program requirements and processes that may be perceived as cumbersome, these interviews were also designed to bring to light failure of design professionals and trade allies to inform customers about the availability of the program. In practice, most of the non-participant interviews were conducted with architects to capture their experience with multiple new construction projects that did not participate in the program.

### ***Sampling and Interviews***

Interview guides were developed for both participants and non-participants and are included in the Appendix. Surveys/interviews were conducted with both program participants and non-participants.

- Participants were randomly selected from the final dataset of 189 projects reported as completed in 2009 in the Fast Track tracking system by PECI that had contact information for respondents who would likely be knowledgeable about program participation<sup>1</sup> (see Exhibit 3-2 below). This differs from the total participation numbers reported in the introduction, which included all participating projects.
- Since there was no comparable list of non-participants, respondents for the non-participant survey were identified using the following methods:
  1. A few projects identified by PECI staff that had originally planned to enroll in the NB program but subsequently dropped out
  2. Several projects/owners were also identified by PECI staff and the program tracking database that had been contacted by a program Outreach Manager but chose not to participate
  3. The majority of non-participants were found using a list of architectural firms in Oregon, who were contacted and asked about any new construction projects they may have had in 2009 that did not participate in the NB program.

The number of interviews completed is presented in Exhibit 2-1.

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<sup>1</sup> Projects with contacts who were purely administrative, such as Accounts Receivable, were excluded.

**Exhibit 2.1 – Completed Interviews**

<b>Energy Trust Staff</b>	<b>2</b>
<b>PECI Program Staff</b>	<b>7</b>
<b>Participants</b>	<b>49</b>
Owner or representative	24
Engineer	8
Architect	6
Project Manager	3
Lighting designer	3
Electrical contractor	2
Other non-owner	3
<b>Non-participants</b>	<b>30</b>
Architect	29
Owner’s representative	1

Note that: a) several respondents were responsible for more than one project, and b) several respondents may have been active on a single project, since we attempted to capture the perspectives of owners as well as architects and other market actors. Therefore, results are reported by respondent rather than by project. Since some respondents were unable to answer some questions because they were not involved in a specific aspect of participation, we have specified the number of respondents for each question in the tables of results.

For several key questions, we have provided mean participant responses separately for owners or owner’s representatives and others. Additional breakdown of results would not be meaningful, and it must be emphasized that even the owner/non-owner comparison did not yield statistically significant differences.

### 3. Results

#### Program Status

The New Buildings Program’s performance for calendar year 2009 is summarized in Exhibit 2-1, which shows estimated savings as a percentage of the yearly goals. The program started slowly as the new implementation contractor took full control, but increased its participation levels rapidly after the middle of the year. Despite a new construction market that shrank by about 40% from 2008 levels, estimated savings exceeded the “conservative” kWh and therms savings goals for the year in December, and exceeded the “Stretch Savings” goals for gas, but not for electric savings.

**Exhibit 3-1**  
**2009 New Buildings Programs Savings Goals and Achievements**

	kWh	therms
<b>GOALS</b>		
Conservative	21,000	35,000
Stretch	28,000	42,000
<b>ACHIEVED*</b>	<b>23,800</b>	<b>52,500</b>
Achieved as % of Conservative Goal	113.3%	150.0%
Achieved as % of Stretch Goal	85.0%	125.0%

\*Estimated: to be verified by impact evaluation in 2011

Monthly progress reports submitted to Energy Trust by PECCI show that during the year, the PMC implemented a number of changes to the NB program, including revisions to forms and to the process itself. Examples include the following:

- In March, The Technical Guidelines and Energy Analysis Report Template were finalized, standardizing and increasing the level of detail of technical data required on Custom Track applications. According to program staff this did encounter some resistance from participants and the energy modeling community, but most participants ultimately recognized that the information being asked for should have been provided anyway.
- The program submitted updates to a number of program documents to Energy Trust in April, including the following forms and corresponding templates:
  - 510E project enrollment form
  - 520S Standard track workbook, including the addition of numerous new measures and measure updates
  - 520L- LEED NC and CS track application
  - 520C Custom track and 520 Cx commissioning applications
  - 520T Technical assistance application

- 520ES Energy Star track application
  - 540ED early design assistance application
- While there is no evidence that this redesign affected participation, we did investigate customer perception of the ease or difficulty of completing program forms during the participant interviews and, as noted below, found that participants were generally satisfied with the ease of completing the application.
  - Also in May, PECI presented a set of proposed program enhancements to the Energy Trust Conservation Advisory Council and received approval for the following items:
    - Project incentive cap of \$500,000 to align with Existing Buildings program cap
    - Pre-approval maximum of \$5,000 to align with Existing Buildings maximum
    - Early design assistance of \$2,500
  - During the year, several measures were updated or added (e.g., AC units, lighting controls, gas boilers, commercial clothes washers, grocery measures, vent hoods) while others were removed due to changing standards (pulse start metal halides, exit signs except for photoluminescents, air-to-air heat pumps below 6 tons). Similarly, early design assistance was implemented as a program offering in July.
  - A lighting calculator tool was approved, tested and made available on a limited basis beginning in September to calculate Standard or Custom savings and incentives.
  - The Core Performance Guide – Oregon Edition was finalized in collaboration with New Buildings Institute and the Small Commercial Efficiency Pilot was designed and rolled out at the end of the year.
  - In November the program implemented the new Energy Trust policy for projects with stimulus funding, requiring an attestation document stating that Energy Trust incentive dollars were used to fund a portion of the energy efficiency project.

As shown in Exhibit 3-2 below, Standard projects far outnumbered LEED, Custom and Energy Star track projects, a result that is consistent with the program’s overall approach since standard track projects are appropriate for most participants.



**Exhibit 3-2 – Number of Projects, by Track**

Track	# of Projects
Standard	133
Custom	17
LEED NC	14
Standard / Custom	14
Path to Net Zero	5
LEED CS	2
ENERGY STAR®	3
Commissioning	1
<b>Total</b>	<b>189</b>

It should be noted that most of the changes implemented in 2009 had little impact on the above participant projects, many of which had been launched in previous years and were either completed or simply had their paperwork wrapped up in 2009. We did review the new forms and procedures and confirmed that they appear to capture the data necessary to track program progress without being unduly difficult for most participants, although some smaller owners and architect firms might still find the application process somewhat daunting because of their own limited personnel resources and technical expertise.

**Program Market Penetration**

As part of the secondary data review we attempted to estimate the NB program’s market penetration by comparing the total square footage of projects participating in the NB program to the overall new construction market in the area served by Energy Trust. To do this, we calculated the total reported square footage for projects that were recorded in the final tracking system dataset as 2009 participants and compared this to the total new construction square footage as reported by McGraw Hill construction data. Results are presented in Exhibit 3-3 below.

**Exhibit 3-3  
Program Square Feet as % of State Total**

	Square Feet
Total Square Ft. for 09 NB projects	8,798,046
Statewide 09 New Buildings/Additions Sq. Ft.	9,911,400
NB Program Total as % of State Total	89%

As shown in the exhibit, this analysis indicates that participating projects accounted for almost 90% of the statewide new construction/additional square footage reported by McGraw Hill. While this seems high given that not all projects in the state are eligible, it should be noted that the statewide data do not include renovations, which are a significant factor in the NB program. Moreover, some of the projects shown in the 2009 program data set were in fact completed in a previous year before the market contracted, but had their incentives processed in 2009, so that the actual share of the market is probably lower than shown – a conclusion that is supported by the number of new construction projects reported by non-participating architects we surveyed.

To account for the effect of projects started in earlier years that were completed and filed paperwork in 2009, we recalculated the statewide square footage as a weighted average of 60% 2009 data, 30% 2008 data and 10% 2007 data to reflect the influence of the larger new construction markets in those previous years. This results in a statewide market of 13.5 million square feet and a penetration rate of 65.1%.

## Participant Results

Participant interviews dealt with all aspects of the program participation process – from initial awareness to post-installation inspection.

While about half of participants said they became aware of the NB program about the time they initiated their current project, many said they had been aware of Energy Trust and its programs for new construction for years, or at least long enough that they could not identify a specific year or month they first learned about it.

Regarding sources of awareness, coworkers and participation in earlier programs were most often cited by participants, as shown in Exhibit 3-4. No other information source was cited by more than 8% of respondents.

**Exhibit 3-4**  
**How did you first learn about the program?**

Source	% of mentions ( n=49)
Colleagues	34.0%
Predecessor programs	32.0%
Program Staff	8.0%
Vendor or contractor	8.0%
Employer	6.0%
Consultant	4.0%
Owner	4.0%
Energy Trust website	2.0%
Local contacts	2.0%

Participants were also asked to rate how useful they found the information sources they used in helping them decide to participate in the NB Program, using a 1 to 5 scale, where 1 is not at all useful and 5 is extremely useful. Average ratings for various sources from highest to lowest are presented in Exhibit 3-5.

**Exhibit 3-5**  
**On a 1 to 5 Scale\*, How Useful Were the Information Sources You Used?**

Source	Mean Rating	No. of Respondents
Architect/engineer/consultant	4.44	9
New Buildings program outreach manager	4.00	8
Recommendation from a colleague	3.86	7
Existing Building program staff	3.71	7
Energy Trust website	3.64	14
Other Energy Trust staff	3.60	10
Program brochures and forms	3.33	12
Association events or trainings	3.33	3
Contractors/vendors/other trade allies	3.11	9
Advertisement	2.00	2
Press release, news story or article	2.00	2

\* 1 is not at all useful, 5 is extremely useful

Design professionals (architects/engineers/consultants) were perceived as most influential in helping respondents decide to participate in the program, followed by the Program Outreach Manager and recommendation from a colleague. Information from staff for the Existing Building Program also received a relatively high rating, indicating that PMC staff are effectively cross-selling Energy Trust programs that are more appropriate for customers.

Participants were also asked whether they were aware of different NB Program tracks; 39 of 50 (78%) were aware, and none of those reported being dissatisfied with the track they selected. Among the projects that respondents were involved in, the large majority were standard track, as shown below.

**Exhibit 3-6**  
**Number of Respondent Projects by Track**

Source	% of projects (n=39)
Standard	56.4%
LEED	23.1%
Custom	15.4%
Standard Custom	2.6%
EnergyStar	2.6%

As shown in Exhibit 3-7, more than half of participants reported downloading their application from the Energy Trust website, while the remainder were about evenly split between Energy Trust staff and consultants (who are sometimes retained specifically to assist in all aspects of the green building process.)

**Exhibit 3-7**  
**Where did you get your program enrollment application?**

Source	% of responses ( n=43)
Energy Trust website	55.8%
Energy Trust Staff	20.9%
Consultant	18.6%
Other (specify)	4.7%

We determined that most respondents were directly involved in completing the application process, with 61% saying they were personally “most responsible” for completing the application, as shown in Exhibit 3-8 below.

