Energy Trust New Buildings Program
2013-2014 Process Evaluation Report
Final

Prepared by

PWP, Inc.

Evergreen Economics

Wirtshafter Associates, Inc.

February 2015

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Executive Summary

This report presents the results of the process evaluation of Energy Trust of Oregon's New Buildings (NB) program for 2013 and into 2014. The NB program provides financial incentives and technical assistance to owners who install energy efficiency measures in new commercial construction, major renovation and tenant improvement projects. The program closed 389 projects in 2013, a more than 25 percent increase over 2012. It enrolled another 422 projects for future completion – the largest annual enrollment to date for the NB program.

Exhibit ES-1 – 2013 Electric and Gas Savings -- Total

Sector	Projects	Savings	
		kWh	Therms
New Buildings	304	76,371,241	338,173
New Multifamily	85	5,314,817	113,325
Total	389	81,686,058	451,497

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 primary data collection, including staff interviews, attending early design meetings, accompanying NB program staff on post-installation inspections, and interviews with 41 current program participants. In addition, results of phone surveys conducted with 2013 participants as part of Energy Trust's data collection effort for reporting annual customer satisfaction were incorporated into the current evaluation findings.

Key findings reported in this report as drawn from these data collection and analysis activities are summarized below.

Conclusions

- The NB program continues to meet its goals and the needs of new building owners and trade and design allies. Savings come from a diverse mix of participants in terms of track, building type, fuel, utility, and geographic region. To achieve its goals, however, the program remained heavily dependent on data centers, which accounted for half of 2013 kWh savings.

- The NB program continues to achieve these savings above and beyond one of the most stringent building codes in the country, and is engaging most of the key designers, engineers and owners in the Oregon market.

- A comparison of NB participation data to Dodge new construction data from McGraw-Hill showed that, overall, the NB program is reaching at least 58% of the Dodge project

counts. Note, however, that Dodge data include projects that may not be built, and in this accounting may include some projects that are renovations and not new construction or additions. Dodge also does not always list the smaller projects that would qualify for the Market Solutions offering, so the NB program's share of overall projects is probably higher.

- The Market Solutions offering of the NB program has been helpful in assisting many commercial projects under 70,000 square feet, which made up more than three-fourths of participants in 2013. However, most of the 2014 participants we spoke to who were eligible for Market Solutions were not fully aware of or did not understand this option. In fact, as was the case in the previous process evaluation, participants – whether owners or other members of the design team -- were generally unaware of the alternative participation tracks available to them, and relied on NB program staff to help them identify the appropriate path to participation.

- The NB program appears to be engaging with more of its participants early in the design and construction process, with over half the 2014 participants we spoke to having made contact with the program when their project was in the programming or conceptual design phase – up from 42% in 2012.

- This has helped encourage more design teams to conduct early design meetings and charrettes, including about one-third of the Market Solutions-eligible 2014 participants we interviewed. Participants who took advantage of Early Design Assistance from the NB program were very satisfied with it, with all but one giving it a "4" or "5" rating on a 1-to-5 scale where 5 represented the highest satisfaction level.

- In the EDA meetings that the evaluation team observed, it seemed that greater awareness of NB program options before the initial design was developed could have led to a more thorough evaluation of efficient design alternatives during the meetings.

- As the commercial new construction market has revived, program staff have had to work hard to keep up with all the new construction projects so that the NB program can capitalize on them. The faster pace of the market also made the qualifying products list (QPL) for LED lighting a greater challenge, since there was more pressure on designers to go with unlisted products rather than wait for the QPL to catch up. Energy Trust successfully revised the requirements for LED lighting in a way that maintained quality control but provided greater flexibility to projects wanting to use LEDs.

- Energy Trust appears to have done a good job in encouraging candidate woman- and minority-owned (WMO) firms to become involved with the NB program as allies. In all categories except woman-owned electrical contractors and woman-owned

plumbing/HVAC contractors, the percentage of WMO allies exceeds the percentage of WMO firms in the total population.

- Among 2013 participants, satisfaction with the program was generally high, with mean satisfaction levels for all aspects of program delivery averaging more than 4.3 on a 1-to-5 scale. Among individual program elements, the only items to receive average ratings of less than 4.5 were the enrollment process and paperwork (4.45), the ease of preparing the application (4.43) and the timeliness of the approval process for those who sought approval from Energy Trust prior to purchasing equipment (4.36).

- Current participants are also very pleased with the NB program, NB staff and the level of communication and support they receive. Overall program satisfaction among 2014 participants (whose projects were still in progress) averaged 4.55, with 97% of the 39 respondents providing "4" or "5" ratings. Almost all of the reasons offered for the ratings reiterated the respondents' satisfaction with the program and its staff, with no major concerns mentioned.

- One comment that was often made by 2012 participants, but was conspicuously absent among current year participants, was concern about the uncertainty surrounding the final incentive. Since all these 2014 participants were Market Solutions candidates, the clearly defined "good", "better", "best" levels of performance and incentives seem to have minimized that concern.

Recommendations

Several recommendations that were made in the 2012 process evaluation report have been or are being implemented by the NB program. The program is continuing its outreach to smaller projects through the use of the Market Solutions offering and working with design-build projects; however, the design-build status of projects is still not included in the tracking data. In addition, the recommendation that paperwork be streamlined to the extent possible appears to have resulted in fewer participant concerns expressed by 2014 participants regarding the complexity of the application process. Similarly, we heard no concerns regarding NB staff turnover, so any that is taking place is being handled smoothly. Recommendations that have not, to our knowledge, been implemented include:

- Supplementing the early design assistance (EDA) incentive with a small bonus incentive for the architect, engineer, or green building consultant to prepare a follow-up report that details what measures were ultimately incorporated into the design and why.

- A mechanism for reinforcing participant awareness that they received design assistance if no early design meeting was held.

- To encourage innovation, offer a bonus incentive for the first 5 or 10 projects using an emerging energy efficient technology.

Based on the conclusions summarized above and other findings throughout the report, the following recommendations are designed to help ensure that NB program efforts remain on track and address any aspects of program delivery that may inhibit participation.

- Provide greater visibility to the Market Solutions offering, particularly among trade and design allies, but also among owners. Use of the good-better-best levels of performance and incentives appears to resonate with participants, and might be an effective way to expand awareness of Market Solutions.

- Because all aspects of energy efficiency increasingly emphasize a behavioral approach, it would be appropriate to provide NB participants with guidance on efficient building operations. Since Market Solutions provides a good-better-best set of criteria for design, it may be worth developing a similar set of good-better-best operational guidelines for each building type.

- Continue to use the EDA meetings to bring together all the members of the design team, but make the meetings more effective by:

    - Before the meeting, providing a summary of program options to whoever prepares the preliminary design so that those options are initially taken into account and can be more effectively discussed at the meeting.

    - Providing owners (and others) with a one-page summary of the key options under consideration at the meeting, as well as a summary of the outcome.

- As a parallel effort, consider providing an incentive for a post-completion project debriefing where the participants who attended the design meeting discuss the final as-built project and compare it to what was discussed initially. Such a discussion would provide valuable feedback, particularly to the allies who will be working on other, similar projects in the future.

Several of our recommendations are specifically related to allies, in part because the comparison of McGraw-Hill (Dodge) “players” data to program tracking data showed that there are multiple potential allies who are not currently touched by the program. Trade and design allies are very valuable in leveraging NB program resources, and Energy Trust needs to more systematically cultivate the ally relationship beyond firms who actually signed up with the program.

- Program tracking data should include, for each project, the names and contact information for all the key allies working on each project: architect, engineer, lighting designer, electrical contractor, mechanical contractor, general contractor, third party

construction or project manager and green building consultant. At the time of program participation, this information is readily available, and while it may be more cumbersome to enter multiple contacts for each project, doing so would help build a much more complete database of firms who are touched by the program. While Energy Trust's own tracking system may not be structured to accommodate this information, the PMC for the program should be encouraged to provide it to Energy Trust periodically so that program and portfolio planners can improve their outreach and marketing efforts.

- Even firms that work on a participating project but do not interact directly with program staff or with program application forms or other paperwork should be included in Energy Trust's tracking data, and perhaps be sent a "thank you for participating in the Energy Trust New Buildings program; contact us to learn more" card upon project completion.

- Allies should receive more information and education on program offerings. The lack of understanding of the Market Solutions offering among many allies is one indication of the need for this. More fundamentally, the NB program is inevitably going to change as the Oregon Code changes, so periodic information and training updates must be provided.

