

Energy Trust New Buildings Program

Process Evaluation Report 1

Final

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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 2010 and 2011, laying the groundwork for a more focused evaluation of the 2012 program. 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 2011 program year, incentives were paid for about 1,350 different measures installed at 211 sites.

The goal of this process evaluation was to obtain feedback on program design and implementation that can be used to more effectively and efficiently deliver energy efficiency in new buildings and improve customer satisfaction. Evaluation activities included a combination of secondary data and program document review and interviews with Energy Trust and NB program staff. No customer interviews were conducted, but the results of Energy Trust's Fast Feedback data collection effort were incorporated into the current evaluation findings.

Key findings reported in this report are summarized below.

- The program met or exceeded its goals in 2010 and 2011 and has continued its steady enrollment of new projects in 2012 to build a savings pipeline for future years, with 126 of the 168 projects enrolled by mid-year expected to deliver savings in 2013.
- The pivotal event affecting the NB program in 2010-2012 has been the stringent 2010 Oregon commercial building code, which increased required efficiency levels on new buildings by 10-15%.
 - While most program savings through early 2012 have come from projects subject to 2007 code requirements, the NB program has moved to adapt to the requirements of the 2010 code with new tools (e.g., workbook-based calculators, early design assistance) and market segment-specific product offerings.
 - The program is working with the voluntary "reach" code to help prepare the market for the next code upgrade scheduled for 2013.
- Through aggressive outreach, attendance at multiple events and ongoing interaction with architects, engineers and other key players, the implementation team has ensured that a majority of new buildings in Oregon continue to participate in the NB program.
- Outreach to trade allies and creation of formal trade ally networks for Development and Design professionals as well as traditional New Buildings Trade Allies have helped solidify existing relationships between the NB program and the new building community while also bringing in new players and leveraging program outreach activities.

- The NB program has also had to cope with the elimination of the Business Energy Tax Credit (BETC) and its replacement with the ODOE Energy Incentives Program, which appears to have more complicated qualification requirements and is harder to understand.
- There has been significant turnover among the Outreach Managers (OM) in the past six months; though all vacated positions appear to have been filled by highly qualified and competent individuals.
- According to the 2011 Fast Feedback surveys, overall participant satisfaction with the program was 4.2 on a 5 point scale, with 83% of participants giving a 4 or 5 rating. Participants were generally least satisfied with information on how to apply for the BETC, the amount of the incentive, and the ease of applying for the incentive, while they were most satisfied with their interaction with the NB program representative and the performance of the installed equipment.

Recommendations

While the NB program appears to be running smoothly in 2012 and effectively enrolling enough participants to meet its goals, we make the following recommendations to ensure that these efforts remain on track.

- The program should continue the outreach and networking activities that have been ongoing, with a particular emphasis on working with trade ally networks to keep them informed not only about program updates (e.g., new market-specific offerings) but also about relevant code and tax credit developments.
- Early Design Assistance appears to have both direct savings and market transformation effects, and should be pursued whenever possible by engaging projects early in the design process. This can be accomplished best through the outreach efforts described above.
- The NB program is already taking steps to prepare the market for the 2013 code through the requirements of the Oregon Reach Code (ORC), and should continue these efforts through work with trade ally networks and other organizations such as AIA, Cascadia, and the Building Energy Simulation Forum (formerly the Building Simulation Users Group).
- In light of the number of new people in OM positions, the program should take steps to ensure a smooth transition. While the initial emphasis is naturally on transitioning currently active projects to the new OMs, it would be worth following up with past participants and other market actors in the affected market or geographic territory to establish or re-establish ties with the NB program through the new OM.

- While the status and complexity of current tax incentives is obviously outside the control of Energy Trust and the NB program, it is important to provide customers with accurate and timely information both on the status and requirements of those incentives and on how to apply for them. This is particularly relevant for those credits that may be awarded using a competitive process, which are likely to be inherently more complex. Clearly, NB program participants appear to consider tax credits to be part and parcel of what is offered to them for building efficiency structures, and although these credits are wholly separate from the NB offering, participants may look to the NB program for answers.
- A number of architects, engineers, owners, developers and others have been motivated to pursue aspirational, highly efficient design through their interaction with the NB program. Offering an Innovation Incentive that rewards these efforts would enhance the NB program's role as a key player in supporting high performance building design in Oregon.
- OMs will need to continue to provide application assistance given the increasing complexity of design tools (e.g. calculators) that must be used to participate in the NB program under the 2010 code requirements and as product offerings target markets with smaller buildings and perhaps less sophisticated design teams. This should be accounted for in planning OM and support staff workloads.

MEMO

Date: October 31, 2012
To: Board of Directors
From: Sarah Castor, Evaluation Sr. Project Manager
Jessica Rose, Business Sector Manager, New Buildings Program
Subject: Staff Response to the 2010-2011 New Buildings Program Process Evaluation Report 1

The 2011 program year was the first full year of having a new program design in effect for New Buildings (NB) with the goal of helping the market adjust to a significantly different environment than prior years. Namely, faltering economic conditions and an energy code baseline change in 2010, followed by significant tax credit changes in 2011 presented major considerations for the program team to address. The results of the 2010-2011 New Buildings Process Evaluation Report 1 confirm program design decisions are supporting the market, and further indicate market transformation impacts. This first report only covered findings from the review of documents and the database, and staff interviews; the next report, due in mid-2013 will include findings from staff and ally interviews as well.

Program changes of note include:

- More support for early design processes, through incentives for charrettes and technical assistance
- Efforts to simplify participation process, including the enrollment process and program paperwork
- A tiered incentive structure that encourages further investment in energy efficiency
- Enhanced technical assistance to encourage modeling project energy use and savings
- New simplified calculators for HVAC and lighting

In addition to these program changes, the program also continues to innovate by using information from the Path to Net Zero pilot evaluation to inform program design to support high performance building design and construction techniques.

The evaluator noted recommendations to continue making progress. These recommendations and how the program has or will address them follow.

- *The program should **continue the outreach** and networking activities that have been ongoing, with a particular emphasis on working **with trade ally networks** to keep them informed not only about program updates (e.g., new market-specific offerings) but also about relevant code and tax credit developments.*

The program plans to continue outreach activities. The program also plans to continue building a market position for all allies – program allies (architects and engineers), trade allies (contractors, installers) and lender allies (lending

institutions, including banks and credit unions). In 2013, the program plans to design a training series for our ally networks.