**Exhibit 3-8**  
**Who was most responsible for completing the application?**

Position/title	% of responses		
	all (n=49)	Owners (n=24)	Other (n=25)
Respondent	61.2%	45.8%	76.0%
Consultant	14.3%	16.7%	12.0%
Architect or engineer	10.2%	16.7%	4.0%
Someone else in the organization	8.2%	12.5%	4.0%
Contractor or vendor	4.1%	8.3%	
Owner	2.1%		4.0%

Note that responses for owner representative indicate a lower level of involvement with the application process than those for other respondents (e.g., engineers, architects, contractors). More than half of owner respondents (13 of 24) indicated that someone else had primary responsibility for completing the application. Overall, however, the active involvement in the application process by more than 60% of respondents helps to validate their answers regarding satisfaction with the application process, summarized in the exhibit below.

**Exhibit 3-9**

**On a 1 to 5 Scale, how satisfied were with the:**

	Overall Mean Rating	(n)	No. of 1s, 2s	Owner Mean Rating	Other Mean Rating
Ease of applying for the incentive?	4.23	42	1	4.16	4.30
Efficiency level required to qualify for incentive?	4.13	47	1	3.96	4.26
Amount of the incentive?	4.21	47	2	4.13	4.30

\* 1 is not at all satisfied, 5 is extremely satisfied

Owners and their representatives were somewhat less satisfied with the application process and the amount of the incentive than were other respondents, although the differences are not statistically significant. While the results show that satisfaction levels were generally high, a handful of participants provided low satisfaction scores and offered reasons for their dissatisfaction. Explanations offered included the following verbatim comments:

- We could not find the required equipment
- Compared to the overall cost of these projects and the level of effort required, the incentive was small.
- Incentive should have been more
- Energy Trust was transitioning from one company to another; the first lost the paperwork

More than two thirds of respondents said they had sought approval from the NB program before buying equipment. As with the overall application process, satisfaction with key elements of the approval process was high, as shown in Exhibit 3-10.

**Exhibit 3-10**

**On a 1 to 5 Scale\*, how satisfied were you with the:**

	Mean Rating	No. Rating	No. of 1s, 2s
Information required regarding project/equipment	4.35	40	1
Timeliness of the approval process	4.20	41	3
Amount of the incentive approved	4.22	41	1

\* 1 is not at all satisfied, 5 is extremely satisfied

As above, a few participants provided low satisfaction scores and offered reasons for their dissatisfaction, including the following verbatim comments:

- It seems like it takes too long for projects to go through; Energy Trust needs to implement a tracking system that provides estimated time of approval and provides updates of milestones in the approval process

- Incentives are significantly less than California, Nevada and Washington.
- Some of the documentation required did not make sense; for example, Energy Trust wanted the electronic file for the engineering model; this was too big to transfer; it takes two weeks to run a model; I could understand them wanting parts of it, but not the entire file.
- It takes too long once the application is submitted
- The change from one contact person to another was a big problem.

About half of respondents that sought pre-approval reported that Energy Trust had made changes to their calculation of the amount of the incentive, and all of those said that they were very satisfied (4 or 5 rating) with the change.

Most participants communicated with New Building program staff regularly, with only about one fourth reporting that they contacted program staff never or less than once a month. As shown in Exhibit 3-11, telephone and email were used with about equal frequency, and both phone and email were used more than three times as often as in-person contact.

**Exhibit 3-11**  
**How did you contact New Building program staff?**

Source	% of mentions ( n=76)
Telephone	42.1%
Email	42.1%
In-person	13.2%
Fax	1.3%
Letter	1.3%

Participants were very satisfied with their communications with Energy Trust and program staff, and none of the respondents offered ratings of 1 or 2 that would have triggered a request for an explanation for their dissatisfaction. Ratings were high for both owners and other respondents.

**Exhibit 3-12**  
**On a 1 to 5 Scale\*, how satisfied were you with:**

	Mean Rating	No. Rating
The ease of contacting Energy Trust or program staff	4.64	36
The speed of the response	4.72	36
How courteous program staff were	4.86	36
How knowledgeable program staff were	4.50	36
The overall response to your question	4.69	36

\* 1 is not at all satisfied, 5 is extremely satisfied

While 40% of respondents said it took longer than 4 weeks to receive their incentive check, most were satisfied with the length of time required, with an average satisfaction rating of 4.6 for 26 participants who recalled the length of time it took.

Two thirds of respondents recalled having a post-installation inspection conducted (15 did not know), but some of those were not personally involved in the inspection process. All were very satisfied (4 or 5 rating) with the quality of the inspection, with a mean rating of 4.8 on a 5-point scale, as shown in Exhibit 3-13. As also shown in the exhibit, participants were also very satisfied with the measures they installed through the NB program.

**Exhibit 3-13**  
**On a 1 to 5 Scale\*, how satisfied were you with:**

	Mean Rating	No. Rating
The post-installation inspection	4.83	23
The measure(s) installed through the program	4.51	41

\* 1 is not at all satisfied, 5 is extremely satisfied

Finally, Exhibit 3-14 shows that for all 49 respondents, satisfaction with the NB program overall averaged 4.4 on a 5-point scale. Both owner and non-owner participants reported high levels of satisfaction, with a slightly higher mean reported for owners, all of whom provided satisfaction ratings of 4 or 5.

**Exhibit 3-14**  
**On a 1 to 5 Scale\*, how satisfied were you with the NB Program overall?**

	Mean Rating	No. of Respondents	% 4s and 5s
All respondents	4.38	49	95.9%
Owners	4.54	24	100.0%
Non-owners	4.24	25	92.0%

\* 1 is not at all satisfied, 5 is extremely satisfied

Participants explained their overall rating with numerous comments regarding the positive contribution the program had made to their new construction project, with just two offering reasons for their somewhat lower (3) ratings. Illustrative verbatim comments for 5 ratings included:

- The owner wanted an environmentally friendly facility; the incentives made that happen.
- Process very smooth; Energy Trust contacted us regularly; we did not have to promote contact from our end; Energy Trust really promoted our involvement.

- Owners would not have done this project without the incentive; incentive was generous enough to get the project moving quickly; Energy Trust support was great throughout; a huge benefit to the building.
- We applied late for the program and the program manager worked to get an exception for us and came to our facility to review the application, going far beyond what was expected.
- Compared to BETC [the Oregon Business Energy Tax Credit], this is a breeze; with Energy Trust neither the process nor the bureaucracy gets in the way.
- It's a wonderful program and it's great that it's so professionally run; the follow-up was great and we loved the incentive.
- It's a great program and it's great that Energy Trust provides incentives for owners to develop green buildings - it's very farsighted.

Those who gave ratings of 4 were generally still enthusiastic about the program, but expressed relatively minor concerns, as illustrated by the following verbatim comments:

- Decent support, and it was money that we wouldn't have otherwise had. Paperwork could have been streamlined, made a little easier.
- Would have been a 5 if we could have stuck with one company or rep. It appears that Energy Trust really does want the program to work—they don't make it hard for you.
- It's quite complicated, although they help you through it.
- The people are great, but incentives are a little low.
- We would like to see the program stay current with new technologies and to rate new equipment and systems that are more energy efficient and provide higher incentives for their use. We had a hybrid HVAC system; the way the program was structured they could analyze components but not the entire system.
- There were times in between certain reviews that took longer than it should have, but we always got high quality assistance when it was needed.
- It was not perfect, and we had to submit some info more than once, but overall the process was seamless.

The lowest overall satisfaction rating provided by any respondents was a three. Both participants who provided this rating offered comments:

- It should be easier, we had issues with the handover (to a new contractor) and there should be more money.
- (From an architect): It was a lot of work for little incentive, and for the client, too.

In addition to their satisfaction with the program, participants were asked about any suggestions they had to improve the NB program. Results tended to mirror issues raised in the satisfaction analysis, as reflected in the following verbatim comments and suggestions.



- Increase the incentives and/or pay them out faster (3 respondents)
- It would be nice to have an online application to fill out and submit.
- Streamline Energy Trust and BETC into one application and put it on-line.
- A project tracking system would be helpful; also might improve forms - some information requests are not necessary.
- Energy Trust needs to make themselves better known to state agencies that fund or manage these type of projects; they need to be fully aware of ODOE SEED program vis-a-vis code and energy efficiency requirements and insert themselves into that process.
- Would like online system providing project status to update owners; Energy Trust website should have more tech info beyond what equipment is eligible and what is not.
- If Energy Trust wants to be involved in predesign as it now appears, they need to make users aware of this and not after the fact. On other projects they want us to look at alternatives and other measures after the design already is complete; at that point it's too expensive to redesign/reengineer and rerun the energy model.
- Better and more regular training for contractors and design professionals.
- The website is too opaque; it used to be easier to access basic data.
- Do follow-on survey (this survey) no more than 6 months after the work is complete.
- Try to streamline final documents process.
- If some of the info provided to owners was less technical, it would be easier for them to understand and participate in the program.

As a final aspect of the analysis of customer satisfaction, respondents were asked if they had participated in the NB program in previous years, and if so, to compare that previous experience with participation in the program in 2009. About one-third of those who had participated previously said they hadn't noticed any significant difference. Others reported changes in their experience, including the following:

- This experience was a little better than average; the owner received his check sooner than usual; otherwise same as usual.
- We had more contact and a direct link with Energy Trust on this project; thus more direct program follow-up, which greatly was appreciated.
- They have made the application process easier and now more user friendly; they need more ability to slot new technologies in to get them to fit across categories.
- Energy Trust now has their hands around the process much better.
- The program definitely has gotten better; for example, more focused on motors and VFDs, it also helps that these type of products are more readily available.
- Like any other program it has improved over time -- staff continues to become more knowledgeable and forward looking, especially vis-a-vis new energy efficiency rules and regulations.

- Biggest changes were from 2008 to 2009; the Program is much more streamlined now and has not seen much change between 09 and 10.
- The review process is much more thorough; that means more work for engineers, but it's better for the owners; the overall level of technical support from Energy Trust staff has definitely improved.
- The program has gotten more comprehensive (covers more technologies and aspects of LEED), now includes commissioning & tech support.
- Much more satisfied this time as opposed to previous - had more involvement and input from the outreach manager; more knowledge and assistance from program staff. Program was much more evolved. In earlier work with the program we did not get staff involved until after design.

Generally, respondents appear to have considered participation in the 2009 program easier and more streamlined than in the previous New Buildings program, with particular emphasis on both the level of support provided by program staff and the overall ease of participation.

To investigate the potential role of ARRA stimulus funds other tax credits and funding sources, respondents were asked what other sources helped pay for their energy efficiency measures. As shown in Exhibit 3-15, the Oregon Business Energy Tax Credit (BETC) was most commonly used, cited by about one-third of respondents. While other tax credits were mentioned by 3 respondents, all other options were all cited by only a single respondent. Note that no respondents mentioned receiving stimulus funds, probably because most of these projects were initiated and often completed before these would have become available.