- Many ally organizations may have only a single employee who is knowledgeable about and active in the NB program, so a concerted effort should be made to have at least two people at each organization available to act as NB program contacts. The fact that the Oregon new construction market is rebounding suggests that more people will be changing jobs, and it is important that program ties to ally firms be maintained when key personnel leave.

- Energy Trust's willingness to listen to allies on the issue of the LED QPL helped avert the potential loss of participation and savings on this issue; actively seeking out feedback from all groups of trade and design allies will ensure that any similar issues can be quickly identified and addressed.

- Many allies have been involved in multiple NB projects over the years, and it may be appropriate to recognize both the length and activity level of their involvement; perhaps with a special designation on the Energy Trust website.

MEMO

Date: July 27, 2015
To: Board of Directors
From: Sarah Castor, Evaluation Sr. Project Manager
Jessica (Rose) Iplikci, Business Sector Manager, New Buildings Program
Subject: Staff Response to the New Buildings 2013-2014 Process Evaluation

The 2013-2014 New Buildings Process Evaluation was an opportunity to take an in-depth look at the current state of the program as a whole and explore specific topics, including the market penetration of the program and customer experience with the Market Solutions offerings that the program rolled out in late 2012.

The program has done an excellent job of meeting its savings goals over the last several years, while at the same time streamlining and enhancing the participation process for customers. Evidence of this is present in the high satisfaction rates of participants and in their comments that the program provided good customer support while motivating participants to design and construct high performance buildings.

The estimate that Energy Trust was involved in about 58 percent of projects in its territory in 2012 and 2013 indicates that the program has maintained a high relevance in a dynamic market. The program recommends using this market penetration estimate as only a rough indicator, as it's very difficult to measure the true size of the program's reachable market using available data sources. There are a number of factors that limit our ability to rely on Dodge data (a national data set used in this analysis) for project activity beyond a general sense. For example, projects may be listed more than once because of mixed use types, and therefore double counted in terms of the number of projects and/or square footage. We have also observed projects that are postponed or cancelled may remain on the Dodge active project list. In addition to these issues, project types are often categorized in a way that is not consistent with program sorting rules, so a project that Energy Trust would consider a retrofit might be classified as a building renovation. Unfortunately, many of these issues are common among other construction data sets as well, so there is not a simple way to accurately determine the percentage of projects that New Buildings is serving.

Based on the findings and conclusions from the report, we see the following take-aways and opportunities for the New Buildings program:

- The program has received positive feedback from owners and allies on new offerings designed for specific markets, tailored to the way they make decisions, and uptake is high. Market Solutions, a package of incentives tailored to specific

business types pursuing small new construction, is among the most noted example and will be expanded to address future market needs.

- Satisfaction with the overall program and program representatives has been consistently high.

- Project documentation provided by customers has been streamlined. Online forms designed to ease participation and increase market reach are being planned along with other enhancements, and should be reviewed in the next program evaluation.

- Early Design Assistance meetings have been effective and the program will continue to improve the structure with new tools; the recent Energy Use Intensity Targeting and Planning tool is designed to identify advanced energy saving strategies.

- Occupant engagement is a topic area addressed through the program's Allies for Efficiency training and education series. Supplemental educational materials may be developed in the future once successful occupancy practices are known.

- In-person ally education will be continued with supporting program communications designed to raise the level of awareness of overall program changes and enhancements.

- Ally recognition is very important and though often provided in-person by program representatives, the program is planning greater public recognition of individuals and project teams through a variety of industry events.

- The evaluator's recommendations to add additional firms to our project tracker data base that are not approved by the project owner will not be implemented by the program. Based on our customer confidentiality requirements, the program is extremely careful to only communicate with those firms that are identified directly by the owner. The program manages projects with a large number of actors and will only track contacts listed by the owner on the enrollment form or that are directly working on the project.

- New Buildings continues to build upon established relationships with minority associations and organizations, including the Oregon Association of Minority Entrepreneurs, the Association of Minority Contractors, minority chambers, and Native American tribes. Specific market engagement activities include targeted outreach to Disadvantaged, Minority- and Woman-Owned, and Emerging Small Business (DMWESB) classified businesses as well as participation and

representation at industry events that focus on the minority business community including the Daily Journal of Commerce's DMWESB networking and awards events, National Association of Women in Construction, and the Association of Commercial Real Estate Women.

1. Introduction

This report presents the results of the process evaluation of Energy Trust of Oregon's New Buildings (NB) program for 2013 and into 2014. The NB program provides financial incentives and technical assistance to owners who install energy efficiency measures in new commercial construction, major renovation and tenant improvement 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[1].

To be eligible to receive electric incentives from the NB program, a site must be served by Portland General Electric or Pacific Power. To be eligible to receive natural gas incentives, a site must be served by NW Natural or Cascade Natural Gas. Commercial building types eligible to receive incentives include, but are not limited to, 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.

For several years leading up to the 2013 program year, the program had been adjusting to the 2010 Oregon Energy Efficiency Specialty Code for new commercial construction in Oregon, which increased baseline efficiency approximately 15% over the 2007 code, while also adapting program offerings to the changing market. For larger, more complex projects this has meant a shift away from LEED toward custom or modeled savings. For smaller buildings, it has meant moving from single measures or system to the more comprehensive packages that make up the Market Solutions offering.

The goal of this evaluation was to obtain feedback and recommendations on program design and the participation process that can be used to improve the implementation of the program. Given the nature of commercial new construction, Energy Trust wanted to get feedback from participants who have recently completed projects and those with projects still in progress with regard to the participant experience and the efficacy of program services, incentives, outreach and marketing. Energy Trust is also interested in documenting the current relevance of the program in the market, and what the program can do to increase or maintain relevance over the next several years and code cycles. For this phase of the evaluation, activities focused on:

[1] PECI's staff and contracts were acquired by CLEAResult in 2014, but for the purposes of this report, we will still refer to the program implementer as PECI.

- Documenting program implementation activities and changes in program design in response to market and code requirements
- Describing the distribution of 2013 participation by fuel type and across:
    - Code requirements
    - Utilities
    - Market segments
    - Measures/end uses
    - Program participation options
    - Geographic location.
- Observing or attending early design meetings to better understand how they are structured and how design team interaction at these meetings influences choices regarding building options and program participation.
- Riding along with program staff on several site visits to observe the process by which installed measures are verified and inspected.
- Interviewing current participants, focusing on how they make their decision of which program participation options to use, particularly with regard to the Market Solutions offering, but also with regard to their use of early design assistance and meetings.
- Interviewing 2013 participating owners to gather information about participant satisfaction, program processes and incentives, and how decisions are made about energy efficient features and equipment.
- Comparing commercially available data on 2012 and 2013 new construction projects in Oregon to program tracking data in order to study where NB projects and allies are located in the state relative to the overall market.
- Comparing program lists of trade and design allies to Dun and Bradstreet and other data to determine the extent to which the NB program has engaged woman- and minority-owned business and program allies.

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 2013 and supported the analysis of participation patterns, including their evolution over the past several years. Secondary data sources included:

- Participant tracking dataset
- Monthly reports and the Energy Trust Annual Report
- Write-ups of charrettes and early design meetings
- Dun and Bradstreet (D&B) data on trade and design ally business characteristics
- Dodge data on new construction projects and associated firms
- Program materials on the Energy Trust website
- Other market research conducted for the New Buildings program

PRIMARY DATA

Primary data collection comprised both in-person visits and meetings as well as telephone interviews.

STAFF INTERVIEWS

Interviews were conducted with eight Energy Trust and PECI staff. These interviews were used both to get a detailed view of current program procedures and activities, and also to identify issues facing the NB program that we subsequently explored through other data collection activities. In addition, our participation in site visits and early design meetings, described below, allowed us to ask program Outreach Managers questions relevant to individual projects and program features.

EARLY DESIGN MEETINGS

Members of the evaluation team attended early design meetings to observe the interaction between the design team and owner representative. This gave us a better understanding of how these meetings influence decisions regarding building options and program participation.

We attended, in person, five design team meetings, including one of each of the following building types:

- Warehouse
- Food production and distribution center
- Multifamily
- Lodging
- Zoo education center

SITE VISITS

Evaluation staff accompanied NB program staff on three site visits to observe the process by which program staff interact with customers. Sites included a police station, a police training center, and a water department warehouse and shops building.