- **Early design assistance** appears to have both direct savings and market transformation effects, and should be pursued whenever possible by engaging projects as early as possible in the design process. This can be accomplished best through the outreach efforts described above.

The program has placed an increased emphasis on early design assistance, a key area of focus that also grew out of the Path to Net Zero pilot, and is looking to provide training sessions on how to facilitate early design project meetings as a market transformation strategy. To influence projects as much as possible, the program now has a Technical Outreach Specialist and a Lighting Design Specialist that attend the early design meetings whenever possible.

- The NB program is already taking steps to **prepare the market for the 2013 code** through the requirements of the reach code, and should continue these efforts through work with trade ally networks and other organizations such as AIA, Cascadia, and the energy modeling group.

The program included cost-effective measures in the new market specific solutions packages for small commercial that were referenced in the Oregon Reach code. To raise awareness of the Reach code, the program and NEEA are collaborating on marketing. Beginning in 2012, the program's Technical Outreach Specialist provides advice on code requirements and strategies for achieving deeper savings.

- In light of the number of new people in outreach manager (OM) positions, the program should make a special effort to **ensure a smooth transition**. While the initial emphasis is naturally on transitioning currently active projects to the new OMs, it would be worth following up with past participants and other market actors in the affected market or geographic territory to establish or re-establish ties with the NB program through the new OM.

The program recognizes this and is taking steps to ensure follow through with past projects and will mitigate this with any future changes. For all markets affected by a transitioning OM, transition plans have been enacted that include previous OMs introducing new OMs to key contacts and prioritization of account outreach. This outreach includes ongoing program presentations where new OMs are able to meet accounts in person. In addition, the use of a robust CRM helps us to track and reengage with former program participants and understand historical relationships as the team shifts over time. This creates a visible record of outreach, project involvement, and communications that stay consistent even though staff may not.

- While the status and complexity of **current tax incentives** is obviously outside the control of Energy Trust and the NB program, it is important to **provide customers with** accurate and timely information both on the status and requirements of those incentives and on how to apply for them. This is particularly relevant for those credits that may be awarded using a competitive

process, which are likely to be inherently more complex. Clearly, NB program participants appear to consider tax credits to be part and parcel of what is offered to them for building efficiency structures, and the fact these credits are wholly separate from the NB offering doesn't mean participants won't look to the NB program for answers.

The program has taken steps to help the market adjust to changing and declining state energy tax credits by offering additional technical support. Given the significant changes to the state's Energy Incentive Program, the added complexity to apply for and receive a tax credit and customer confusion on the difference between an Energy Trust incentive and a tax incentive, Energy Trust decided to place less of an emphasis on providing information and facilitating applications on tax incentives.

- *A number of architects, engineers, owners, developers and others have been motivated to pursue aspirational, highly efficient design through their interaction with the NB program. Offering an **Innovation Incentive that rewards these efforts would enhance the NB program's role** as a key player in supporting high performance building design in Oregon.*

Program staff are currently exploring ways to further position the program as a resource to support market adoption of high-performance design. Launching an innovation incentive is one of many ideas that will be considered. Market research currently in process will inform final decisions and guide further market development and transformation activities in early 2013.

- *With the increasing complexity of design tools (e.g. calculators) that must be used to participate in the NB program under the 2010 code requirements, it will continue to be necessary for **OMs to provide application assistance**, particularly as product offerings are rolled out that target markets with smaller buildings and perhaps less sophisticated design teams. This should be accounted for in planning OM and support staff workloads.*

The program recognizes that there will be a continuing need to support projects through the application processes, particularly for lighting and HVAC calculators. While the program will continue to support projects with technical outreach managers, we are focusing on simple and cost-effective means for delivery with tools that are easy for any project to use. For example, the program recently launched market specific solutions packages targeting small commercial for the top six building types under 70,000 square feet. These offers are all presented in a simple format to customers, using a fillable PDF format that doesn't even involve Excel based calculations, just a few check boxes and an incentive that uses auto-fill functionality to total. Internally, the program team will continue to complete the Lighting Calculator to test for measure cost effectiveness if it is 40% or greater savings above code, and if it is for exterior lighting, or if LEDs are used.

1. Introduction

This report presents the results of the first phase of the process evaluation of Energy Trust of Oregon's New Buildings (NB) program for 2010 and 2011, extending into the first half of 2012. 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 management contractor (PMC), Portland Energy Conservation Inc. (PECI), which took over the program's administration in 2009.

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 three stories), and parking garages.

Over the 2010-11 timeframe and into 2012, the program has adjusted to the 2010 Oregon Energy Efficiency Specialty Code for new commercial construction in Oregon, which increased baseline efficiency approximately 15%. This has required Energy Trust and its PMC to develop new program offerings that encourage building owners and developers to construct even more efficient buildings than required by the new code. However, given the long lead time in construction, many of the buildings participating in the NB program in the 2010-2012 program years are subject to the 2007 energy code, and the program has been working simultaneously with projects subject to the two different codes and respective program offerings.

The overall goals of the 2010-12 NB program process evaluation are: to obtain feedback on program design and implementation that can be used to improve the design and delivery of the current program, help it more effectively achieve energy savings in new buildings, and improve customer satisfaction – particularly in light of the changing code requirements in 2010 and a code change anticipated to take effect in 2013. For the time frame covered by this first phase of the evaluation, activities focused on:

- Documenting program implementation activities and changes in program design in response to market and code requirements
- Describing the distribution of 2010 and 2011 participation by fuel type and across:
 - Code requirements
 - Utilities
 - Market segments

- Measures/end uses
 - Program participation options
 - Geographic location.
- Analyzing results of Fast Feedback data collection for 2011 and describing how the program has responded to that feedback.

2. Evaluation Methodology

To address the above goals, the evaluation team relied on secondary data, program document review and in-person and telephone interviews with program staff. Each of these data sources is discussed below.

DOCUMENT REVIEW AND SECONDARY DATA

Review and analysis of NB program data and documents helped provide an understanding of how the program was implemented in 2010-11 and the results it achieved. In addition, the review of program documents was designed to reveal how the NB program was modified in response to changes in the market and in the level of efficiency required under the Oregon building code. 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 and types of measures rebated.