**Exhibit 3-15**  
**What other sources helped pay for the EE measures?**

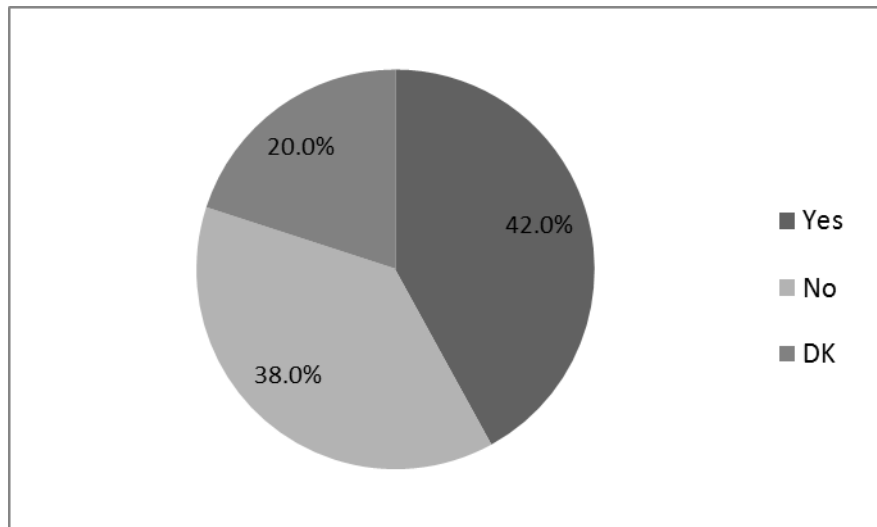
Source	No. of mentions
Federal stimulus (ARRA) funds	0
BETC	16
Other tax credits	3
Manufacturer rebates or incentives	1
Federal Funds EPACT	1
Federal Section 179B	1
FAA Funds	1
SB338	1
SB1148	1

While only two participants who used the BETC explicitly relied on New Building program staff for help in obtaining the credit, respondents were highly satisfied with the information they received from the NB program regarding the credit, with 9 giving it an average rating of 4.33 on a 5-point scale.

Although a detailed free-ridership analysis was not conducted for the projects of surveyed participants, they were asked about the likelihood that the project would have used high efficiency equipment if the NB program had not been available. As shown in Exhibit 3-16, 40% (or just over half of those who offered an answer) said their organization would have provided the funds necessary to install the equipment for which it received a rebate.

**Exhibit 3-16**

**If your firm had not received the incentive, would it have made available the funds to cover the cost of the energy efficient equipment and design?**



When asked if there were anything program staff could have done to encourage the inclusion of more energy efficient measures in the project, the primary responses were that program staff did all they could and that only increased incentives would have helped encourage the inclusion of more measures. A few respondents said that it would have been useful to have “more technical support” or “more brainstorming” to help identify additional opportunities.

Participants were also asked about the influence of a variety of program and non-program factors on their decision to select high efficiency equipment. Respondents said that design professionals had been most influential. New Building program staff and incentives were somewhat less important, but received higher importance ratings than program-provided technical assistance.

**Exhibit 3-17**

**On a 1 to 5 Scale\*, how influential was each of the following?**

Source	Mean Rating	No. Rating
Design professionals	4.58	38
Energy Trust program representative	3.92	24
Energy Trust incentive	3.86	37
Energy Trust funded technical assistance	3.56	9

\* 1 is not at all influential, 5 is extremely influential

Based on responses from participants, we calculated the rate of free ridership using Energy Trust's standard methodology<sup>2</sup>. This method calculates free ridership by combining an influence score (which measures the extent to which the decision to install qualifying equipment was motivated by the program as reported in Exhibit 3-17) and a change score (which measures the likelihood that the participant would have installed the same qualifying equipment in the absence of the program). Using this approach, we calculated a free ridership rate of 35.2% based on results from 43 respondents. Those who said they had not been involved in the original equipment selection decision were excluded from the analysis.

Another view of the influence of the NB program was examined by asking participants about their standard practice on new construction projects, and whether they typically meet or exceed code. Only about 10% of respondents said that they merely strive to meet code, while about 5% said they play no role in the decision of what specific design approach to use. All other respondents provided variations on the response that they always try to exceed code; about 40% simply said they strive to exceed code, while about 7% said they are moving toward the 2030 Challenge goal of zero-net-energy buildings, 7% said they try to exceed code by 20-30%, and 10% said they routinely design to meet LEED requirements. The remainder said they attempt to exceed code, but did not specify by how much, and added the caveat that this goal was subject to cost-effectiveness and payback requirements.

In a related line of questioning, participants were asked about barriers to their use of energy efficient design and equipment in new construction projects. About 40% of respondents said that basically there were no barriers, while about one-third cited cost as the primary concern. Other responses included the architect's focus on aesthetics rather than efficiency (9%) and availability of high efficiency equipment (7%), while two mentioned the difficulty of working with older buildings and single respondents mentioned state guidelines, lack of experience and the difficulty of convincing owners.

Finally, participants were asked about the pending changes to the Oregon code. While almost two-thirds were aware of the change, few had studied the new code or were familiar with specific requirements. Some of those who were relatively knowledgeable about the new code said that it should not pose major challenges, offering comments such as "we have been working towards that for a while," "the code is catching up to what we are doing at this time," and "based on our current practices I do not think we will have much trouble complying; the emphasis is likely to be on proper functioning of control systems and the commissioning process."

Those who envisioned potential challenges cited the costs associated with compliance as well as specific areas of concern, including thermal bridging and other envelope issues, documentation of compliance, mechanical systems and lighting. Illustrative verbatim comments included:

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<sup>2</sup> Energy Trust Free Ridership Methodology, Phil Degens and Sarah Castor, June 4, 2008

- From a mechanical perspective it is not too challenging, but from an architectural perspective it will be difficult to get a pleasing building that meets code.
- Challenge will be working with owners to understand and translate it; also current lighting technology has peaked and we may have to wait for the next wave to realize more efficiencies.
- There is resistance to meeting the new codes by those that do not understand them; I have no problem with them, other than that in the public sector the design budget is fixed and it tends to constrain the ability to make the best decisions in terms of project life cycle costs.
- We need a full understanding of glazing requirements and relevance of code to renovating existing buildings with regard to the envelope; many times existing buildings are historic buildings and we need to fully understand the implications of the new code regarding these structures.
- Biggest challenge will be thermal bridging and making sure that is really happening. I believe there may be a conflict between the new code requirements for a vapor barrier on the warm side of the wall with the current code; this may conflict with continuous insulation requirements in the new code.

### ***Participant Conclusions***

The results discussed above describe a high overall level of satisfaction from participants with the NB Program. Virtually all participants had a great deal of praise for the program's support for energy efficiency, energy savings, sustainability and environmental quality. There were many compliments for Energy Trust's sponsorship of a forward thinking program that enables owners to contemplate such projects and for consultants, architects, engineers and contractors to participate with them in making green buildings possible.

In addition, almost all respondents gave NB program staff very high scores in all categories (communication, timeliness, courtesy and knowledge). There was a genuine sense of appreciation expressed by participants for the program staff and real enthusiasm when responding to this portion of the survey.

There was also general agreement among participants that the program and staff have done very well in the area of "lessons learned" as reflected in incremental improvements to the program. It generally was expressed that the application process had been made more streamlined, that staff are more knowledgeable and involved and that the review process is more thorough. The fact that the program is more "comprehensive," covering more technologies and including commissioning and technical support, also was viewed favorably.

Given the overall high level of satisfaction with both the NB program and staff, suggestions for improvement were along the lines of added features or making modest changes to the program. In regard to the application process participants expressed a desire to have the application put online, preferably with a direct link to or in combination with the BETC application. Respondents also expressed a desire for a project tracking system that would enable them to go online without having to contact NB staff to determine their project's status in the application process and project approval timeline. Such a system could highlight the dates projects achieve defined milestones and identify tasks in process or to be completed.

On promoting awareness of the NB program, participants felt that if it is a program goal to be more involved in project-related predesign activities, program staff need to take steps to promote awareness of this, since participants do not want to have to redesign their projects or rerun their energy models. A few participants also stated that Energy Trust needs to make its program better known to state agencies that fund or manage these type of projects in order that they can be part of and influence the process (code and energy efficiency requirements) that ultimately results in participation in the NB Program. Better and more regular training for contractors and design professionals also would increase awareness of the program.

Specific comments on the program's website expressed a desire that 1) it should have more up to date information on program eligible and ineligible equipment and technologies and 2) it be easier to reach from the Energy Trust home page.

Program negatives appeared to be based on the experience of a single project; there were no consistent negatives identified by participants. Obviously, participants would like to see the incentives increased.

## **Non-Participant Results**

Non-participant interviews focused on program awareness, efforts to learn about the program, barriers to participation and standard practice.

Non-participants fell into three categories: those who were unaware of the program, those who had new projects and consciously decided against participating, and those who had planned to participate but who were forced by external circumstances to delay their project. All but 2 respondents were architects; the others were owner's representatives. Together these respondents said they had worked on more than 180 projects, most of them relatively small, with an average size of some 26,000 square feet per project (note that this average was increased by several 200,000 square foot resort modeling projects; about 40% of projects were under 10,000 square feet and .) Respondents were asked to consider a single project; the largest if they had done more than one. About half those projects were renovations, remodels or additions; the other half new construction.

Non-participants were asked about their awareness not only of the NB program, but also of LEED and the Oregon Business Energy Tax Credit (BETC).

**Exhibit 3-18**  
**Non-participant Program Awareness**

Please tell me if you have heard of any of the following:	No. Aware (n=30)
1. LEED (Leadership in Energy Efficient Design)	30
2. The Oregon Business Energy Tax Credit, or BETC	27
3. The Energy Trust New Buildings program	19
Were you aware that your new construction project might have qualified for incentives through Energy Trust?	14

While almost two-thirds of respondents said they had heard of the NB program, fewer than half were aware that the non-residential new construction or remodeling project they worked on might have qualified for incentives. The relatively low level of awareness of the NB program is particularly striking in light of the fact that almost all of these respondents are professional architects.

Among the respondents who were aware of the NB program, 17 recalled where they heard about it. Of these, 5 mentioned Energy Trust Staff, 4 cited AIA or other seminars, and 3 said colleagues had told them about it, with smaller numbers noting the Energy Trust website, trade journals, and involvement in previous projects.