PARTICIPANT INTERVIEWS

To gather data on satisfaction from projects that participated in the NB program in 2013, we surveyed 35 owners or owner's representatives regarding their experience with the program. To obtain feedback from current participants, we conducted telephone interviews with a total of 41 individuals representing 35 projects active in the program in 2014. While owners and their representatives made up most of the 2014 respondents, we also obtained feedback from architects, engineers and consultants, as shown in Exhibit 2-1.

Exhibit 2 - 1 –Completed Interviews, by Function

Project Role	Completes
2013 Participants	
Owner/owner's representative	35
2014 Participants	
Owner/owner's representative	29
Architect	4
Engineer	3
Consultant	5
Total	76

The current evaluation is meant to build upon the results of the 2012 process evaluation report (http://energytrust.org/library/reports/NB_Process_Report_2-Final.pdf). That evaluation found that the NB program was running smoothly and effectively enrolling enough participants to meets its goals. The 2012 evaluation contained the following recommendations to ensure that these efforts remain on track:

- The program should continue its outreach to smaller projects through the use of market-specific packages and working with design-build projects. To support the latter, the program tracking data should include information on whether a project is design-build so that the outcomes of these projects can be tracked separately.

- As the NB program strives to engage projects earlier in the design process, it should maintain the emphasis on supporting early design meetings and charrettes. To achieve optimal results from these meetings, a single member of the design team should be formally designated as having responsibility for ensuring follow-up. In addition to the $2,500 incentive for holding the EDA meeting/charrette, consider adding a small ($500) bonus incentive for the architect, engineer, or green building consultant to prepare a follow-up report that details what measures were ultimately incorporated into the design and why. In addition to the Early Design Assistance Report Template, the program should provide a sample report with a more detailed description of the type of discussion, estimated savings and level of specificity desired.

- Since participants are often unaware that they received code compliance assistance, consider providing more concrete documentation of the services provided, such as an invoice for the value of the services provided with a “paid by Energy Trust” and $0.00 due shown on the receipt.

- Participants recognize the need for Energy Trust to document all aspects of NB program participation, but would appreciate any streamlining of the paperwork process, which would have the added benefit of reducing participant reliance on NB staff to complete forms. To the extent possible, it would be helpful to refer to forms by name rather than by number as a means of making the application process more user-friendly.

- As another means to make the participation process (including the selection of a program track or options) more transparent, Outreach Managers or other program staff could provide a brief summary of participation options tailored to what they know about a project (e.g., size, building type) to help guide their discussion with the design team regarding how to proceed. After a decision has been made, both a leave-behind and follow-up emails could be used to clarify the participation options and measures selected. Such a summary should include a description of Code Assistance if provided, along with estimated savings.

- Consider providing participants with an “X plus or minus 10%” guaranteed incentive level to facilitate equipment selection and budgeting, as well as potentially greater influence on the decision-making process.

- To encourage “deep savings,” highlight the fact the program offers tiered incentives for custom projects that increase according to the extent by which the project exceeds code. To encourage innovation, offer a bonus incentive for the first 5 or 10 projects using an emerging energy efficient technology.

- Be proactive when staff turns over. Make every attempt to have new staff thoroughly up to speed not only on the program, but on individual projects. Make sure that a project history is available to new OMs or others for every individual they are likely to make contact with. Also, have the NB Program Manager at PECI place a follow-up phone call to every member of the design team for each project affected by a staff member’s departure or change in responsibilities.

3. Results

3.1 – Current Program Status

For 2013, the NB program took advantage of the emerging upturn in the new construction market to expand the number of projects enrolled, streamline the participation process, and lay the groundwork for an expected upgrade to the Oregon Commercial Building Code in 2014. Specifically, the Market Solutions offering, designed to better serve the most common types of small commercial buildings, had been developed the previous year, but was fully available for the 2013 program year. Market Solutions offers market-specific packages with tiered (good, better, best) incentives for restaurant, grocery, multifamily, office, school and retail buildings. The offers are comprehensive packages of measures with previously modeled savings that eliminate the need for more costly integrated design for small projects, which often use a design-build approach.

3.2 – 2013 Program Participation

The New Buildings Program's performance for calendar year 2013 as presented in the Energy Trust annual report is summarized in Exhibit 3-1. In all, the program closed 389 projects in 2013, a more than 25 percent increase over 2012. It enrolled another 422 projects for future completion – the largest annual enrollment to date for the NB program.

Exhibit 3-1 – 2013 Electric and Gas Savings -- Total

Sector	Projects	Savings	
		kWh	Therms
New Buildings	304	76,371,241	338,173
New Multifamily	85	5,314,817	113,325
Total	389	81,686,058	451,497

Savings and goals for 2013 are presented in Exhibit 3-2, which shows that the program achieved 174% of its overall kWh stretch goal and 111% of its gas stretch goal. Savings achieved as a percentage of goal were highest for Pacific Power and lowest for NW Natural.

Exhibit 3-2 – 2013 Electric and Gas Goals and Savings[2]

2013	YTD Savings (Reportable)	2013 Stretch Goals	% Goal Achieved
Electric	**kWh**	**kWh**	**%**
PGE	28,381,685	26,015,437	109%
Pacific Power	58,508,150	23,975,119	244%
Total Electric	**86,889,835**	**49,990,556**	**174%**
Gas	**therms**	**therms**	**%**
Northwest Natural	419,800	407,244	103.1%
Cascade	72,400	37,001	195.7%
Total Gas	**492,200**	**444,245**	**111%**

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 2007 code naturally declining over time. The number of projects closing in 2013 that had used various participation options or "tracks" – including the 2007 and 2010 code baselines – as well as the savings associated with each, is shown in Exhibit 3-3.

The results show that even in 2013, 16 of the projects that closed (about 5% of the total) participated using the 2007 code baseline, reflecting those relatively few projects that were still eligible to use this code because of the date their permit was filed. Although they accounted for only 5% of the total projects, participants subject to the 2007 code accounted for 8% of kWh and 20% of therms savings, since the lower 2007 baseline allowed the program to claim greater savings. Nevertheless, it should be noted that overall kWh savings per project were about 30% higher in 2013 than they were in 2012 (although therms savings per site were 15% lower), despite the challenges faced by the NB program as codes become more demanding. In 2012, two large projects accounted for over 40% of kWh savings, while in 2013 one large project accounted for about 50% of kWh. When those very large projects are removed, average kWh savings for 2013 were about 113,000 per project -- 8% higher than in 2012.

[2] Totals do not match those reported in Exhibit 3-1, which do not include market transformation bulk savings measures (2 electric and 4 gas) totaling 4,781,512 kWh and 30,771 therms.

Exhibit 3-3 – 2013 Projects by Type, Option and Code

Track	No. of Projects	% of Projects	% of kWh	% of therms
07 Custom	1	0.3%	1.2%	6.5%
07 LEED	6	1.5%	5.0%	5.3%
07 Standard	4	1.0%	0.1%	1.8%
07 Standard/Custom	5	1.3%	2.1%	6.0%
10 Analysis only	9	2.3%	0.7%	3.9%
10 LEED	5	1.3%	0.9%	1.5%
10 Prescriptive & Analysis	61	15.7%	20.3%	30.0%
10 Prescriptive only	240	61.7%	11.8%	25.4%
10 Undecided*	25	6.4%	0.0%	0.0%
Core Performance Pilot	3	0.8%	0.3%	1.1%
Data Center	6	1.5%	55.3%	0.0%
Net Zero Pilot	4	1.0%	1.3%	11.7%
Market Solutions	20	5.1%	1.0%	6.8%
Total	**389**	**100.0%**	**100.0%**	**100.0%**

The program's 2013 program tracking data provide several breakdowns of savings by end use and sector. Exhibit 3-4 below shows the declining importance of LEED measures in the overall savings, as well as the dramatic increase in the share of HVAC and "other" end uses, reflecting the importance of data centers to total savings. Lighting accounted for about 16.5% of estimated kWh savings in 2013 – up from 14% in 2011 but down from 18.5% in 2012 – while motors and other measures accounted for half of kWh savings.

Exhibit 3-4 – kWh Saving by Measure Group

Measure Group	2009	2010	2011	2012	2013
LEED	48.20%	24.60%	15.30%	10.30%	1.85%
Lighting	33.90%	15.50%	13.60%	18.50%	16.47%
HVAC	15.40%	2.80%	12.50%	6.60%	29.84%
Motor and Other	2.60%	57.00%	58.70%	64.60%	50.56%
Market Solutions					1.27%

A breakdown of savings by building type for 2013 calculated from program participation data, shown in Exhibit 3-5, illustrates the dominant role that data centers have played in enabling the NB program to attain its ambitious kWh growth targets in the past several years. Among other building types, only retail accounted for more than 10% of kWh savings. Gas savings were more

evenly distributed; both multifamily and schools and universities contributed 22% of therms savings, offices added 19%, and hospitals/health care contributed 15% of the therms total.