Secondary data sources included:

- Participant tracking dataset
- New Buildings 2011 Annual Report
- New Buildings 2012 Program Plan
- Monthly reports, internal memos, Energy Trust website
- Utility service territory data
- Fast Feedback results
- PECCI-developed Data Center Market Assessment
- Previous New Buildings, Path to Net Zero and Small Commercial Efficiency Pilot evaluations

PRIMARY DATA -- PROGRAM STAFF AND PMC INTERVIEWS

Primary data collection was limited to interviews with program Energy Trust and Program Management Contractor staff. A total of nine interviews were conducted between January and June 2012.

3. Results

2010 - 2011 Program Participation

The New Buildings Program’s performance for calendar year 2010 is summarized in Exhibit 3-1, which shows both electric and gas savings from a total of 277 projects that closed in 2010.

Exhibit 3-1 – 2010 Electric and Gas Savings -- Total

Sector	Projects	Savings	
		kWh	Therms
New Buildings	251	36,070,570	442,266
New Multifamily	26	3,384,463	121,660
Total	277	39,455,033	563,926

By comparison, the number of projects closing in 2011 comprised 299 New Buildings and 29 New Multifamily projects. Savings and goals for 2011 are presented in Exhibit 3-2, which shows that the program achieved 130% of its overall kWh stretch goal and 93% of its gas stretch goal. Savings achieved as a percentage of goal were highest for Pacific Power and lowest for NW Natural gas.

Exhibit 3-2 – 2011 Electric and Gas Goals and Savings

Utilities		Electric - kWh			Gas - Therms		
		PGE	PAC	Total	NWN	CNG	Total
Goals	Conservative	9,289,297	11,926,504	21,215,801	513,895	53,800	567,695
	Stretch	10,928,585	14,031,181	24,959,766	604,582	63,295	667,877
Results	Achieved	12,080,188	20,438,859	32,519,047	560,806	61,187	621,993
	% Conservative	130.0%	171.4%	153.3%	109.1%	113.7%	109.6%
	% Stretch	110.5%	145.7%	130.3%	92.8%	96.7%	93.1%

As noted earlier, the program continues to work with projects that are being built to both the 2007 and 2010 codes, with the percentage of projects conforming to the 2010 code naturally increasing over time. The number of projects closing in 2010 and 2011 that had used various participation options (formerly “tracks”) – including the 2007 and 2010 code baselines – is shown in Exhibit 3-3.

The results show that even in 2011, 200 of the projects that closed (about 60% of the total) participated using the 2007 code baseline, reflecting many projects that were still eligible to use this code because of the date their permit was filed.

Exhibit 3-3 – Projects by Type, Option and Code

New Building Project Type	2010	2011
Commercial Buildings Projects	251	299
07 Custom	21	10
07 ESTAR and Standard/ESTAR	1	1
07 LEED	30	29
07 Standard	151	121
07 Standard / Custom	31	23
TOTAL 2007 CODE	234	184
10 LEED	1	3
10 Prescriptive & Analysis	1	13
10 Prescriptive Only	1	70
10 Analysis Only	0	16
10 Undecided	0	12
TOTAL 2010 CODE	3	114
Core Performance Pilot	8	1
Net Zero Pilot	6	0
Multifamily Projects	26	29
07 Custom	1	0
07 LEED	12	3
07 Standard	8	12
07 Standard / Custom	2	1
TOTAL 2007 CODE	26	16
10 LEED	0	2
10 Prescriptive & Analysis	0	1
10 Prescriptive Only	0	3
10 Undecided	0	3
TOTAL 2010 CODE	0	9
LRM ESTAR	2	2
Net Zero Pilot	1	2
All Projects	277	328

It should be noted that savings per project were lower in 2011 as there were fewer opportunities for higher impact individual measures. In addition, a single large infrastructure project increased the per-project 2010 results.

The program’s 2011 accomplishments report and the 2010-2011 program tracking data provide several breakdowns of savings by end use and sector. Exhibit 3-4 below shows the declining importance of lighting measures in the overall savings, as well as the dramatic increase in the share of “other” end uses, which appears to reflect large infrastructure projects in 2010 and data

center projects in 2011. An analysis of 2010/11 program tracking data confirms that lighting accounted for about 13% of estimated savings.

Exhibit 3-4 – kWh Saving by Measure Group

Measure Group	2009	2010	2011
LEED	11,823,955	11,276,835	5,409,556
	48.2%	24.6%	15.3%
Lighting	8,308,790	7,123,645	4,805,032
	33.9%	15.5%	13.6%
HVAC	3,765,883	1,291,811	4,410,172
	15.4%	2.8%	12.5%
Motor and Other	633,287	26,119,437	20,789,434
	2.6%	57.0%	58.7%

A breakdown of savings by building type for 2010 and 2011 calculated from program participation data, shown in Exhibit 3-5, illustrates the impact that individual large projects can have on the percentage of savings accounted for by different sectors, as was the case with infrastructure in 2010 and data centers in 2011. The results also show the continued importance of such key sectors as schools, hospitals and office buildings, while highlighting several sectors that have grown in importance, such as multi-family, grocery stores, and restaurants. As described below, the NB program has made changes to program offerings to address opportunities offered by these sectors. While we do not know the precise shares of new construction participation in the NB program for different sectors, there are indications that the percentage of new construction projects participating has generally been higher for some sectors (e.g., schools) and lower for others (small commercial).