About 25% of respondents said they had considered participating in the NB program with their 2009 project but had decided against it. Measures considered ranged from envelope, lighting and mechanical systems to heat recovery and solar panels. Reasons offered for not participating included:

- On this project we could not find enough savings
- The client wanted to participate, but the program had no path for a commercial window replacement project
- We were not familiar with the process until recently, but are changing that.
- We looked at lots of energy efficient alternatives, but the project was grant funded and did not work out
- Client projects did not fit the program.
- Client was not motivated due to fear of added cost
- Architect determined that to do modeling and extra design work would cost as much as the credits were worth, and since it's a public agency tax credits don't help
- This was a low budget project

- Unfortunately energy efficiency is a low priority in this economy

In summarizing the factors influencing the decision not to participate, several respondents said it was ultimately a question of payback – the combination of extra design time, application time, and equipment cost would have been too great in light of any incentives and anticipated energy savings. A few others said they ultimately decided not to participate because there was not a good fit between their project and the NB program, while several architects said the owner had decided against participating.

Only a few respondents said they had contacted Energy Trust for additional information and most of those said they had used the website, while two had communicated with Energy Trust staff by phone. Those who said they had contacted Energy Trust were generally very satisfied with the response, with the exception of one architect who said he had waited for several months before getting a reply.

Most non-participants said they had included a number of energy efficient measures in the projects they worked on in 2009, including insulation, windows, lighting and mechanical systems as well as both passive and PV solar as well as other sustainable approaches such as low VOC paints. Barriers most often mentioned as inhibiting use of more efficient design included first cost, owner resistance, and the hassle or cost of certification and program participation.

Respondents were asked to rate whether they would find various program elements extremely helpful (3), somewhat helpful (2) or not at all helpful (1) in facilitating more energy efficient designs. Results for those who offered a response are shown in Exhibit 3-19. Note that while incentives are highly rated, these non-participants appear to be even more interested in help with program or tax credit paperwork and assistance in calculating paybacks on efficient equipment.

**Exhibit 3-19**  
**On a 1 to 5 Scale\*, how helpful would you find:**

	Mean Rating	No. Rating
Help with program or tax credit paperwork	2.9	17
Calculation of payback	2.9	16
Rebates or incentives for efficient equipment	2.8	18
Energy modeling	2.5	16
Assistance selecting energy efficient equipment	2.2	16
Design assistance	1.9	15

\* 1 is not at all helpful, 5 is extremely helpful

To determine whether other program features might be attractive to these respondents, we asked about previous participation in energy efficiency programs either in Oregon or elsewhere. A total of 8 respondents said they had previously participated in some sort of program, including 2 in the NB program, 2 who had used BETC, 2 who participated in Washington state, 1 in Southern



Oregon in a pre-Energy Trust program and 1 in Alaska. Reasons offered for participation in these programs were incentives, the suitability of the previous project to the program, and the fact that the owner had been willing to pursue participation.

Like participants, non-participants said their decision to incorporate energy efficient designs or technologies in their projects would be most strongly influenced by a favorable payback, followed by recommendations from architects or engineers and the availability of incentives.

**Exhibit 3-20**  
**When thinking about whether to incorporate energy efficient features, how influential is each of the following on a 1 to 5 scale\*?**

Source	Mean Rating	No. Rating
Payback of less than 2 years on added cost	4.8	26
Recommendation of architect or engineer	4.6	26
Rebates or incentives	4.5	26
Recommendation of equipment suppliers	3.4	25

\* 1 is not at all influential, 5 is extremely influential

When asked what changes in the New Building program would make them more likely to participate with their next new construction project, respondents offered several suggestions, including:

- Have a more streamlined program for small projects
- Provide technical support, including assistance with program forms and procedures, from early in the design phase to identify incentives, tax credits and energy savings
- Provide better guidance on the various tracks to those new to the program.
- An easier participation process, with more assurance of getting money

As with participants, non-participants were questioned about their standard practice on new construction projects, and whether they typically meet or exceed code. About 60% of non-participants say they typically strive to exceed code on their new construction projects, with one-third of those (6 respondents) adding the requirement of cost-effectiveness. However there was only a single respondent who said his firm is trying to meet the goals of the 2030 challenge, and no respondents who said they try to exceed code by 20-30% or achieve LEED certification on all projects as some participants did. One-third of non-participants (10 respondents) said they simply try to meet code, with 4 of those emphasizing that this is an owner decision. Two respondents said their approach varies according to the type of project.

Among the 30 respondents, 8 said they previously designed LEED buildings, while 4 said they had worked on projects that applied for the BETC. All but 5 respondents were aware of the pending new Oregon energy code, although most said they had not analyzed what changes it would require. The half of respondents who were somewhat familiar with the requirements most

often said that added cost would be the biggest challenge, while others mentioned the building envelope, lighting, and mechanical systems. Two respondents said they did not see any major challenges.

Only a handful of non-participants offered any final comments or suggestions, primarily explaining that they are small firms and would need Energy Trust assistance with the application process if they were to participate. Several respondents who were essentially unaware of the program before they were contacted for an interview expressed a desire to find out more about the NB program.

### ***Non-participant Conclusions***

Surprisingly, even after years of activity and promotion, there are still portions of the new construction market that are not aware of the NB program. Others, including a number of architects, are vaguely aware that a program exist but have very little detailed knowledge of its offerings and requirements. Among the key findings from the non-participants:

- Many of these architects appear to work for owners with a first-cost focus, while other fear that program participation will require extra time and effort that they will not be paid for.
- Similarly, some who are more familiar with the program see the paperwork and the overall application process as more trouble than it's worth, and perceive that potential incentives are relatively small.
- As a group, non-participants comprise mostly smaller design firms, and these firms in particular worry about the time and effort of completing applications, since they do not have staff who can be assigned to this task.
- While non-participants see incentives as very helpful, they appear to be even more interested in help with program or tax credit paperwork and assistance in calculating paybacks on efficient equipment

Finally, it should be noted that more than half of the non-participants interviewed said that they routinely try to exceed code in their new building design; in other words, there is an interest in energy efficient design if the path to achieving it can be made relatively smooth.

## **4. Overall Conclusions and Recommendations**

### **Conclusions**

Key findings reported elsewhere in this report are summarized below.

- Program application forms and instructions are comprehensive and clear, while the application process appears to capture needed participant and measure data. However, the

need for data creates a perception among a few participants and somewhat more potential participants that the process is difficult, especially among smaller architecture firms and owners working with them.

- The Energy Trust website plays a key role in providing information about the NB program, and more than half of participants downloaded their program application, but it is perceived as somewhat difficult to use to find specific information, particularly on covered measures and incentive levels.
- The organization of program Outreach Managers by market sector seems to be very effective in reaching almost all large and even medium sized players, but small owners/architects and some projects in other segments may be missed, based upon the results of the NP survey.
- The overwhelming majority of participants use the Standard track, but this may simply reflect that this path is most appropriate for a majority of projects; respondents who were aware that there were different tracks were all satisfied with their choice of track.
- Market penetration of the NB program is very high, although the 90% market share calculated may reflect some projects started in earlier years and finalized in 2009. The currently slow new construction market may make it easier for program staff to stay abreast of all the projects out there.
- Sources of information about the NB program for both participant and non-participants reflect the influence of design professionals and highlight the need to continue outreach and education to this group, particularly “second-tier” and one-person firms that may find it more difficult to attend AIA or other training sessions where NB staff typically present the program.
- Among participants, there were generally high levels of program satisfaction across the board, including the ease of applying, required efficiency level, and amount of the rebate as well as program communications and responsiveness of staff.
- Some participants expressed concern about the length of time to get applications approved and the difficulty of tracking the status of the application; someone suggested an online application and tracking process. Some participants also expressed concern about amount of data required to support the application (e.g., entire model runs). While 40% of respondents said it took longer than 4 weeks to receive their incentive check, most were nevertheless satisfied with the length of time required.
- Overall participant satisfaction with the program was 4.4 on a 5 point scale. The only negative comments related to the level of incentives; similarly, “higher incentives” was the most often offered suggestion. Other requests included online application linked to

the BETC, online application tracking, more assistance for applicants who lack technical resources, continued outreach to architects as well as public agencies.

- Most participants who were familiar with earlier incarnations of the NB program commented favorably on the program as currently implemented, citing easier application, more streamlined process, more measures covered and the very responsive staff.
- Using Energy Trust's standard methodology, we calculated a free ridership rate of 35.2% based on results from 43 respondents. About half of participants said their organization would have installed the energy measure for which they received an incentive even without the program; similarly, about three-fourths of participants said they typically strive to exceed code on their new construction projects, with several citing a commitment to move toward net-zero buildings and others stating their goal is to exceed code by 20-30%.
- About half of non-participants said their standard practice is to exceed code, although fewer had the specific aggressive goals mentioned above.
- For both groups, first cost and payback continue to be significant barriers; conversely, the NB program could encourage the adoption of efficient design if it could demonstrate the cost-effectiveness of targeted measures – with or without an incentive. For example, non-participants rated information on payback more useful even than incentives in encouraging efficient design.
- Among non-participants, more than one-third were not at all aware of the NB program, while several others were only slightly familiar with it. Among those who were familiar, program paperwork is perceived as a barrier, and assistance with program or tax paperwork is seen as a valuable program feature.
- Most architects and owners are aware of the new Oregon Energy Code, but most do not have a clear understanding of its requirements and the challenges they may pose, other than knowing they will be required to make changes to everything from the envelope to lighting to mechanical systems.

## **Recommendations**

While the NB program is running smoothly and effectively working with many owners, design professionals and trade allies, there are opportunities to extend its coverage to the segments of the market that have limited exposure to the program, and to address concerns expressed by some participants. Recommendations include:

- Conduct outreach to small architects, particularly those who work with design-build contractors, to inform them about the NB program and the BETC.

- In explaining the program, emphasize ease of participation, and offer help with program application forms for organizations that lack internal resources to handle the process.
- Consider an online application process, including tracking the progress of applications and potentially using online communications to address problems with the application.
- Supplement incentives and design assistance with information on costs and returns on the most popular measures; this may seem self-evident for more sophisticated users, but many of the smaller firms simply do not know where to find this data.
- Consider some kind of public recognition device for new buildings that participate in the program – something less than certification but more than just the incentive, along the lines of a sticker or plaque that can be placed on the building saying “this building participated in the Energy Trust New Buildings program.”
- While the new Code will make it more difficult to achieve incremental efficiency gains through the NB program, the program should emphasize its new (2011) requirements in the context of the new Code, explaining, for example, what specific measures or technologies can be used to meet the new code and what specific measures or technologies can be used to exceed it and qualify for an incentive.

# Appendix A

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**From:** Phil Willems, PWP

**To:** Sarah Castor

**Re:** Small Commercial Efficiency Pilot findings

September 3, 2010

This memo summarizes our findings from interviews conducted with Small Commercial Efficiency Pilot participants, including two owners and two architects, one of whom was responsible for two projects.