Exhibit 3-5 – Savings by Building Type

Sector	Savings	2010	2011	2012	2013
Data centers	kWh	0%	45%	51%	4%
	therms	0%	0%	0%	0%
Grocery	kWh	3%	5%	8%	7%
	therms	4%	2%	6%	6%
Hospitals/health	kWh	2%	15%	6%	3%
	therms	1%	26%	16%	5%
Infrastructure	kWh	66%	<1%	<1%	<1%
	therms	<1%	<1%	0%	0%
Lodging/hotel/motel	kWh	2%	0%	<1%	<1%
	therms	2%	1%	<1%	<1%
Multifamily & high rise	kWh	7%	6%	1%	23%
	therms	21%	7%	10%	0%
Offices	kWh	6%	5%	5%	0%
	therms	20%	13%	8%	0%
Restaurants	kWh	0%	1%	1%	<1%
	therms	4%	7%	9%	0%
Retail	kWh	3%	5%	8%	23%
	therms	3%	5%	<1%	0%
Schools & universities	kWh	4%	11%	8%	6%
	therms	22%	26%	32%	5%
Other	kWh	6%	7%	10%	0%
	therms	24%	14%	17%	0%

In terms of project size, 78 percent of projects that closed in 2013 were small commercial buildings -- defined as 70,000 square feet or smaller (excluding small data centers.) These buildings accounted for 23 percent of electric savings and 40 percent of gas savings. Data centers, which accounted for over half of kWh savings, ranged in size from less than 20,000 to more than 350,000 square feet.

Finally, we analyzed the geographic distribution of program savings for 2013. Results are presented, and compared to Dodge data, in the section below.

3.3 – Comparison of Program Data to Dodge Data

This section pulls together data from the New Buildings (NB) program tracking databases compiled from 2010 through 2013 Program years; and commercial building project records, purchased from McGraw-Hill and commonly referred to as Dodge data, for 2012 and 2013. There are two types of data connected with each dataset: project and contact data. All of the databases were combined into a composite dataset that included all years with relational links between projects and contacts. Each project site and contact office location was also geo-located so that spatial analysis could be performed. The first section of this chapter discusses the program tracking data. The second section discusses the Dodge data. In the third section the two datasets are analyzed together.

NEW BUILDING PROGRAM DATA

Description of Data and Preparation

Three sets of program tracking data were made available by Energy Trust. These consist of data for Program Year 2013, Program Year 2012, and a third set with combined data for Program Years 2010 and 2011. The original files contain projects listed in multiple files. This occurs because a project may be booked in one program year, but not completed in that year. In assigning records, we selected the most recent year as the Program Year; reasoning that earlier years represented projects that remained uncompleted. To divide data from the 2010-11 data file, we assigned projects based on the "Recognized" entry. Exhibit 1 shows the original counts of projects in each file and the assignment of overlapping year projects to each Program Year.

Exhibit 3-6: Program Tracking Data Received

Original Data File	Original Number of Records (Measures)	Number of Unique Projects	Assigned Program Year	Final Program Year Project Count
2010-11	2,762	623	2010	252
			2011	315
2012	1,654	394	2012	349
2013	1,583	390	2013	389
Total	5,999	1,407	Total	1,305

New Program Data Analysis

According to the combined data, there were 1,305 projects in the 2010 to 2013 period, with steady growth in the number of projects from year to year. The 389 projects in 2013 represent a 54% increase over the 252 in 2010. The distribution of these projects is shown in Figure 3-1. The majority of the projects are in the Portland/Willamette Valley area.

Figure 3-1: Distribution of Projects from 2010 to 2013

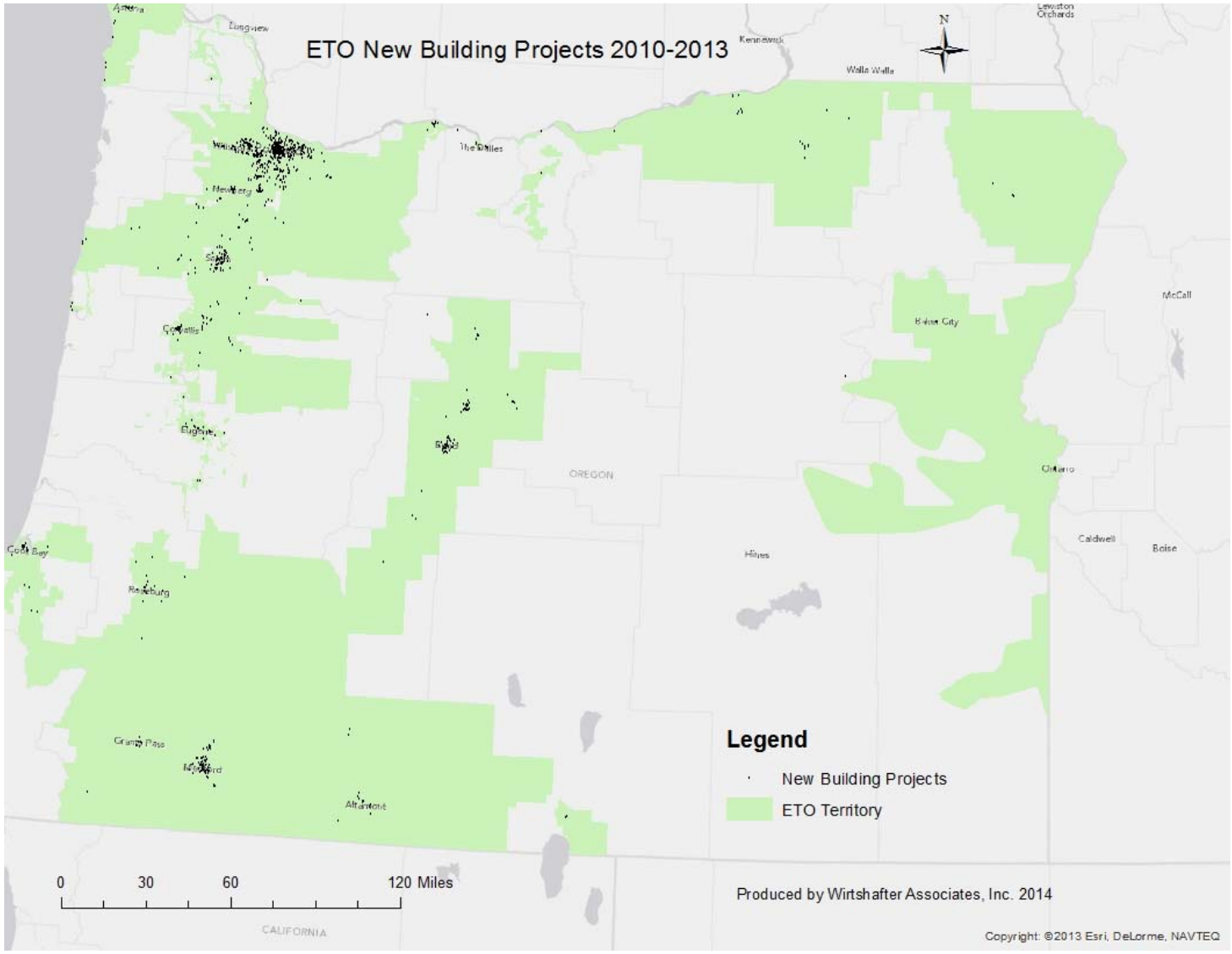


Figure 3-2 shows the distribution for just 2013.