Exhibit 3-5 – kWh Savings by Building Type

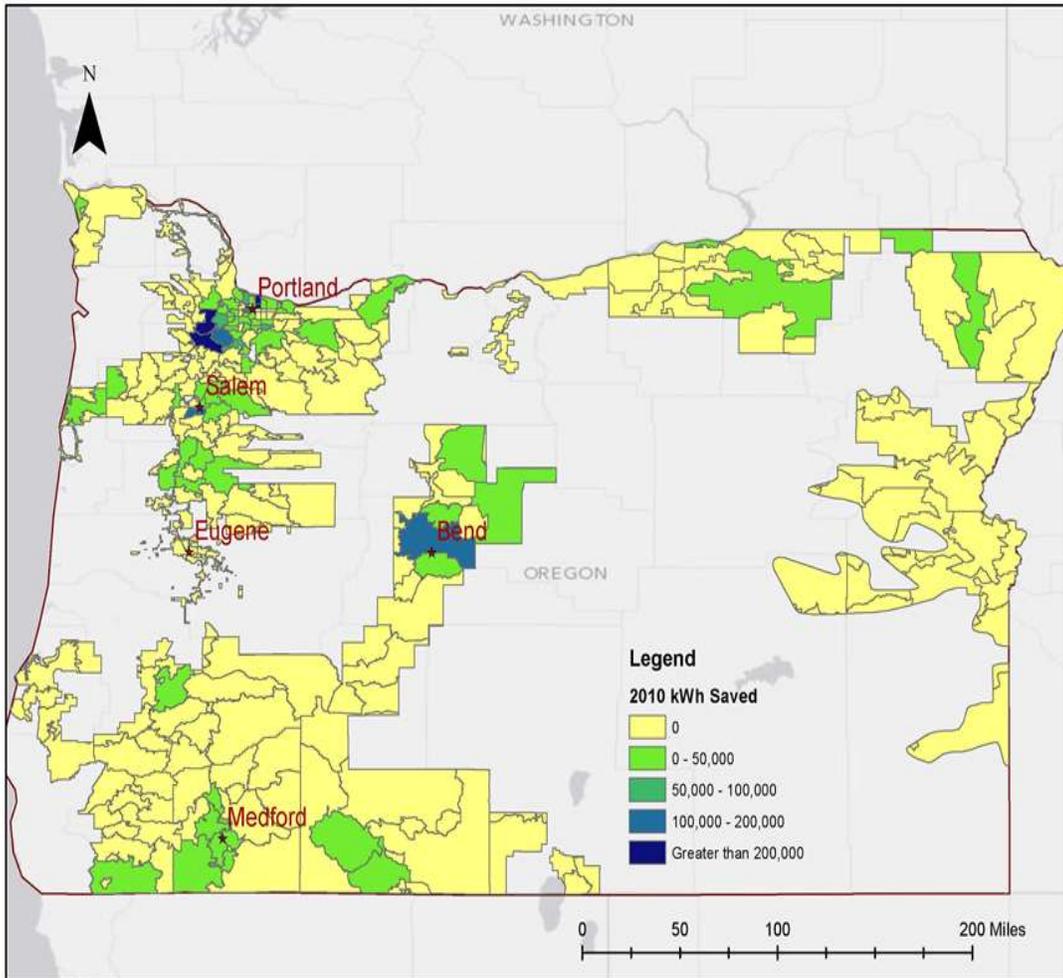
Sector	Savings	2010	2011
schools & universities	kWh	4%	11%
	therms	22%	26%
offices	kWh	6%	5%
	therms	20%	13%
data centers	kWh	0%	45%
	therms	0%	0%
hospitals/health	kWh	2%	15%
	therms	1%	26%
multifamily & high rise	kWh	7%	6%
	therms	21%	7%
infrastructure	kWh	66%	<1%
	therms	<1%	<1%
grocery	kWh	3%	5%
	therms	4%	2%
lodging/hotel/motel	kWh	2%	0%
	therms	2%	1%
restaurants	kWh	0%	1%
	therms	4%	7%
retail	kWh	3%	5%
	therms	3%	5%
other	kWh	6%	7%
	therms	24%	14%
TOTAL	kWh	100%	100%
	therms	100%	100%

In terms of project size, the New Buildings 2011 Annual Report notes that 84% of projects closing in 2011 were smaller than 70,000 square feet, representing 31% of electric savings and 47% of gas savings.

While project numbers shown in previous exhibits reflect the number of projects closed, an equally important metric is the number of projects enrolled, which provides the basis for a pipeline of future program savings. According the 2011 Annual Report, newly enrolled projects set a record at 415 projects for the year, including 84 that closed in 2011. Another 296 are expected to close in 2012-2014, while 35 were abandoned or are expected to go on hold.

Finally, we analyzed the geographic distribution of program savings for 2010 and 2011. Exhibits 3-6 through 3-9 show savings at the zip code level for both years compared to the geographic area served by all the utilities. Not surprisingly, there is significant variation from year to year based on the timing of specific projects, particularly in the less densely populated parts of the state. Note that both the Bend/Redmond and Medford areas had a zip code with higher kWh savings in 2011 than in 2010. Therm savings also showed a notable increase in the Bend/Redmond area in 2011.