Overall, the participants we spoke with are very satisfied with their initial experience with the Small Commercial Efficiency Pilot. They particularly like the Pilot's:

- comprehensive approach that recognizes an efficient overall design rather than the use of individual efficient components
- combination of energy savings and emphasis on sustainability and local content
- availability of certification from a respected regional brand at much lower cost than LEED.

## **Pilot Project Status**

Of the three participating projects initially identified by the Program Manager in the spring, two have advanced or almost completed; the third dropped out of the Pilot when they could not move forward with the project because they didn't have tenants lined up for their commercial space.

The other two have successfully participated in the program without major problems. In addition, the architect for one of the two has promoted the Pilot to other clients, and one – a retail store for a non-profit – has enrolled in the program and is moving forward. We were told that several other projects have been initiated, but we did not pursue interviews with those pending Energy Trust's review of our initial findings.

## **Participation Process**

All participants spoke highly of the support and information provided by Energy Trust and Earth Advantage staff for the Pilot. Reasons for participation included the ability to design a building that was greener and cleaner as well as being more energy efficient; a more comprehensive

approach to design and construction, and the ability to achieve certification as an Earth Advantage building.

Two of the architects involved with these projects contrasted the Small Commercial Pilot's approach to that of the standard New Buildings program, which both had participated in previously. Their comments included:

- Instead of giving you the equipment incentives, they give you the money to help achieve the certification.
- The Pilot is more comprehensive. If you do certification, you don't want a place full of European and vinyl products. Also, with the regular Energy Trust (New Buildings) program you don't get credits for what you don't use. With the Pilot you have a more holistic approach, so you could get part of the certification for things you were not using because you didn't need them.

The Earth Advantage certification seems to be one of the greatest perceived benefits of the Pilot, particularly the fact that this certification is both cheaper than LEED and more locally oriented (e.g., Earth Advantage certification defines locally sourced materials as coming from within 200 miles vs. 500 miles for LEED). All participants mentioned Certification as a powerful incentive to participate; even the mixed use project that dropped out of the Pilot because it lacked commercial tenants had already achieved Earth Advantage certification for the residential portion of the building and had hoped to extend the certification to its commercial space. Several participants offered comments explaining the value of the certification.

- As an architect who wants to pursue clients to do sustainable practices, the Pilot helps to get them to that approach. LEED adds more cost, and the Earth Advantage certification is something the general public will see as meaningful. All our clients love the local stuff.
- We had originally thought about going through the LEED process and we saw a presentation at AIA on the Earth Advantage certification, so ... we decided we'd go through this. A big advantage is that this is local, so we felt like it was a better fit from that perspective.

### **Core Performance Requirements and Project Designs**

At least one of the initially enrolled projects was relatively far along in the design process. As the owner's representative for that project explains, "this project really is not a poster child for the Pilot; we were not involved early enough, since we were pouring concrete for the foundation when we enrolled." Still, he adds, they were able to incorporate numerous changes; some of them affecting energy efficiency and others affecting overall sustainability and local content. Examples cited by the owner include:

- Substantial upgrades to the HVAC system; biggest change was nightly purge aspect; we installed four CO<sub>2</sub> sensors (one for each unit instead of a single one for all units.)
- Occupancy and daylight sensors for lighting
- Monitoring of electric use and taking a look at phantom power
- Use of sustainable materials; changed adhesives in carpet, low VOC paint, locally sourced formaldehyde free furniture, ceiling tiles with recycled content, locally sourced certified lumber and doors

For both the two initial projects and one newly enrolled project, complying with the Core Performance requirements has been challenging but not impossible, as reflected in these comments from participants.

- So far, there have not been too many changes to the design to meet the Core Performance Requirements. Modifications have been more from the engineering standpoint; the envelope was pretty robust, basically already exceeded Core Performance requirements. Mechanical system, lighting, plumbing and controls were where we had to make changes, but prices on all of those have been coming in attractive, so it should be no problem.
- With (the first project) we worked through Core Performance and had some problems with requirements for mechanical because of availability. Only Trane could provide the required EER in mid-range small commercial units, and that did not meet the requirements, since all equipment at other facilities is Carrier and the client wanted to maintain consistency for maintenance purposes. We met with (client) and Energy Trust and said we were doing the best mechanicals we could given those constraints – we put in more CO<sub>2</sub> sensors so we were able to work with them (the Trust) and still do a higher level of efficiency than what’s generally out there.
- With the second project, we were able to have the mechanical and electrical meeting before we did the design. In a lot of retail stores there is a clear prototype so we have a typical design for how we normally do things and we could make changes from that. We’re still in the process on this store because we ended up having to finish the shell improvements and are now doing the thermal envelope, which will influence how we comply with Core Performance. We had to make some big lighting changes; we had to go through a lot of that in terms of watts per square foot. Because it’s retail, the store has a high lumen/square foot lighting requirement, so we’re going to a skylighting solution.

### **Effect of the New Code**

An architect working on two Pilot projects said that the Pilot has helped prepare his firm for working with the new Oregon code, and that the second project should be somewhat better than the new code. He is doubtful about their ability to go much beyond that, however, explaining that, “the Pilot helps us get to the new code because some of the performance requirements that



get you to Energy Trust levels are actually above the new code;. But there is still a question of how much you can encourage someone. Like with lighting, we're hitting a wall; if you want 50 foot-candles of lighting; there's only so much you can do before you darken the sales floor. Same thing if you lower the heating, at some point people are going to start plugging in space heaters."

## **Conclusions and Recommendations**

The Comprehensive Commercial Pilot is perceived by participants as offering a valuable alternative to the standard New Buildings program and to LEED certification. All of the individuals interviewed said they would like to see the same approach offered in a full scale program, and none reported concerns about the current Pilot's requirements or the participation process. As one participant said, "There have been no big issues, but it has been a little tricky. After all, it's a pilot and we had not gone through it before so it's been a learning curve, but we're just plowing through it."

In light of the difficulty of substantially exceeding the more stringent requirements of the new Oregon Code, rolling out a full-scale version of the Comprehensive Commercial Pilot may be problematic. However, key components of the Pilot that are highly regarded by participants and worth including in a full scale program include the comprehensive, holistic approach to design, the availability of certification and the combination of energy savings with broader sustainability goals.

October 24, 2011

**From:** Phil Willems, PWP

**To:** Sarah Castor, Energy Trust of Oregon

**Re:** Final Small Commercial Efficiency Pilot Evaluation Findings

This memo summarizes the results of PWP's evaluation of the Small Commercial Efficiency Pilot (SCEP, or the Pilot). To date, the Pilot has enrolled 10 projects and is now closed to further enrollment. With the update in building codes in July 2011, the program is in the process of deciding whether to pay for an update to the Core Performance Guide and continue the program in its current structure. This investigation used review of program data and interviews with program staff and pilot participants (including owners, architects, project managers and mechanical and general contractors), some of whom were involved with other projects that considered participation but chose not to or were unable to. The goal of the evaluation was to develop actionable recommendations of whether and how to continue the pilot as a regular Energy Trust offering.

To complete the evaluation, program materials and documents, including the original proposal, status updates and an internal assessment of the Pilot's success conducted by the staff of the Program Management Contractor, PECl. In addition, interviews were conducted with Earth Advantage and PECl program staff and with SCEP participants, some of whom had also been involved with other projects that they considered enrolling but ultimately did not, to allow us to investigate reasons why potential participants might not have participated. The number of participant interviews conducted by type is presented below.

**Exhibit 1**  
**Participant Interviews**

Respondents	Number of Individuals	Number of Projects
Program Staff	4	10
Owners	8	10
Architects	8	10
Engineer/contractor	2	2

# Evaluation Findings

## *Program Staff Perceptions*

Program staff were interviewed both to gather data on individual projects and to obtain feedback on their perceptions of program strengths and weaknesses and challenges in bringing participants on board that had caused some projects to be excluded from the pilot.

Interviewed program staff provided detailed information about individual projects, including the project and organizational characteristics that appeared to have motivated them to participate.

- Not surprisingly, when the SCEP was first launched, program staff and outreach managers worked hard to identify potential participants. Given the slow new construction market, however, there were not many candidate projects that met the 10,000-70,000 square foot criterion and that were in an appropriately early stage of the design process.
- As a result, some of projects accepted into the Pilot were further along in the construction process than would have been ideal, were somewhat atypical building types (e.g., culinary schools with multiple range hoods, a theater, a school moving into a remodeled commercial space) or were at the upper or lower boundaries of the preferred size range.

This created one of the major challenges faced by program staff in that they had to be continuously involved in providing guidance on how to tailor the Pilot requirements to the specific projects and had to develop numerous “work-arounds.” On the other hand, the close and frequent interaction between these participants and program staff helped ensure that Pilot requirements were met and a great deal of knowledge was transferred to participants that could be used in future projects.

Program staff reported that Pilot participants seemed to be motivated both by the potential for higher incentives and the availability of Earth Advantage certification.

- Staff members said the fact the SCEP projects would be eligible for more incentives and would cover additional measures appears to have attracted several participants. Having incentives calculated on a per square foot basis was also thought to have removed some of the uncertainty that surrounds participation in similar programs, particularly when energy modeling is involved.
- In addition, program staff pointed out that owners and architects on many small projects see the benefits of green building certification, but view LEED as a cumbersome, expensive “black box” process that gives applicants little guidance on how to achieve

compliance. The Earth Advantage Commercial certification provided a lower cost alternative to LEED that offers the same benefits. Moreover, some architects were eager to be in the forefront of bringing this alternative, locally based certification to the market. In addition, staff said that participants appreciate the greater interaction between the design team and the program, which most participants utilized extensively, leading to “lots of iterations” in the design process.

It was not only Earth Advantage certification that led to more frequent interaction between program staff and participants. One of the program staff pointed out that “the Guide (the Core Performance Guide for Oregon) is just overwhelming....It’s really confusing that there are 17 requirements but some measures may not be applicable.” Program staff prepared a series of spreadsheets summarizing program requirements and the possibilities for trade-offs, but even with those, there was a lot of back and forth with participants. Another staff member interviewed noted that the amount of staff time required to manage a SCEP project was at least twice the amount needed for regular new building program participants.

The relative complexity of the Core Performance Guide was seen as a particular barrier to rolling out a full scale version of the SCEP. For staff who worked exclusively or primarily with the SCEP, it was not a huge barrier, but one respondent described another New Buildings Outreach Manager for whom “juggling all these different requirements for different tracks and getting up to speed on the Pilot,” made it difficult and time consuming to ensure that the project met the specific demands of the Guide.

On balance, program staff felt that the SCEP approach (i.e., Core Performance plus Certification) had been validated by their experience with the Pilot projects. They all said that both the core performance incentives and the availability of certification contributed to the success of these projects, but they did not believe that a full implementation of the Core performance approach required both to succeed, particularly if there were more candidate projects available in a more active market.