Figure 3-2: Distribution of 2013 Projects

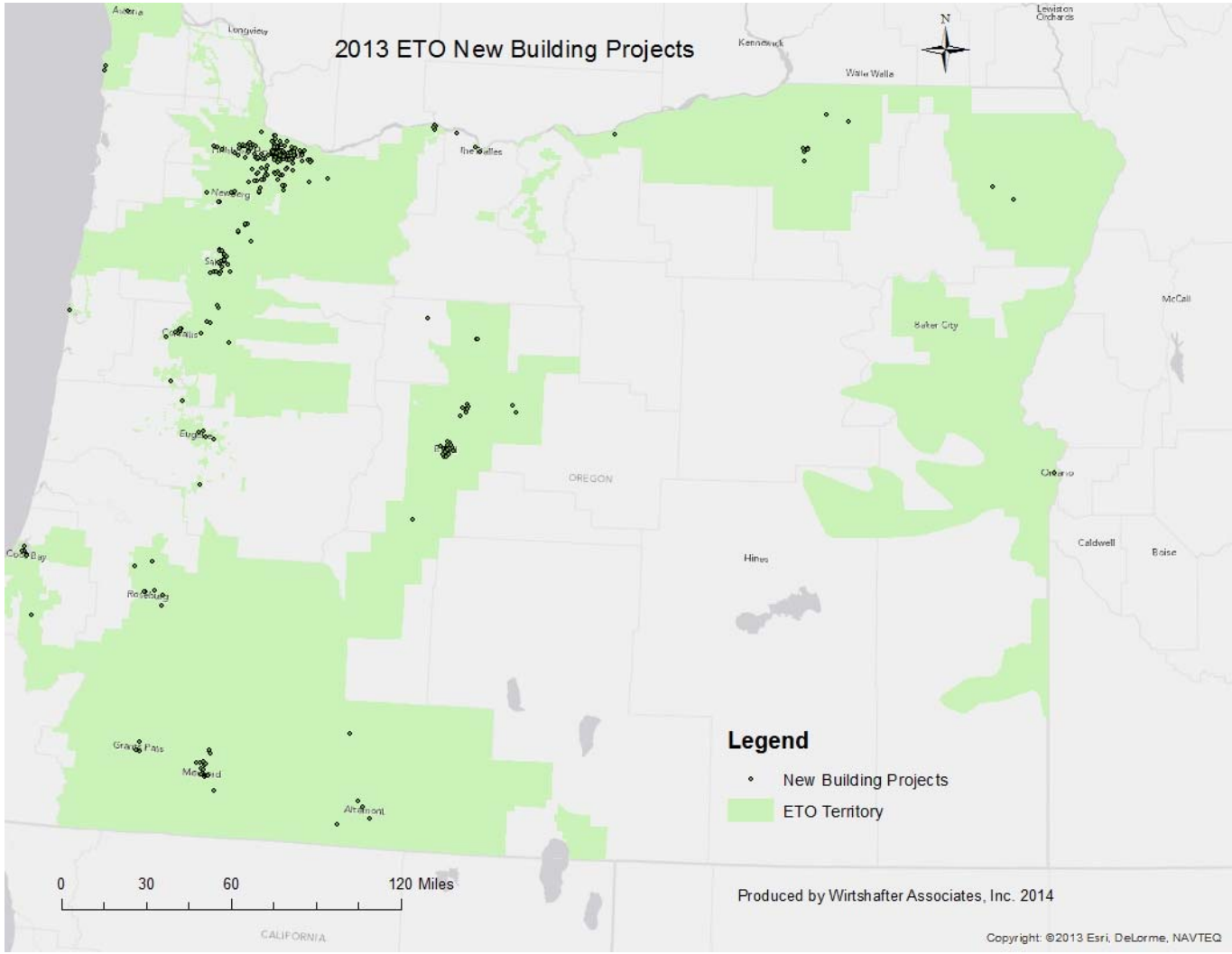


Figure 3-3 shows a graphical comparison of county activity by year.

Figure 3-3: Projects by Year by County

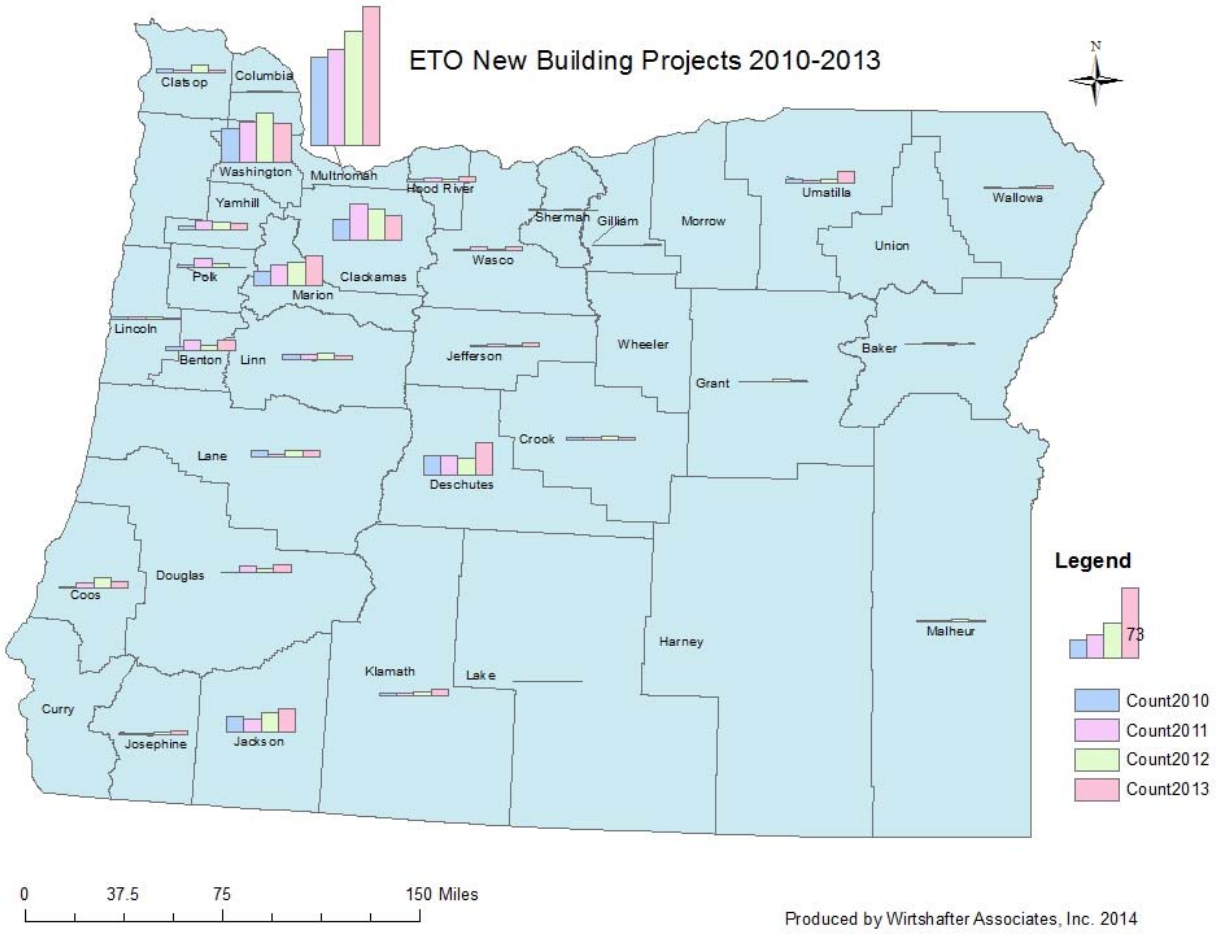


Exhibit 3-7 shows the distribution of projects by year and by county, and highlights how more than one-third of all projects were in Multnomah County, while 13% were in Washington County and 9% in Clackamas County. No other county had more than 100 projects.

Exhibit 3-7: Number of Projects by County

	2010	2011	2012	2013	Grand Total	% of Total
Baker County		1	1		**2**	**0%**
Benton County	4	10	5	11	**30**	**2%**
Clackamas County	22	38	32	26	**118**	**9%**
Clatsop County	4	3	8	3	**18**	**1%**
Columbia County		1	1		**2**	**0%**
Coos County	1	5	10	6	**22**	**2%**
Crook County	2	2	3	2	**9**	**1%**
Deschutes County	21	21	18	35	**95**	**7%**
Douglas County	1	7	4	8	**20**	**2%**
Gilliam County				1	**1**	**0%**
Grant County			3		**3**	**0%**
Hood River County	3	4	3	5	**15**	**1%**
Jackson County	16	14	20	24	**74**	**6%**
Jefferson County	1	2	1	3	**7**	**1%**
Josephine County	1	1	3	4	**9**	**1%**
Klamath County	3	3	4	6	**16**	**1%**
Lake County	1	1	1		**3**	**0%**
Lane County	6	3	6	6	**21**	**2%**
Lincoln County	2	2	2	1	**7**	**1%**
Linn County	6	6	7	4	**23**	**2%**
Malheur County	1	1	3	1	**6**	**0%**
Marion County	15	22	24	31	**92**	**7%**
Multnomah County	93	102	120	146	**461**	**35%**
Polk County	2	9	4		**15**	**1%**
Sherman County	1		1		**2**	**0%**
Umatilla County	5	3	4	13	**25**	**2%**
Wallowa County	1		1	2	**4**	**0%**
Wasco County	1	3	1	3	**8**	**1%**
Washington County	35	42	51	41	**169**	**13%**
Yamhill County	4	9	8	7	**28**	**2%**
Total	**252**	**315**	**349**	**389**	**1,305**	

In addition to analyzing participation by county, we combined county level data into the trade ally service regions used by the NB program to organize program outreach. A map of these regions is shown in Exhibit 3-8, and participation by region is shown in a table in Exhibit 3-9. This is followed by similar tables showing distribution by region for square footage (Exhibit 3-10), reportable therms (Exhibit 3-11), reportable kWh (Exhibit 3-12), and Energy Trust incentives (Exhibit 3-13).