Exhibit 3-6 – kWh Savings by zip code – 2010



**Exhibit 3-7 – kWh Savings by zip code –
2011**

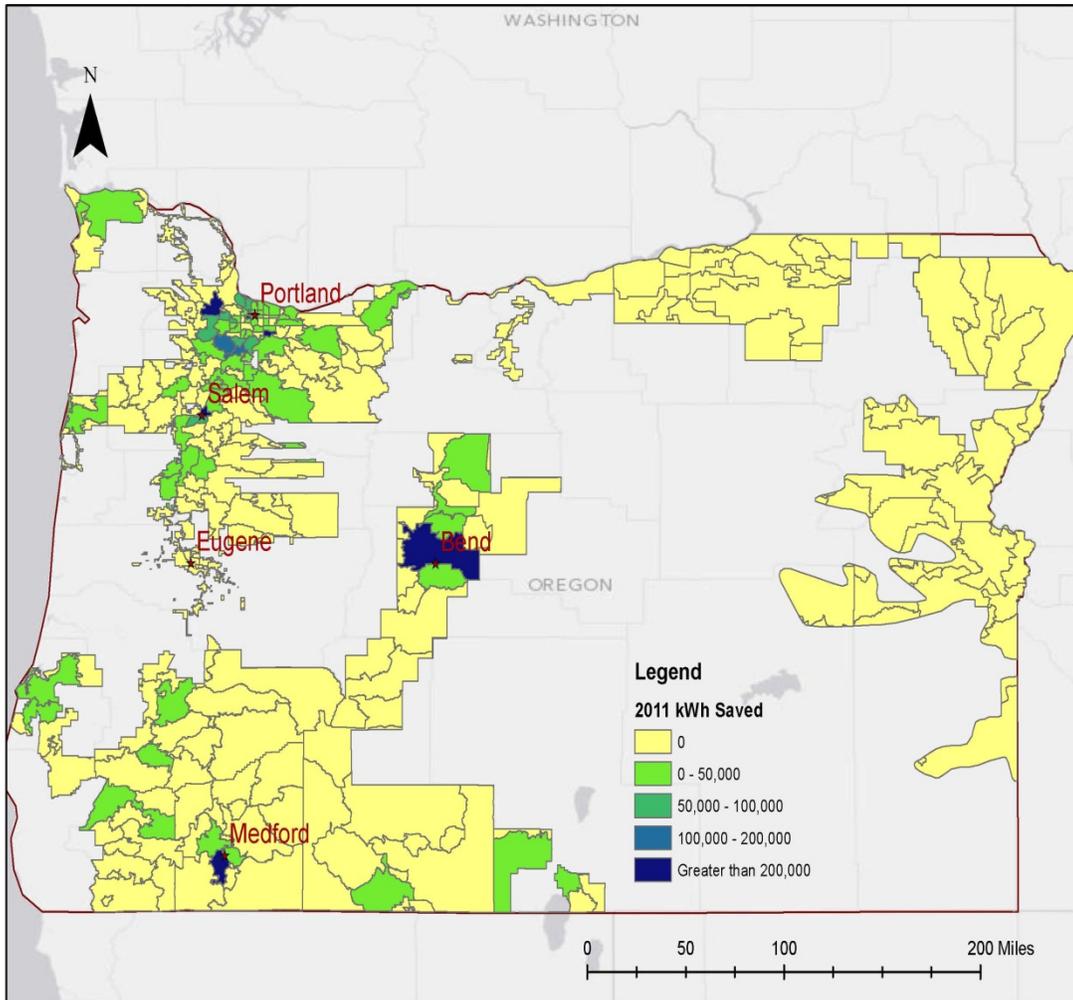


Exhibit 3-7 – Therm Savings by zip code – 2010

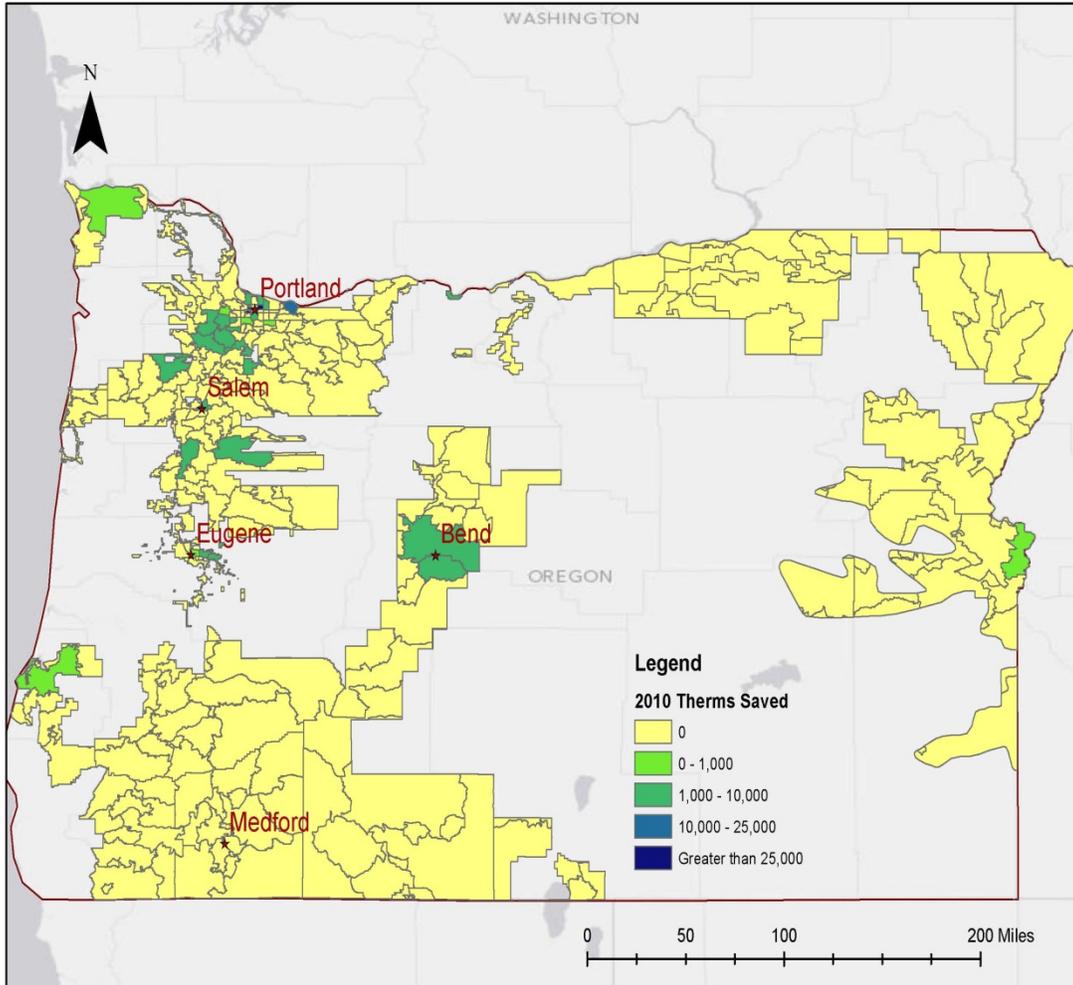
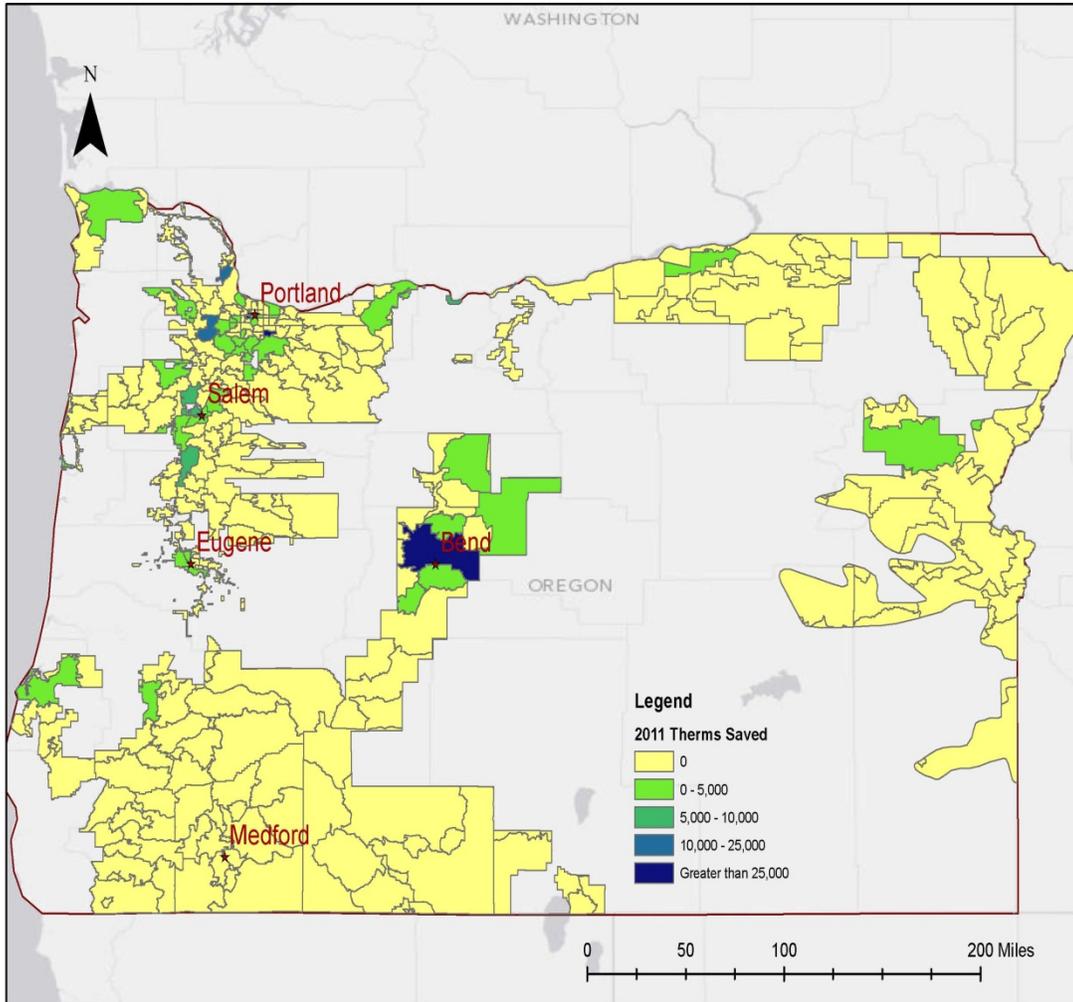