### ***Participant Interviews***

As noted above, interviews were conducted with 16 individuals involved in 10 different projects (3 of which had the same owner and design team) to determine which Pilot characteristics motivated their participation and how they might respond to alternate combinations of features and requirements. Not surprisingly, many of the themes outlined by the program staff were confirmed and expounded upon by the SCEP participants.

While most of the questions and responses were qualitative in nature, all participants were asked to rate various program features as not at all important, somewhat important or very important to

their decision to participate in the Pilot. Results are summarized in Exhibit 2, which presents features sorted in their order of importance ratings.

**Exhibit 2**  
**How important was each of the following features in your decision to participate?**

PROGRAM FEATURES	Very (=3)	Somewhat (=2)	Not at All (=1)	DK or NA	Average
	Number of responses				
Higher incentives than through New Buildings program	12	3	0	1	2.80
Lower cost Green Building Certification	7	3	0	2	2.70
More measures than just lighting and HVAC	11	5	0	0	2.69
Extensive support from program staff	11	4	1	0	2.63
Equipment would undergo functional performance testing	8	6	0	2	2.57
Availability of Earth Advantage Commercial certification	7	7	0	1	2.50
Incentives for design assistance	9	5	2	0	2.44
No need for energy modeling	8	4	2	2	2.43
Multiple onsite inspections	9	3	3	1	2.40
Clearly defined per square foot incentives	5	9	1	0	2.27

For seven projects, we spoke to both the architect and the owner’s representatives. Architects and owners agreed on the importance of most scores, but had somewhat different priorities for a few features. While the differences are relatively small and would not be statistically significant as a sample, they basically represent a census of participants and are therefore indicative of differences in the perceived importance. Exhibit 3 compares the mean importance ratings for the two groups. The results show that architects tended to place somewhat greater importance on higher incentives, availability of Earth Advantage Commercial certification and multiple on-site inspections, while owners were somewhat more likely to consider lower cost green building certification, program staff support and incentives for design assistance very important.

**Exhibit 3**  
**Differences in Owner and Architect Ratings**

PROGRAM FEATURES	Architects	Owners
	Average Ratings	
Higher incentives than through New Buildings program	<b>3.00</b>	2.71
Lower cost Green Building Certification	2.40	<b>3.00</b>
More measures than just lighting and HVAC	2.86	2.79
Extensive support from program staff	2.57	<b>2.86</b>
Equipment would undergo functional performance testing	2.57	2.60
Availability of Earth Advantage Commercial certification	<b>2.57</b>	2.43
Incentives for design assistance	2.43	<b>2.57</b>
No need for energy modeling	2.43	2.50
Multiple onsite inspections	<b>2.71</b>	2.17
Clearly defined per square foot incentives	2.36	2.33

While the ratings indicate that most of the program features discussed were considered important by most participants, these results, in combination with the responses to more open ended questions, suggest some differences in motivations.

**Three “bundles”: Certification, Efficiency, Assistance**

The SCEP appears to have attracted participants with three core motivations that exerted varying degrees of influence in the decision to participate. While most participants said that each of these attributes was at least somewhat important, some were clearly more motivated by one feature than others. The key features are as follows:

1. Certification – some participants were motivated primarily by the desire to obtain certification for their building. In some cases this was because of the perceived marketability of “green” space, in others because of a desire to build a “sustainable” image, and in still others because of a decision or mandate that public sector buildings should attain some sort of green building certification. The fact that the Earth Advantage Commercial certification was simpler and lower cost than LEED, coupled with the more open process and greater interaction with the certifying authority, made certification a key feature in the decision. In addition, a number of participants were drawn to this more

local or regional certification, with some architects in particular expressing an interest in being in the forefront of bringing Earth Advantage Commercial Certification into the market. As one architect explained in speaking about green building certification, “A lot of RFPs are coming out with these type of requirements, and the more you have the better off you are.”

2. Energy efficiency – a few participants, typically those with more sophistication and experience, were most impressed by the SCEP’s ability to help them achieve a very efficient small commercial building. These participants recognize the importance of tapping other sources of energy savings besides lighting and more efficient HVAC equipment and particularly appreciate the broader range of measures and higher incentives. While no respondents said that Certification was unimportant, participants in this category typically assigned somewhat greater importance to savings than to certification; they like the recognition that certification brings, but are generally less interested in a “green” image than in energy performance. As one owner’s representative explained: “The main goal is having more energy efficient buildings; we’re not that motivated by certification, although it was of interest.”
3. Program support – a third group, including owner representatives in particular, rated the amount of support provided to participants as key factor in their decision to participate. About one-third or those interviewed mentioned the amount of support as the best aspect of their participation. One respondent said that the best aspect of participation was “the fact that we had a person at ETO we could contact to find alternatives or offsets when we could not meet a specific criterion in the pilot.” Both the flexibility of the Pilot and the degree of interaction between the design team and program staff were of great importance to this group of projects.

Finally, there were a few participants who clearly wanted all three elements of the SCEP offering and who would not have participated if any one of them were missing.

### **Timing of Participation**

Participants learned about the pilot when their projects were in various stages, ranging from predesign to design documents to already having poured concrete. All respondents agreed that timing is very important, noting that the construction process usually moves quickly once it starts and there is no budget to deal with delays. A few participants, including those who were the first to enroll, recognized that they had started later in the process than they would have liked and may have missed some opportunities as a result, but most said the timing had been appropriate.

The consensus was the “earlier is better,” and it appears that if the design team knows about the possibility of participating in a project like SCEP in advance, they can better anticipate it and perhaps modify their project timeline. This was, of course, difficult with the SCEP because it was not widely known and program staff and Outreach Managers were identifying projects and

informing them about the Pilot one at a time. Having a SCEP-like program in place for specific qualifying projects should make it easier for owners to plan for participation in advance and for architects or design-build contractors to incorporate it into their bids and proposals.

Several projects that dropped out had hoped to participate, but were unable to do so because the design and construction process was too far along or had restrictive deadlines that would have prevented them from going through the extra iterations involved in meeting the Core Performance requirements.

### **Concerns and Challenges**

Especially for projects that were somewhat farther advanced in the design process, the impact of participation on schedule was a significant concern, with the associated worry that costs would be substantially higher as a result. An overall concern was the increased coordination and communication that would be required with an additional party involved, and a few respondents said they had been somewhat concerned that as a pilot, the SCEP requirements might not be well defined. Participants generally said that these concerns proved to be unfounded, particularly with the added support offered by SCEP staff.

One challenge mentioned by several participants related to Earth Advantage Commercial certification was the difficulty of finding locally sourced materials, while others specifically said they had difficulty finding qualifying mechanical equipment. Again, the latter was apparently more of an issue with early enrollees, and additional qualifying models of HVAC equipment are said to have come onto the market in the past year. One project encountered challenges because it was a multi-tenant retail building and some requirements (e.g., assuring that all tenants would install Energy Star qualifying equipment) would be difficult to meet at the time of construction.

In all cases, participants said the concerns and challenges were overcome through frequent interaction with SCEP representative and the willingness of Pilot administrators to be flexible in finding alternatives or solutions to potential problems.

### **Incentives and Incentive Levels**

As noted previously, the higher overall incentive levels were rated as very important by more participants than any other Pilot feature in their decision to choose the SCEP. Yet the fact that incentives were clearly defined on a per square foot basis was only somewhat important for the majority of respondents. Surprisingly, very few of those interviewed even knew whether they had pursued the Basic or Enhanced package (all projects but one used the Enhanced), even though the Enhanced path meant significantly higher incentives. Three respondents representing two projects were able to answer definitely that they had chosen the Enhanced path. When asked which path their project had chosen, several owners said, ask the architect; and several architects said, ask the owner. Similarly, few respondents knew for certain whether their project had enrolled in Energy Star benchmarking, which would earn them an additional incentive to offset



the cost of Energy Star certification if performance goals were met after one year. A few said they thought they had, or would within the year.

Participants were split on whether or not they would have pursued Earth Advantage Commercial certification. Most said the incentive was invaluable in helping them to cover much of the cost of certification so that they would not have been able to attain certification without it, but a few said their organization was committed to green building certification, and would still have chosen EA Commercial over LEED because of the lower cost and complexity.

When asked how different the building design would have been if the project had not participated in the SCEP, responses were about evenly divided between those who said the building would have been the same or very similar and those who said major changes had been made. Some said the owners had committed to an energy efficient building and would have pursued that regardless, while others mentioned specific systems that would not have been upgraded (lighting, HVAC, insulation, windows) and a few said the primary change would have been less use of locally sources or sustainable materials. Several commented that the participation process “kept the design team honest” by constantly referring the design back to SCEP requirements and thereby ensuring an efficient building.

### **Program Requirements and Design Assistance**

Program requirements were generally seen as reasonable and attainable for standard buildings that matched the types covered by the Core Performance Guide Oregon Edition. For non-standard buildings (such as a culinary school that included multiple range hoods or the previously mentioned multi-tenant retail project) more adjustments were required, and participants universally praised the SCEP staff’s flexibility in working with design teams to tailor program requirements to their projects. A few projects were at the extreme end of the targeted size range, and one of the projects that initially expressed an interest was unable to meet the minimum square footage or savings requirements.

As noted earlier, architects generally were less motivated by the availability of design assistance offered through the SCEP than by the higher levels of efficiency made possible by higher incentives. Most architects said they had used the Guide to develop their design and generally found the Guide helpful and relatively easy to work with. They also found the summaries and spreadsheets offered by SCEP engineers helpful, and one architect reported accessing the New Buildings Institute for additional information. A few mentioned specific limitations with regard to mechanical systems, such as the failure to include variable refrigerant systems and the limited number of qualifying systems available. Most owners had not looked at the Guide and said that program staff had provided them (and others on the design team) with information on qualifying measures and equipment. The one general contractor interviewed said he found the Pilot requirements confusing and said that the biggest challenge was “it cost a lot of money to manage it; a lot of meetings going over the same thing over and over again.”

## **Inspections and Testing**

Overall, functional performance testing was recognized as an important factor encouraging participation; multiple on-site inspections somewhat less so. While on-site inspections were seen as somewhat less important by owners, they were considered more important by architect. Several owner representative said they trusted their contractor to do a good job, suggesting that inspections may not be that essential to them, while architects appear to want assurance their design is being built as intended. Respondents with the most experience with functional performance testing were the most likely to value it highly, and several of those said they would have conducted performance testing reported that commissioning is standard practice for projects they work on. Most participants said they were not certain whether data trend logs were provided or would be provided (even though it is a program requirement.) One owner noted that trend logs revealed and helped rectify a serious problem that would have gone undetected otherwise.