Exhibit 3-8 Energy Trust Trade Ally Service Regions

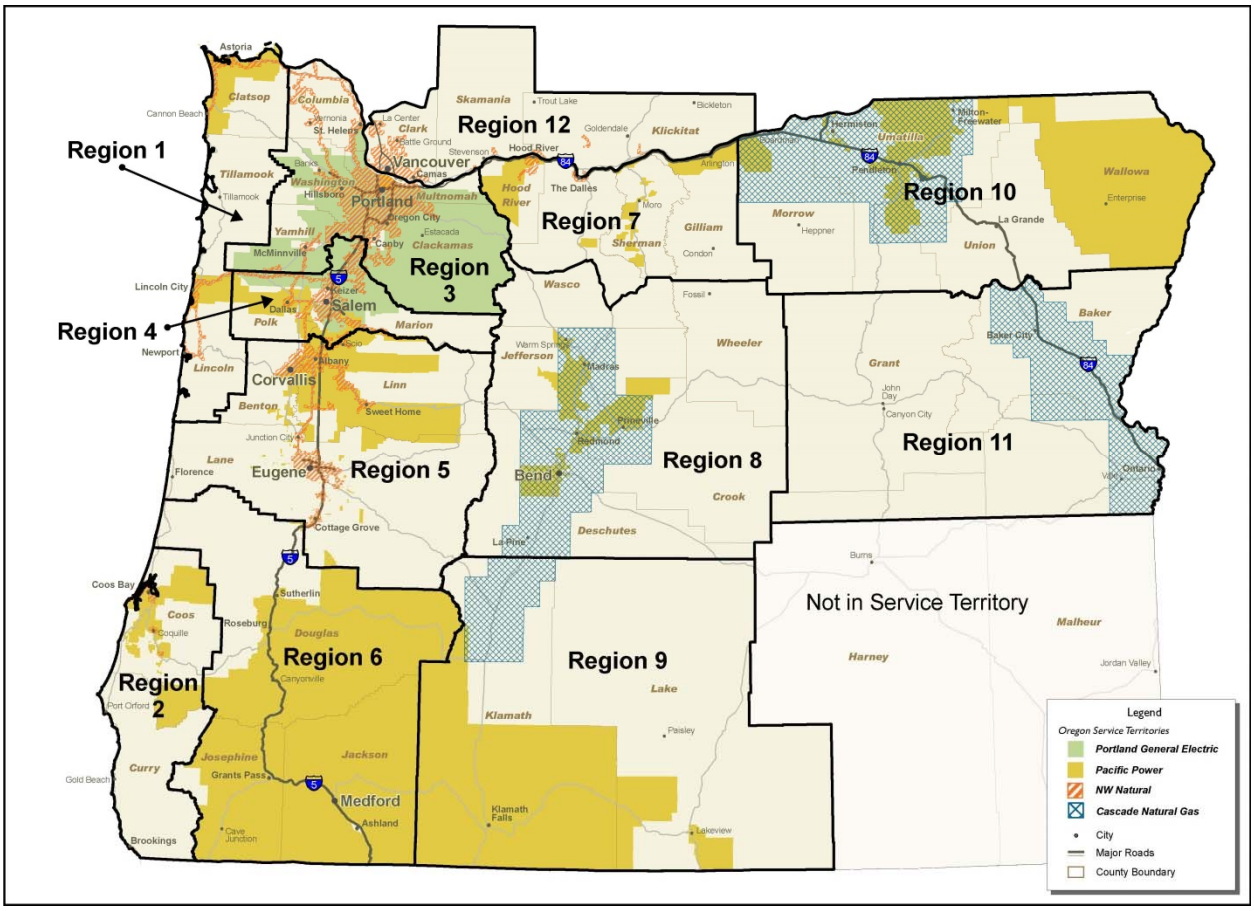


Exhibit 3-9: Number of Projects by Service Region

Number of Projects	2010	2011	2012	2013	Grand Total	% of Total
Region 1 - North Coast	6	5	10	4	25	2%
Region 2 - South Coast	1	5	10	6	22	2%
Region 3- Portland Metro	154	192	212	220	778	59%
Region 4 - Mid-Willamette	17	31	28	31	107	8%
Region 5 - Southern Willamette	16	19	18	21	74	6%
Region 6 - Southern Oregon	18	22	27	36	103	9%
Region 7 - Columbia Basin	5	7	5	9	26	2%
Region 8 - Central	24	25	22	40	111	9%
Region 9 - Klamath Basin	4	4	5	6	19	1%
Region 10 - Northeast	6	3	5	15	29	2%
Region 11 - Eastern	1	2	7	1	11	0%

Exhibit 3-10: Square Feet by Service Region

Square Feet	2010	2011	2012	2013	Grand Total	% of Total
Region 1 - North Coast	249,024	128,455	292,826	54,733	725,038	1%
Region 2 - South Coast	3,820	62,197	357,200	366,271	789,488	1%
Region 3- Portland Metro	11,226,373	9,737,498	16,356,866	15,141,497	52,462,234	68%
Region 4 - Mid-Willamette	961,189	1,314,337	2,529,191	1,285,888	6,090,605	8%
Region 5 - Southern Willamette	408,546	688,565	784,148	1,049,783	2,931,042	4%
Region 6 - Southern Oregon	587,526	2,463,977	843,087	2,075,779	5,970,369	8%
Region 7 - Columbia Basin	101,810	229,742	97,875	257,672	687,099	1%
Region 8 - Central	896,678	822,076	1,770,459	1,724,275	5,213,488	6%
Region 9 - Klamath Basin	120,614	158,370	82,544	149,326	510,854	1%
Region 10 - Northeast	174,272	191,450	462,959	414,660	1,243,341	2%
Region 11 - Eastern	33,800	30,500	201,384	5,400	271,084	0%

Exhibit 3-11: Reportable Therms by Service Region

Therms	2010	2011	2012	2013	Grand Total	% of Total
Region 1 - North Coast	4,085	1,878	8,540	3,183	17,686	1%
Region 2 - South Coast	346	1,625	6,845	51,147	59,963	3%
Region 3- Portland Metro	424,989	264,691	294,175	357,378	1,341,234	68%
Region 4 - Mid-Willamette	2,806	58,512	42,823	36,974	141,115	7%
Region 5 - Southern Willamette	43,180	52,352	11,872	37,808	145,211	7%
Region 6 - Southern Oregon	0	182	0	0	182	0%
Region 7 - Columbia Basin	1,487	5,657	3,181	3,302	13,628	0%
Region 8 - Central	58,765	49,119	27,766	71,168	206,818	10%
Region 9 - Klamath Basin	0	0	0	0	0	0%
Region 10 - Northeast	908	2,453	12,403	1,717	17,481	1%
Region 11 - Eastern	283	134	7,674	654	8,745	0%

Exhibit 3-12: Reportable kWh by Service Region

kWh	2010	2011	2012	2013	Grand Total	% of Total
Region 1 - North Coast	402,678	146,000	164,051	12,392	725,121	0%
Region 2 - South Coast	10,875	31,620	294,629	480,185	817,309	0%
Region 3- Portland Metro	9,752,240	10,498,262	19,687,972	38,888,863	78,827,337	38%
Region 4 - Mid-Willamette	563,528	1,002,121	1,230,470	951,248	3,747,367	2%
Region 5 - Southern Willamette	24,344,963	957,673	467,436	4,134,748	29,904,820	14%
Region 6 - Southern Oregon	419,659	1,943,224	1,153,420	4,375,748	7,892,051	4%
Region 7 - Columbia Basin	24,531	49,798	64,190	270,021	408,540	0%
Region 8 - Central	811,435	14,618,707	22,366,171	46,067,844	83,864,157	40%
Region 9 - Klamath Basin	249,636	319,954	137,758	41,090	748,438	0%
Region 10 - Northeast	200,912	0	33,246	293,470	527,628	0%
Region 11 - Eastern	0	0	0	0	0	0%