Exhibit 3-7 – Therm Savings by zip code – 2011



2011 Fast Feedback Results

While no participant surveys or interviews were conducted for this first phase of the evaluation, we reviewed the results of Fast Feedback surveys conducted for all Energy Trust programs. In addition to measuring program effectiveness in terms of savings, Energy Trust fields a Fast Feedback survey to a sample of recent program participants to assess participant satisfaction and program influence, with results reported quarterly. In some cases we used full year results from the “Fast Feedback Results, 2011 Draft,” and in other cases, we combined the individual quarterly reports for 2011 into aggregate results of participants surveyed during calendar 2011. Some of the questions asked in the survey changed from one quarter to the next, which is reflected in the lower Ns for responses to some questions below. While Energy Trust strives to contact owners for the Fast Feedback survey, they are often difficult to reach, and only 22 of the 71 survey respondents were owners, as shown below.

Exhibit 3-10 – 2011 Fast Feedback Survey Respondents

Project Role	Count	Percent
Owner	22	31%
Consultant	6	8%
Contractor	3	4%
Other	40	56%
Total	71	

A key metric for which the Fast Feedback surveys collect data is program satisfaction. Participants are asked to rank their satisfaction with various program elements and the New Buildings program overall on a 1 to 5 scale, where 1 is not at all satisfied and 5 is very satisfied. Energy Trust typically reports the percentage of 4 and 5 responses for each question as an indicator of the percentage of very satisfied participants. In addition to the percentage of 4 and 5 responses we have calculated a mean satisfaction score for all who provided a response other than “don’t know.”

Results for all of 2011, presented in Exhibit 3-11 below, show that participants were generally least satisfied with information on how to apply for the BETC, the amount of the incentive, and the ease of applying for the incentive, while they were most satisfied with their interaction with the NB program representative and the performance of the installed equipment. Satisfaction with other features as well as with the program overall fell in between the two extremes, with overall program satisfaction receiving a 4.2 average rating and 83% of participants providing a rating of 4 or 5.

Exhibit 3-11 – 2011 Fast Feedback Results: Participant Satisfaction

Program Attribute	Average	% 4 or 5	N*
Interaction with program representative	4.6	88%	69
Ease of applying for incentive	3.9	64%	69
Incentive amount	3.8	65%	66
Turnaround time to receive your incentive (Q2-Q4)	4.3	81%	44
Installation of energy efficient features (Q1 only)	4.5	93%	13
Performance of your equipment (Q2-Q4)	4.7	95%	45
Information on how to apply for the state tax credit (if received)	3.8	51%	43
Overall experience	4.2	83%	71

*N excludes Don't Know responses

The Fast Feedback surveys also asked about participant experience with Design Assistance; just 13 of the 71 respondents received such assistance. Their satisfaction with the help they received (presented below) is about the same as the overall program satisfaction of all participants.

Exhibit 3-12 – 2011 Fast Feedback Results: Design Assistance Satisfaction

Received Design Services	Average	% 4 or 5	N
Q1	4.5	100%	2
Q2	3.8	60%	5
Q3	4.7	100%	3
Q4	4.3	67%	3
All 2011	4.2	77%	13

According to the Draft 2011 Program Accomplishments report, 41 participants received \$137,600 in early design assistance in 2011.

Fast Feedback survey respondents were also asked about the importance of various factors influencing their decision to incorporate energy efficient features into their new construction projects. Responses indicate that both the Energy Trust incentives and Energy Trust-funded design services were considered almost as influential as input from design professionals in the decision to pursue energy efficiency (Exhibit 3-13). Note the lower N for design professionals, which presumably reflects project architects and engineers who were surveyed but did not answer that question, since they are the design professionals.

Exhibit 3-13 – 2011 Fast Feedback Results: Influence on Efficient Design

Design Influences	Average	% 4 or 5	N
Energy Trust incentives	3.3	55%	66
Design professionals	3.5	57%	28
Energy Trust representative	3.1	45%	60
Energy Trust-funded design services	3.5	50%	10

*N excludes Don't Know responses

Fast Feedback surveys also asked about whether the same energy efficient design would have been built if the NB program had not been available, but those results are not presented here because of the limited number of responses from building owners.

2012 Program Status

The analysis of 2010 and 2011 results helps establish the context for the current 2012 program. As explained by the PECEI program staff during interviews in 2012 and amplified in the 2012 Monthly Reports submitted by PECEI to Energy Trust, the NB program has made a number of changes before and during this year to address market trends and participant concerns.