## **Solar and Solar-Ready**

While none of the buildings in the Pilot actually installed solar, all but one of the projects were either designed to be solar ready or (in cases where construction had not yet begun) were planning to be solar ready. Participants said relatively minor changes are needed to make a building solar-ready, and several noted the desirability of being ready to adopt solar if the regulatory/economic climate changes or additional incentives are offered.

## **Applicability to the Broader Market**

All the architects interviewed believed the SCEP approach would be widely applicable to other small commercial projects and said they would try to use a similar approach. A few said they already had a strong focus on efficiency and green building, and that the lessons learned participating in the Pilot would help them refine and improve their own standard practices. Unfortunately, neither architects or owners anticipate a significant recovery in the small commercial construction market within the next two years.

## ***Conclusions and Recommendations***

As an attempt to demonstrate the applicability to a comprehensive approach to the small commercial new construction market, the SCEP clearly succeeded. Representative of all the projects we spoke with believed they ended up with more efficient, more sustainable designs than would have been likely using the regular New Buildings program, and all were pleased with the participation process. Similarly, all believed that the same comprehensive approach would be more widely applicable and should be offered in a full scale program.

However, because different participants appear to have been motivated by different underlying fundamental interests in SCEP attributes (i.e., efficiency, certification, support), it may not be

necessary to offer a single program that addresses all three core motivations. With the new construction market expected to languish for several more years at least, Energy Trust should have time to develop several alternative approaches to bringing a more comprehensive approach to the small commercial market. The following recommendations and suggestions are offered based on the results of this evaluation.

1. Use Certification as a point of leverage to ensure maximum efficiency gains are achieved by offering an incentive to projects that, for example, achieve somewhat higher efficiency levels than specifically required by Earth Advantage.
2. Because there are some customers who highly value the combination of certification, efficiency, and support, continue to offer a package that includes all of those even it means, for example, specifying that more assistance from program staff will be offered with a slightly reduced incentive level.
3. Develop a strategy to gradually reduce the amount of support needed to design and construct efficient small commercial buildings, including, for example, offering training and seminars specifically targeted to small business owners, architects and engineers through NEEA's BetterBricks initiative.
4. As an alternative to Earth Advantage Commercial certification, which recognizes overall sustainable design, consider a certification label that focuses exclusively on energy efficiency. Something like an "Energy Advantage" label could recognize the achievement of teams who design buildings that incorporate all the features of efficient design embodied in the comprehensive approach but are less interested in local content, water usage, and other aspects of green building certification.
5. Recognize that the slow commercial construction market will continue for several years; in that time, build the infrastructure to enable participants to rapidly implement efficient design for more typical small commercial buildings (e.g., office, retail, schools) so that a program and supporting resources are in place when the market recovers.
6. Similarly, it may be necessary to limit participation in whatever offering follows SCEP to more standard buildings. This will reduce the number of projects that are able to participate, but without the need to enroll projects for the Pilot, that should not be a major concern. The reduction in the amount of tailoring and adjustments would reduce the need for interaction with program staff.
7. Train Outreach Managers and design-build contractors in the basics of any comprehensive small commercial program so that they conduct some of the basic analysis and make decisions regarding appropriate trade-offs. This would accelerate the participation process to keep pace with the rapid design and construction cycle typical of

many small commercial projects – particularly those in retail and small offices. As is often done with program training, group sessions could be used to hold down costs.

8. Make verification of building performance for one year after completion mandatory for all participants in a comprehensive program. This is important to help verify that the assumptions underlying a comprehensive approach are accurate – just as it is necessary to verify the assumptions and savings results from energy modeling runs.
9. Work with other organizations to develop and maintain a current list of regionally available equipment that meets comprehensive program standards.
10. Functional performance testing or commissioning should remain a requirement of any program offering higher incentives for a more comprehensive package of measures. Similarly, collecting trend data on equipment usage is vital to ensure that all measures are operating as intended. Both activities also provide valuable feedback to all members of the design team.

# Appendix B

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## ENERGY TRUST OF OREGON NEW BUILDINGS PROGRAM PROCESS EVALUATION PROGRAM YEAR 2009 PARTICIPANT SURVEY

### Participation Verification

**Intro.** Hello, this is <INTERVIEWER NAME> calling from PWP Inc. on behalf of Energy Trust of Oregon. This is not a sales call. May I please speak with [PROGRAM CONTACT]?

I'm calling to do a follow-up interview about your participation in Energy Trust of Oregon's New Buildings program.

[IF PROGRAM CONTACT NOT AVAILABLE]

Who would be the best person to talk to about the incentive you received from Energy Trust?

[IF NEEDED] Energy Trust of Oregon would like to better understand how businesses like yours think about and manage their energy use, and how satisfied you are with your experience with the New Buildings Program. Your input is very important to help Oregon manage its energy use and to improve its energy program services and incentives and rebates.

### Confirm Participation

A1. Just to confirm before we start, did your organization participate in the Energy Trust of Oregon's New Buildings Program in 2009? Our records show that your organization got an incentive from Energy Trust of Oregon for installing energy-saving equipment through the New Buildings Program. Do you remember participating in the New Buildings Program?

A2. Our records show in 2009 your business got an incentive for installing a [MEASURE] at [FACILITY] located at [ADDRESS]. Is that right?

A3. We also show that you received the incentive in [MONTH] of 2009. Does that sound right?

A4. Is [MEASURE] still installed in your facility and operating as expected?

A5. IF NO: Why is the measure not operating as expected? (Probe for reasons and what they have done about it.)

### Customer Information

I'd like to ask you few general questions about [COMPANY], specifically at [ADDRESS].

B1. Our records describe the project at [ADDRESS] where [COMPANY] participated in the New Buildings Program as (BUSINESS TYPE). Is this correct? (If not, record correct building type)

B2. What is your job title or role? [RECORD RESPONSE]

B3. Please describe your role in the project that received the efficiency incentive? Who else played a significant role in influencing the energy efficient design of the building, selection of equipment and the decision to participate in the program?

### Program Participation Process

Next I am going to ask you a few questions about your participation in the New Buildings Program.

D1. How did you first learn about the program?

D2. When did you first learn about the Energy Trust of Oregon New Buildings Program? \_\_\_\_Month  
\_\_\_\_Year

D3. At what stage in the design and construction process was the project for which you received a incentive in 2009 when you learned about the program?

D4. How useful were each of the following sources of information in helping you to decide to participate in the New Buildings Program? For each, would you say it was: very useful, somewhat useful, not at all useful or not used:

- A. Program brochures and forms
- B. The Energy Trust website
- C. The New Buildings program outreach manager
- D. Contractors/vendors/other trade allies
- E. (Owners only) The architect/engineer/green building consultant on the project
- F. Other Energy Trust staff
- G. Existing Building program staff
- H. Recommendation from a colleague
- I. Association events or trainings
- J. Advertisement
- K. Press release, news story or article
- L. Other (specify)

D5. For all rated “not at all useful,” why do you say that information source was not at all useful?

D6. When you participated, were you aware that there are different Tracks through which you could participate in the New Buildings Program? (IF NEEDED: You may have heard these described as different program options, such as pursuing LEED certification, the custom application process, or the EnergyStar track.)

D7. How did you decide which Track to use for your project? Who else helped influence your decision to select that track? Were you satisfied with the Track that you selected? Why or why not?

D8. Where did you get your program enrollment application?

D9. Who was most responsible for completing the enrollment application: you, someone else in your organization, a contractor or vendor, an architect or engineer, or someone else? If you were not “most responsible”, what was your role?

**D10. (IF INVOLVED IN APPLICATION)** On a 1 to 5 scale, with 1 indicating “not at all satisfied” and 5 indicating “very satisfied”, how satisfied were you with the ease of applying for the incentive?

**D11.** [IF 1 or 2] Why were you dissatisfied?

**D12. ALL** On that same 1 to 5 scale, how satisfied were you with the efficiency level required to qualify for an incentive?

**D13.** [IF 1 or 2]Why were you dissatisfied?

**D14.** How satisfied were you with the amount of the incentive?

**D15.** [IF 1 or 2]Why were you dissatisfied?

**D16.** Did you seek approval of the incentive from Energy Trust before buying the equipment? (IF NO, SKIP TO D19)

**D 17.** How satisfied were you with the approval process in terms of:

1. The information required regarding the project and equipment
2. The timeliness of the approval process
3. The amount of the incentive approved

**D18.** IF 1 OR 2 FOR ANY: Why were you dissatisfied?

**D19.** [If CUSTOM MEASURE] Did Energy Trust make adjustments to your calculations for your Custom measure?

**D20.** How satisfied were you with the adjustments they made?

**D21.** [IF IF 1 or 2]Why were you dissatisfied?

**D22.** In the course of participating in the New Buildings Program, how often did you contact Energy Trust or PECEI with questions? (Probe for weekly, twice a week, monthly, etc.)

**D23** How did you contact them (check all that apply)?

1. Phone
2. Email
3. Fax
4. Letter
5. In person

**D24.** And how satisfied were you with each of the following aspects of your communications with Energy Trust? Again using a 1 to 5 scale, with 1 indicating “not at all satisfied” and 5 indicating “very satisfied”, or each, please tell me how satisfied you were with:

- 1 The ease of contacting Energy Trust or the New Buildings Program
- 2 The speed of the response
- 3 How courteous program staff were
- 4 How knowledgeable program staff were
- 5 The overall response to your question

**D25.** For each 1 or 2 response, ask: Why were you dissatisfied with:

- 1 The ease of contacting Energy Trust/the New Buildings program

- 2 The speed of the response
- 3 How courteous program staff were
- 4 How knowledgeable program staff were
- 5 The overall response to your question

**D26.** From the time you had the equipment installed and submitted the completion form, about how many weeks did it take to receive your incentive check?

**D 27.** How satisfied were you with how long it took to receive the incentive check?

**D28.** Did Energy Trust or its contractor conduct a post-installation inspection of the equipment you installed through the New Buildings Program?

**D 29.** How satisfied were you with the inspection?

**D 30.** [IF 1 or 2]Why were you dissatisfied?

**D 31.** How satisfied are you with your new [MEASURE]? OR: How satisfied are you with the design assistance you received?

**D 32.** [IF 1 or 2]Why are you dissatisfied?

**D33.** Finally, if you were rating your overall satisfaction with the New Buildings Program on a 1 to 5 scale, with 1 indicating not at all satisfied and 5 indicating very satisfied, how would you rate your overall satisfaction with the program?

**D34.** Why do you give it that rating?

**Program Barriers and Missed Opportunities**

**C1.** What were the main barriers to your use of energy efficient design features or installation of program qualifying equipment in your new construction project?

**C2.** How did the New Buildings program staff, trade allies, or other aspects of the program help overcome those barriers?