Exhibit 3-13: New Building Program Incentives by Service Region

Incentives	2010	2011	2012	2013	Grand Total	% of Total
Region 1 - North Coast	$113,547	$25,904	$36,474	$6,647	$182,572	1%
Region 2 - South Coast	$3,768	$6,513	$56,596	$121,166	$188,042	1%
Region 3- Portland Metro	$3,140,101	$2,650,900	$3,596,014	$6,188,145	$15,575,159	63%
Region 4 - Mid-Willamette	$165,958	$324,712	$348,933	$211,918	$1,051,520	4%
Region 5 - Southern Willamette	$2,143,945	$294,648	$69,672	$721,636	$3,229,900	13%
Region 6 - Southern Oregon	$135,123	$301,952	$155,871	$683,309	$1,276,255	5%
Region 7 - Columbia Basin	$21,948	$37,746	$16,681	$55,932	$132,307	1%
Region 8 - Central	$293,632	$936,171	$669,310	$980,700	$2,879,812	12%
Region 9 - Klamath Basin	$51,366	$81,674	$17,501	$10,909	$161,450	1%
Region 10 - Northeast	$37,611	$5,748	$28,702	$45,807	$117,867	0%
Region 11 - Eastern	$1,875	$1,778	$12,804	$884	$17,341	0%

Exhibit 3-14 shows the percentages by region for the four year totals for number of projects, square footage, therms saved, kWh saved, and NB program incentives. As expected, the Portland Metro region dominates the number of projects, the size of the projects, the therms saving, and the NB incentives, but only accounts for 38% of the kWh savings because of the inclusion of one extremely large data center project in the Central region.

Exhibit 3-14: Percentages By Region, 2010-2013

Percentages	% of Projects	% of Sq Ft	% of Therms	% of kWh	% of Incentives
Region 1 - North Coast	2%	1%	1%	0%	1%
Region 2 - South Coast	2%	1%	3%	0%	1%
Region 3- Portland Metro	59%	68%	68%	38%	62%
Region 4 - Mid-Willamette	8%	8%	7%	2%	4%
Region 5 - Southern Willamette	6%	4%	7%	14%	13%
Region 6 - Southern Oregon	9%	8%	0%	4%	5%
Region 7 - Columbia Basin	2%	1%	0%	0%	0%
Region 8 - Central	9%	6%	10%	41%	12%
Region 9 - Klamath Basin	1%	1%	0%	0%	1%
Region 10 - Northeast	2%	2%	1%	0%	0%
Region 11 - Eastern	0%	0%	0%	0%	0%

Exhibit 3-15 shows the yearly distribution of projects by project type. The type with the most projects has been offices. However, multifamily/high-rise, retail and grocery have shown a steady increase in number of projects over the four years.

Exhibit 3-15: Number of Projects by Project Type

	2010	2011	2012	2013	Grand Total	% of Total
Assembly	7	4	7	9	**27**	**2%**
Auto Services	3	3	9	2	**17**	**1%**
Church & Religious	4	4	5	3	**16**	**1%**
College/University	10	29	18	20	**77**	**6%**
Data Center		5	3	6	**14**	**1%**
Grocery	5	9	17	27	**58**	**4%**
Gym/Athletic Club	5	3	3	5	**16**	**1%**
Hospital/Healthcare	15	27	20	24	**86**	**6%**
Infrastructure	3	3	1	2	**9**	**1%**
Institution/Government	16	5	3		**24**	**2%**
Laundry/Dry Cleaners	2	2			**4**	**0%**
Lodging/Hotel/Motel	5	4	4	4	**17**	**1%**
Manufacturing	6	1	2		**9**	**1%**
Multifamily & High-rise	19	26	45	79	**169**	**13%**
Office	51	34	50	43	**178**	**14%**
Other	20	34	36	31	**119**	**9%**
Parking structure/Garage	2	5	3	4	**14**	**1%**
Restaurant	18	28	48	33	**127**	**10%**
Retail	20	32	33	39	**124**	**10%**
Retirement/Assisted Facilities	1	1	2	8	**12**	**1%**
Schools K-12	16	31	24	35	**106**	**8%**
Warehouse	24	25	16	15	**80**	**6%**
Grand Total	**252**	**315**	**349**	**389**	**1,305**	

Exhibit 3-16 shows the distribution of project square footage by building type for each year, and confirms the growth of multifamily construction, which had more than double the square footage of offices in 2013 and the greatest total square footage over the 2010-13 period.

Exhibit 3-16: Square Feet by Project Type

Building Type	2010	2011	2012	2013	Grand Total	% of Total
Assembly	82,382	169,502	1,048,205	119,041	1,419,130	2%
Auto Services	97,200	82,941	193,991	20,615	394,747	1%
Church & Religious	72,975	55,934	340,666	71,736	541,311	1%
College/University	808,550	1,803,560	2,058,331	1,517,295	6,187,736	8%
Data Center	0	229,900	459,800	514,423	1,204,123	2%
Grocery	172,129	253,070	361,617	1,201,616	1,988,432	3%
Gym/Athletic Club	209,260	37,800	122,046	176,447	545,553	1%
Hospital/Healthcare	464,624	883,430	1,633,649	2,090,349	5,072,052	7%
Infrastructure	14,190	1,383,153	1,588,400	828,726	3,814,469	5%
Institution/Government	348,518	119,068	40,394	0	507,980	1%
Laundry/Dry Cleaners	4,210	2,800	0	0	7,010	0%
Lodging/Hotel/Motel	476,519	49,757	315,153	58,657	900,086	1%
Manufacturing	78,990	124,154	155,684	0	358,828	0%
Multifamily & High-rise	2,973,728	1,768,724	4,515,813	5,691,861	14,950,126	20%
Office	3,279,471	2,135,455	3,620,108	2,343,659	11,378,693	15%
Other	877,687	659,927	2,245,508	1,164,858	4,947,980	6%
Parking structure/Garage	535,576	381,632	595,968	1,112,833	2,626,009	3%
Restaurant	134,872	272,095	231,164	172,406	810,537	1%
Retail	836,901	679,145	773,441	1,881,827	4,171,314	5%
Retirement/Assisted Facilities	199,924	29,998	413,861	419,648	1,063,431	1%
Schools K-12	1,057,255	3,564,518	1,666,894	2,363,831	8,652,498	11%
Warehouse	2,038,691	1,140,604	1,397,846	775,456	5,352,597	7%
Grand Total	14,763,652	15,827,167	23,778,539	22,525,284	76,894,642	100%

Exhibit 3-17 presents the distribution of therms savings by building type, and shows that four sectors – schools, multifamily, offices, and colleges/universities – accounted for more than half (57%) of cumulative therms savings.

Exhibit 3-17: Therms by Project Type

Building Type	2010	2011	2012	2013	Grand Total	% of Total
Assembly	129	2,003	9,082	3,842	15,056	1%
Auto Services	5,497	9,247	11,206	6,911	32,861	1%
Church & Religious	7,455	3,125	1,449	1,159	13,188	1%
College/University	66,277	93,431	19,848	35,423	214,979	11%
Data Center	0	0	193	0	193	1%
Grocery	15,386	8,120	15,981	30,771	70,258	1%
Gym/Athletic Club	15,269	0	0	6,716	21,985	1%
Hospital/Healthcare	2,297	13,940	26,396	86,793	129,426	7%
Infrastructure	637	354	0	0	991	0%
Institution/Government	2,367	28,522	813	0	31,702	2%
Laundry/Dry Cleaners	1,072	904	0	0	1,976	0%
Lodging/Hotel/Motel	9,268	5,586	4,017	1,730	20,602	1%
Manufacturing	7,708	8,771	0	0	16,479	1%
Multifamily & High-rise	107,896	43,356	36,148	113,300	300,700	16%
Office	102,311	68,477	35,756	107,964	314,508	16%
Other	81,279	25,555	51,596	17,166	175,596	9%
Parking structure/Garage	0	5,086	0	0	5,086	0%
Restaurant	20,562	40,254	47,263	29,584	137,664	7%
Retail	13,790	27,041	7,431	22,689	70,950	4%
Retirement/Assisted Facilities	0	0	7,076	9,039	16,115	1%
Schools K-12	47,454	38,468	134,476	86,497	306,893	16%
Warehouse	30,195	14,366	6,546	3,748	54,855	3%

Exhibit 3-18 shows the kWh by project type. Data center projects account for 45% of all kWh savings over the four years; and 55% of kWh savings in 2013. The large increase in data center kWh savings is notable. There has been a small increase in the number of projects, so the large growth is due to the larger size and energy intensity of each project.