The pivotal event affecting the NB program as it planned for 2012 was the new OR commercial building code that officially took effect in 2010. The 2010 code posed a significant challenge to the NB program because it increased required efficiency levels on new buildings by 10-15% relative to the 2007 code. As noted above, however, most of the projects participating in the NB program through the end of 2011 had obtained their building permits under the 2007 code, and the NB program continued to provide incentives for measures based on their performance relative to the 2007 code for these projects.

Program data show that about 60% of 2011 projects participated using the 2007 code. This aligns with participant responses to a 2011 Fast Feedback survey question about whether they were working on a project that would have to meet the 2010 code: half said they were and half were still working on a project subject to the 2007 code. Even in the first quarter of 2012, 76% of incentives paid were for savings achieved under the 2007 code, according the April 2012 Monthly Report.

But code development is not standing still while the market and the NB program catch up. A code upgrade is expected for mid-2013; in the meantime, there is the voluntary 2011 Oregon Reach Code (ORC) that has been implemented and that provides the basis for some of the current NB program requirements¹. The ORC essentially achieves energy savings of about 15% over those required using the current 2010 OR code and is expected to be similar to the 2013 code update. NB program incentives have been tied to attainment of the reach code, and program managers are hoping that experience with the ORC requirements through the NB program will enable the market to deal with the new code when it takes effect in 2013.

To adapt to the ongoing tightening of code requirements, the NB program has continued to position itself as a technical and educational resource in the market, focusing on influencing market transformation and diversifying its offerings to continue to capture energy savings. Examples of program changes initiated over the past two years and in place in 2012 include:

- Use of Excel-based calculators rather than purely prescriptive incentives, meaning that even the “prescriptive only” option reflects calculated savings rather than rebates based upon specific models or efficiencies of equipment – even though the calculated savings can still be considered “deemed.” As shown in Exhibit 3-3 above, the number of customers using this option went from just one in program year 2010 to 73 in 2011 (even though about 40% of 2011 projects still used the “standard” prescriptive option using a 2007 baseline). Both lighting and HVAC calculators have been developed, and program staff have facilitated the transition both by offering trainings and by working with participants and trade allies on specific projects. The calculators also continue to be updated to incorporate advances in technology. For example, Evergreen, a lighting consultant retained by the NB program, has provided updated lighting costs and prototypical lighting designs/layouts that will make meeting the requirements of the 2010 code and the ORC easier. Once reviewed by Energy Trust, these changes will be incorporated into the lighting calculator.
- “Custom Track” projects have been replaced by the “analysis only” option, where savings are estimated by modeling only. The number of projects using this option increased from just 1 in 2010 to 16 in 2011. “Prescriptive and analysis” projects are those that use a mix of modeled and deemed savings and are the equivalent of the old “standard/custom” track. There was 1 “prescriptive and analysis” project in 2010, but 14 in 2011 as more projects conformed to the 2010 code.

¹ The 2011 Oregon Reach Code (ORC) is based on the November 2010 International Green Construction Code public version 2.0 with Oregon specific amendments, including provisions from the 2012 International Energy Conservation Code and ASHRAE 90.1. The State of Oregon Energy Codes Division notes that “The Division worked to align the commercial provisions of this code with state, local and federal incentive programs. The Oregon Department of Energy drafted rules to allow the ORC as an alternative path for buildings required to follow the State Energy Efficient Design program. The Energy Trust of Oregon is offering incentives at varying levels for buildings constructed to the ORC. The Energy Trust of Oregon also has incentives and expertise available to assist with modeling complex structures.”

- Many design teams have faced difficulties in simply meeting the requirements of the 2010 code, let alone exceeding it using the Lighting or HVAC calculators. For a number of projects, the NB program provided technical assistance that helped projects attain and exceed code when they otherwise might not have. In February 2012, PECI proposed that Energy Trust claim about 700,000 kWh and 4,000 therms in 2011 for this code compliance assistance, and expects to assist other projects in meeting code in 2012. Starting in 2012, a separate CODEASSIST measure has been added to those projects where the program is providing code compliance assistance in addition to other New Buildings measures.

Another challenge for the program has been the expiration of the Oregon Business Energy Tax Credit, or BETC. While projects that applied for the BETC have additional time to attain completion, the Oregon Department of Energy has stated that no new applications for BETC have been or will be approved.

- BETC has been replaced by the ODOE Energy Incentives Program, which appears to have more complicated qualification requirements and is harder to understand. Even before this change, the well-established BETC was one of the more difficult aspects of program participation for owners and design teams to deal with, and NB program participants expressed their frustration by giving the assistance provided in applying for the BETC the lowest rating of any program element in the Fast Feedback satisfaction ratings.
- To deal with the expiration of the BETC, PECI added two technical outreach specialists to help design teams identify potential design changes that would qualify for NB incentives to help offset the reduction in state tax credits for affected projects.

Several pilot programs from the past several years also provided lessons learned that have been or are being incorporated into new product offerings tailored to the market and the stricter code.

- The Path to Net Zero (PTNZ) Pilot was launched in mid-2009 and required that projects achieve 60% savings beyond 2007 code, with a minimum of 50% savings beyond 2007 code from efficiency and the remainder from renewables. Some elements from the pilot were incorporated into the 2010 program redesign, and additional elements have been incorporated in 2012, such as further solar integration and a solar ready incentive, new measures and integrated design approaches, and expanded monitoring and reporting offerings.
- The Small Commercial Efficiency Pilot (SCEP) was launched in 2010 to provide a prescriptive, whole-building approach to energy efficiency in buildings 10,000 to 70,000 square feet. The small commercial packaged offerings launched in 2012 are a direct result

of the pilot's findings and include simple prototypes that standardize claimed savings for a set of tiered "Good", "Better", and "Best" measures.

Monthly progress reports from PECI show that in the first half of 2012, PECI has sought approval from Energy Trust to implement a number of changes to the NB program to better address the needs of the market. These include the development of offerings targeted to specific end user segments, including small commercial (office, retail and restaurant), data centers, and groceries. Final versions of workbooks and forms for office, retail, and restaurant were being developed in June 2012, and recommended measures and package options are to be developed for additional small commercial offerings in the school, multi-family, and grocery market sectors.