**C3.** In addition to the New Buildings Program incentives, did any of the following sources help to pay for the efficiency measures you installed for this project? [READ LIST, CHECK ALL THAT APPLY]

- 1. Federal stimulus funds – also known as “ARRA” funds
- 2. Tax credits – if so which ones – BETC, Federal credits?
- 3. Manufacturer rebates or incentives
- 4. Other – Specify

**C3A.** IF BETC USED: Did the New Buildings program staff help you obtain the BETC? IF YES: On a 1 to 5 scale, how satisfied were you with the information on how to apply for the state tax credit? Why do you say that?

**C4.** IF FEDERAL STIMULUS FUNDS USED: What percentage of the total cost of the New Buildings Program measure for which you received an incentive – including both the cost of the equipment and the installation cost -- was paid for by stimulus funds?



**C5.** Suppose no incentives had been available from Energy Trust. What do you think your business would have done with regard to selecting equipment for this project? (Probe for the type of equipment they would have installed or design they would have implemented)

**C5A.** If your firm had not received the incentive, would it have made available the funds needed to cover the entire cost of the energy efficient equipment and design?

**C6.** What other aspects of this project might have qualified for incentives through the New Buildings program?

**C7.** How could the New Buildings program have encouraged you to include more energy efficient design features, approaches, or equipment?

**C8.** Similarly, is there anything the New Buildings program staff could have done to encourage you to consider energy efficient design features, approaches, or equipment earlier in the design process?

**C8A.** How influential were the following elements on your decision to incorporate energy efficient features in your project? Please indicate your answer on scale of 1 to 5, with 1 indicating “did not have any influence on your design or decision to install the equipment you did” and 5 indicating “had a great influence on your design or decision to install the equipment you did.”

Energy Trust incentive	1	2	3	4	5	Don't know	N/A
Design professionals	1	2	3	4	5	Don't know	N/A
Energy Trust program representative	1	2	3	4	5	Don't know	N/A
Energy Trust-funded technical assistance	1	2	3	4	5	Don't know	N/A

**C9. [IF PARTICIPATED IN NB PROGRAM BEFORE].** How would you compare your previous participation in the New Buildings to your participation in the Program in 2009? How would you say the program has changed?

**C10.** What would you change about the New Buildings program? (Probe: Are there aspects of new building design and construction you would add to the program? Remove from the program?)

**C11.** Do you have any other suggestions to improve the current New Buildings Program?

### Standard Practice

Finally, I'm going to ask you a few questions relating to the practices that your organization typically uses in new construction projects.

**SP1.** In other recent new construction/renovation projects, what has been your organization's standard practice with regard to meeting or exceeding code? (Probe: Do you typically meet code? Try for LEED certification? Try to move toward a net zero building?)

**SP2. IF EXCEED CODE:** How far beyond code does your organization typically try to go? In what specific areas are you most likely to try to exceed code? for the measures covered by the NB program.

**SP3.** Are you aware of the upcoming 2010 update to the Oregon Energy Code for commercial buildings? (IF NO, EXPLAIN: The new code will require buildings to be significantly more energy efficient than the current code – perhaps by as much as 10-15%.)

**SP4.** What are the challenges that you foresee in meeting those new code requirements? Are there specific aspects of building design (e.g., lighting, windows, insulation, HVAC) that you think will be particularly challenging?

### Final Comments

**F1.** Do you have any final comments on your participation in the New Buildings Program?

READ - Thank you for taking the time to complete this important interview! Have a great day/night!

# Appendix C

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**ENERGY TRUST OF OREGON  
NEW BUILDINGS PROGRAM PROCESS EVALUATION  
PROGRAM YEAR 2009 NON-PARTICIPANT SURVEY**

**Respondent Screen**

**Intro.** Hello, this is <INTERVIEWER NAME> calling from PWP Inc. on behalf of Energy Trust of Oregon. This is not a sales call. May I please speak with the person who is most responsible for design and equipment selection decisions for your organization's new construction and remodeling projects?

I'm calling to ask a few questions about the new construction project or projects your organization completed in 2009, as well as your awareness and perceptions of Energy Trust of Oregon's New Buildings program.

[IF NEEDED] Energy Trust of Oregon would like to better understand how businesses like yours think about and manage their energy use, and how much you know about the New Buildings Program. Your input is very important to help Energy Trust improve its energy program services, incentives and rebates.

**Confirm Non-Participation**

A1. Just to confirm before we start, did your organization complete or work on a new construction project in Portland General Electric, Pacific Power, NW Natural or Cascade Natural Gas territory in 2009?

A2. And you did not participate in the Energy Trust's New Buildings program with that project, correct? (IF PARTICIPATED OR PLANNING TO PARTICIPATE LATER, THANK AND TERMINATE)

**Customer Information**

First, I'd like to ask you few general questions about the new construction project or projects that you completed in 2009.

B1. Did you complete or work on one project or multiple projects? If multiple, how many?

B2. Thinking about the largest of those projects, please tell me:

1. The location of the project (street and city)
2. Was it a new construction, expansion/addition or major renovation?
3. About how many square feet was the project?
4. What kind of building was it (office, school, retail, warehouse, etc.)

B3. What was your role on the project: Owner, architect, engineer, consultant, prime contractor, lighting contractor, mechanical contractor?

B4. And along those same lines, please describe your role in the project with regard to the building's design and/or selection of energy using equipment?

B5. Who else played a significant role in influencing the energy efficient design of the building or selection of equipment? Can you give us their name and contact information?

### Program Awareness

Next I am going to ask you a few questions about your knowledge about the Energy Trust New Buildings Program and other efficient new building initiatives.

C1. Please tell me if you have heard of any of the following:

1. LEED (Leadership in Energy Efficient Design)
2. The Oregon Business Energy Tax Credit, or BETC
3. The Energy Trust New Buildings program?

C2. Were you aware that the new construction project you completed (or worked on) in 2009 might have qualified for incentives through Energy Trust?

C3. How did you first learn about the program?

C4. When did you first learn about the Energy Trust New Buildings Program? \_\_\_\_ Month \_\_\_\_ Year

C5. Did you or your organization consider participating in the New Buildings program?

C6. IF NO: Why didn't you consider participating? (Probe for specific barriers: no time, no money, didn't know enough; architect, engineer, contractor, owner not interested etc.)

C7. IF YES: What specific measures or building components did you consider? (Probe for lighting, heating, cooling, insulation, windows, kitchen equipment, other.)

C8. What factors did you consider when deciding whether or not to participate? (Probe for cost, payback, long-term savings, project timeline, amount of paperwork)

C9. Did you search out additional information on the New Buildings Program?

IF NO GO TO C.16  
IF YES CONTINUE

C10. Where did you look for additional information? (Probe for program staff, Energy Trust website, program collateral, architects/engineers, contractors, others)

C11. How useful were these information sources in helping you find the information you needed to support your decision?

C12. In the course of considering participating in the New Buildings Program, did you contact Energy Trust or PECEI with questions? If yes, how often?

**C13.** How did you contact them (check all that apply)?

6. Phone
7. Email
8. Fax
9. Letter
10. In person

**C14.** And how satisfied were you with each of the following aspects of your communications with Energy Trust? Again using a 1 to 5 scale, with 1 indicating “not at all satisfied” and 5 indicating “very satisfied”, or each, please tell me how satisfied you were with:

- 1 The ease of contacting Energy Trust or the New Buildings Program
- 2 The speed of the response
- 3 How courteous program staff were
- 4 How knowledgeable program staff were
- 5 The overall response to your question

**C15.** For each 1 or 2 response, ask: Why were you dissatisfied with:

- 1 The ease of contacting Energy Trust/the New Buildings program
- 2 The speed of the response
- 3 How courteous program staff were
- 4 How knowledgeable program staff were
- 5 The overall response to your question

**C16.** Overall, why did you ultimately decide against participating in the New Buildings program for this particular project?

### Program Barriers and Missed Opportunities

**D1.** Did you install energy efficient systems into your project(s)? If yes, what systems did you include? (Lighting, HVAC, or other.) If not, what were the main factors that kept your organization from using energy efficient design features or installing high efficiency equipment in your new construction project?

**D2.** Thinking about what program support and incentives might have helped you overcome those barriers to energy efficient design and equipments, would you consider each of the following extremely important, somewhat important, or not at all important:

1. Rebates or incentives for efficient equipment
2. Assistance selecting energy efficient equipment
3. Design assistance
4. Energy modeling
5. Calculation of payback for various measures
6. Help with program or tax credit paperwork
7. Any other specific program features?

**D3.** Has your organization participated in the New Buildings program or other energy efficiency programs in the past – either here in Oregon or in other states? If yes, when and what programs?

**D4.** What was it about those other programs that encouraged you to participate?

**D5.** When thinking about whether to incorporate energy efficient features in a new construction project, how influential would each of the following be? Please indicate your answer on scale of 1 to 5, with 1 indicating “would not have any influence on your design or decision to install energy efficient equipment” and 5 indicating “would have a great influence on your design or decision to install energy efficient equipment.”

Rebates or incentives	1	2	3	4	5	Don't know	N/A
Recommendation from architect or engineer	1	2	3	4	5	Don't know	N/A
Recommendation from equipment supplier	1	2	3	4	5	Don't know	N/A
Payback of less than 2 years on added cost	1	2	3	4	5	Don't know	N/A

**D6.** What would you change about the New Buildings program to make you more likely to participate with your next new construction projects? (Probe: Are there aspects of new building design and construction you would add to the program? Remove from the program?)

**D7.** Do you have any other suggestions to improve the current New Buildings Program?

### Standard Practice

Finally, I'm going to ask you a few questions relating to the practices that your organization typically uses in new construction projects.

**SP1.** In new construction/renovation projects, what has been your organization's standard practice with regard to meeting or exceeding code? (Probe: Do you typically meet code? Try for LEED certification? Try to move toward a net zero building?)

**SP2.** IF EXCEED CODE: How far beyond code does your organization typically try to go? In what specific areas are you most likely to try to exceed code?

**SP3.** IF AWARE OF BETC FROM QC1: Have you applied for the BETC (Business Energy Tax Credit) for any buildings in the past? IF YES, when and how often?

**SP4.** IF NOT DISCUSSED PREVIOUSLY AND AWARE OF LEED FROM QC1: Have you completed or been involved in construction of any buildings that tried for LEED certification? If so, how many?

**SP5.** Are you aware of the 2010 update to the Oregon Energy Code for commercial buildings? (IF NO, EXPLAIN: The new code will require buildings to be significantly more energy efficient than the current code - perhaps by as much as 10-15%.)

**SP6.** What are the challenges that you foresee in meeting those new code requirements? Are there specific aspects of building design (e.g., lighting, windows, insulation, HVAC) that you think will be particularly challenging?

### Final Comments

**F1.** Do you have any final comments on the Energy Trust New Buildings Program?

READ - Thank you for taking the time to complete this important interview! Have a great day/night!