Several other key features of program delivery are highlighted by the monthly reports:

- **The ongoing and extensive outreach conducted by NB program staff.** Outreach Managers attend numerous events, such as trade shows, regional professional and business group meetings, as well visiting individual firms to give presentations about the NB program offering. The development of trade ally groups is designed to leverage these outreach activities so that more individuals are reached per event or encounter.
- **The program seeks out and records feedback from a variety of market actors.** Sometimes this is generic information about market trends, but other times it can be very specific, as with one past program participant who expressed disappointment through the Fast Feedback process about the ultimate incentive provided by the program and as a result said they would recommend that their organization not participate in the future. This kind of feedback is valuable in providing a reality check to Outreach and other NB Program Managers.
- **Current program activity is adding to the program pipeline and establishing a solid base for program performance in future years.** As of mid-2012, for example, 126 projects were enrolled with incentive payments forecasted for 2013.
- **There has been considerable turnover in outreach staff,** with new people in the Program Outreach Manager and several OM positions. Some of this appears to be part of a general streamlining of operations, and some Outreach Managers who formerly worked for Earth Advantage will now be direct employees of PECI and will still be working in the same segment, but there are also several OMs with long-standing ties to specific market or geographical segments who will no longer be working for the NB program.

Both staff interviews and monthly reports describe an ongoing and evidently successful effort to develop several networks of trade allies involved in new construction. In 2011, the NB program added 60 new program allies, broadening the program reach to serve new customers with a wider array of expertise. As of mid-2012, there are 62 allies enrolled in the Development and Design ally group, including architects, engineers, green building consultants and developers, and 114 enrolled in the New Buildings trade ally group, which includes builders and specialty contractors. Solar Design Ally and Lending Ally networks are under development, but will require coordination between NB and other programs.

A source of frustration expressed by implementation staff is the difficulty of encouraging leading edge design because of limitations on the kinds of measures that qualify for incentives. One example offered in point was a data center design that, with careful planning, allowed for an entire mechanical system to be eliminated. Since there was no “incremental” cost, no incentive could be provided. Another example mentioned was the bundling of measures to create a cost-effective overall project even though some innovative individual measures within that bundle would not meet cost-effectiveness criteria. An “innovation” incentive based, for example, on a building’s overall energy use intensity (EUI) might be able to support both of these kinds of projects and encourage bold and aspirational designs.

4. Overall Conclusions and Recommendations

Conclusions

Key findings reported elsewhere in this report are summarized below.

- The program met or exceeded its goals in 2010 and 2011 and has continued its steady enrollment of new projects in 2012 to build a savings pipeline for future years, with 126 of the 168 projects enrolled by mid-year expected to deliver savings in 2013.
- The pivotal event affecting the NB program in 2010-2012 has been the stringent 2010 Oregon commercial building code, which increased required efficiency levels on new buildings by 10-15%.
 - While most program savings through early 2012 have come from projects subject to 2007 code requirements, the NB program has moved to adapt to the requirements of the 2010 code with new tools (e.g., workbook-based calculators, early design assistance) and market segment-specific product offerings.
 - The program is working with the voluntary “reach” code to help prepare the market for the next code upgrade scheduled for 2013.
- Through aggressive outreach, attendance at multiple events and ongoing interaction with architects, engineers and other key players, the implementation team has ensured that a majority of new buildings in Oregon continue to participate in the NB program.

- Outreach to trade allies and creation of formal trade ally networks for Development and Design professionals as well as traditional New Buildings Trade Allies have helped solidify existing relationships between the NB program and the new building community while also bringing in new players and leveraging program outreach activities.
- The NB program has also had to cope with the elimination of the BETC and its replacement with the ODOE Energy Incentives Program, which appears to be more complex to qualify for and harder to understand.
- There has been significant turnover among the Outreach Managers in the past six months; though all vacated positions appear to have been filled by highly qualified and competent individuals.
- According to the 2011 Fast Feedback surveys, overall participant satisfaction with the program was 4.2 on a 5 point scale. Participants were generally least satisfied with information on how to apply for the BETC, the amount of the incentive, and the ease of applying for the incentive, while they were most satisfied with their interaction with the NB program representative and the performance of the installed equipment

Recommendations

While the NB program appears to be running smoothly in 2012 and effectively enrolling enough participants to meet its goals, these following recommendations will help ensure that NB program efforts remain on track.

- The program should continue the outreach and networking activities that have been ongoing, with a particular emphasis on working with trade ally networks to keep them informed not only about program updates (e.g., new market-specific offerings) but also about relevant code and tax credit developments.
- Early Design Assistance appears to have both direct savings and market transformation effects, and should be pursued whenever possible by engaging projects as early as possible in the design process. This can be accomplished best through the outreach efforts described above.
- The NB program is already taking steps to prepare the market for the 2013 code through the requirements of the Oregon Reach Code (ORC), and should continue these efforts through work with trade ally networks and other organizations such as AIA, Cascadia, and the Building Energy Simulation Forum (formerly the Building Simulation Users Group).
- In light of the number of new people in OM positions, the program should make a special effort to ensure a smooth transition. While the initial emphasis is naturally on

transitioning currently active projects to the new OMs, it would be worth following up with past participants and other market actors in the affected market or geographic territory to establish or re-establish ties with the NB program through the new OM.

- While the status and complexity of current tax incentives is obviously outside the control of Energy Trust and the NB program, it is important to provide customers with accurate and timely information both on the status and requirements of those incentives and on how to apply for them. This is particularly relevant for those credits that may be awarded using a competitive process, which are likely to be inherently more complex. Clearly, NB program participants appear to consider tax credits to be part and parcel of what is offered to them for building efficiency structures, and although these credits are wholly separate from the NB offering, participants may look to the NB program for answers.
- A number of architects, engineers, owners, developers and others have been motivated to pursue aspirational, highly efficient design through their interaction with the NB program. Offering an Innovation Incentive that rewards these efforts would enhance the NB program's role as a key player in supporting high performance building design in Oregon. For example, a substantial "bonus" incentive for exceeding (through demonstrated performance for one year post-occupancy) current code requirements by a large percentage (e.g., 40 or 50 percent) would encourage the design community to pursue leading-edge designs.

OMs will need to continue to provide application assistance given the increasing complexity of design tools (e.g. calculators) that must be used to participate in the NB program under the 2010 code requirements and as product offerings target markets with smaller buildings and perhaps less sophisticated design teams. This should be accounted for in planning OM and support staff workloads.