Exhibit 3-18: kWh by Project Type

Building Type	2010	2011	2012	2013	Grand Total	% of Total
Assembly	39,266	146,941	249,097	250,613	685,917	0%
Auto Services	63,139	240,340	168,438	35,117	507,034	0%
Church & Religious	71,285	45,831	77,561	8,229	202,906	0%
College/University	960,920	1,549,002	312,843	2,306,174	5,128,939	2%
Data Center	0	14,542,922	25,986,113	52,853,953	93,382,988	45%
Grocery	918,083	1,438,516	1,777,710	8,937,362	13,071,671	6%
Gym/Athletic Club	102,237	10,948	35,801	256,969	405,955	0%
Hospital/Healthcare	364,357	638,504	2,101,216	2,672,986	5,777,063	1%
Infrastructure	24,030,980	2,014,990	13,110	170,955	26,230,035	2%
Institution/Government	265,935	69,403	35,429	0	370,767	13%
Laundry/Dry Cleaners	4,852	689	0	0	5,541	0%
Lodging/Hotel/Motel	874,460	44,653	229,693	63,827	1,212,633	0%
Manufacturing	145,548	86,512	65,165	0	297,225	1%
Multifamily & High-rise	2,796,057	1,777,942	2,228,298	5,207,136	12,009,433	6%
Office	2,486,958	1,484,493	3,348,544	3,318,189	10,638,184	5%
Other	557,337	862,883	4,184,982	849,768	6,454,970	3%
Parking structure/Garage	268,010	156,926	368,206	2,050,584	2,843,726	1%
Restaurant	82,334	216,191	572,960	348,009	1,219,494	1%
Retail	1,106,459	1,491,051	2,083,052	11,436,209	16,116,771	8%
Retirement/Assisted Facilities	76,671	205,736	232,342	169,691	684,440	0%
Schools K-12	764,849	1,542,418	743,771	3,856,472	6,907,510	3%
Warehouse	800,720	950,004	785,012	723,366	3,259,102	2%
Grand Total	**36,782,467**	**29,518,906**	**45,601,355**	**95,517,622**	**207,462,768**	**100%**

Exhibit 3-19 shows Energy Trust Incentives by project type. The largest amounts of incentives are going to data centers; followed by retail, offices, infrastructure, and groceries.

Exhibit 3-19: Energy Trust Incentives by Project Type

Building Type	2010	2011	2012	2013	Grand Total	% of Total
Assembly	$10,609	$43,273	$89,110	$112,955	$255,946	1%
Auto Services	$36,636	$50,935	$46,969	$10,685	$145,225	1%
Church & Religious	$16,074	$19,864	$16,742	$3,929	$56,609	0%
College/University	$374,942	$460,800	$192,644	$542,438	$1,570,824	6%
Data Center	$0	$787,796	$1,051,110	$1,887,123	$3,726,028	15%
Grocery	$320,824	$316,969	$319,570	$1,262,362	$2,219,724	9%
Gym/Athletic Club	$80,360	$4,252	$8,596	$58,505	$151,713	1%
Hospital/Healthcare	$123,179	$167,313	$442,734	$494,893	$1,228,118	5%
Infrastructure	$1,939,133	$380,019	$2,322	$27,801	$2,349,276	9%
Institution/Government	$155,481	$47,927	$12,141	$0	$215,549	1%
Laundry/Dry Cleaners	$12,456	$5,252	$0	$0	$17,708	0%
Lodging/Hotel/Motel	$179,830	$29,789	$31,450	$15,073	$256,142	1%
Manufacturing	$26,067	$33,631	$8,525	$0	$68,223	0%
Multifamily & High-rise	$822,269	$350,350	$355,441	$774,859	$2,302,919	9%
Office	$720,266	$409,704	$566,345	$855,946	$2,552,261	10%
Other	$268,092	$361,921	$799,599	$182,369	$1,589,780	6%
Parking structure/Garage	$48,968	$136,940	$46,286	$146,315	$378,509	2%
Restaurant	$52,693	$130,820	$174,485	$111,295	$469,293	2%
Retail	$301,900	$304,449	$345,522	$1,808,722	$2,760,593	11%
Retirement/Assisted Facilities	$28,304	$22,080	$41,060	$43,979	$135,423	1%
Schools K-12	$283,641	$319,162	$314,948	$567,229	$1,484,979	6%
Warehouse	$307,149	$254,501	$142,956	$120,575	$825,182	3%

Exhibit 3-20 shows the percentages by project type. Data centers have almost half the kWh savings, but represent 1% of the projects and only 15% of the incentives; the percentage of incentives is smaller than the percentage of savings because the largest data center projects are subject to the program's incentive cap. After data centers, retail, office, infrastructure, groceries, and multifamily are the next largest incentive recipients by type.

Exhibit 3-20: Percentages by Project Type

Building Type	% of Projects	% of SqFt	% of Therms	% of kWh	% of Incentives
Assembly	2%	2%	1%	0%	1%
Auto Services	1%	1%	2%	0%	1%
Church & Religious	1%	1%	1%	0%	0%
College/University	6%	8%	11%	2%	6%
Data Center	1%	2%	0%	45%	15%
Grocery	4%	3%	4%	6%	9%
Gym/Athletic Club	1%	1%	1%	0%	1%
Hospital/Healthcare	6%	7%	7%	3%	4%
Infrastructure	1%	5%	0%	13%	9%
Institution/Government	2%	1%	2%	0%	1%
Laundry/Dry Cleaners	0%	0%	0%	0%	0%
Lodging/Hotel/Motel	1%	1%	1%	1%	1%
Manufacturing	1%	0%	1%	0%	0%
Multifamily & High-rise	14%	20%	16%	6%	10%
Office	14%	15%	16%	5%	10%
Other	9%	6%	9%	3%	6%
Parking structure/Garage	1%	3%	0%	1%	2%
Restaurant	10%	1%	7%	1%	2%
Retail	10%	5%	4%	8%	11%
Retirement/Assisted Facilities	1%	1%	1%	0%	1%
Schools K-12	8%	11%	16%	3%	6%
Warehouse	6%	7%	3%	2%	3%

DODGE PROJECT DATA

Description of Data and Preparation

Data were purchased from McGraw-Hill Corporation for all of Oregon for 2012 and 2013 for all new and renovations projects in their database. The Dodge data is a forward looking database of pending or ongoing construction projects as they are happening, not after they are completed. By contrast, permit data is a backward count of projects that have been permitted. Dodge numbers deviate from permit data in two basic ways. Dodge prides themselves on their ability to obtain information about pending construction projects, in some cases before a permit is even filed, but acknowledge that they do not get every project. In addition, the list contains some projects that are conceived but never built.

The data received from Dodge includes a list of projects: new construction, renovation, or additions; and each known "player" associated with that project. The player could be an owner, architect, engineer, contractor, or other ally. The database for 2012-2013 contains 5,790 records, with each record being a specific player and associated project. Since the database covers all of Oregon, we geo-located those projects that were within Energy Trust's territory. Exhibit 3-21 shows the unique number in the database and in Energy Trust territory. There are 2,105 unique player names in the Dodge database. As will be shown below, the players are spread across Oregon and the rest of the country. The data file did not include a record that signified if a project was new construction, addition, tenant improvement or renovation. We used the project title to try to identify projects that were not new construction or additions. When there was no mention of renovation, remodel, or tenant improvement, the project was classified as new or addition; those projects are identified as "New Construction or Additions Only" in the following tables.

Exhibit 3-21: Number of Unique Dodge Projects*

	In Oregon	In Energy Trust Territory	
Number of Unique Projects		All Projects	New Construction or Additions Only
In 2012	752	712	445
In 2013	597	567	352
Total Unique Projects	1,349	1,279	797

*Includes new construction, additions, and renovations

Exhibit 3-22 shows all the Dodge projects by Energy Trust service region. The Metro Portland region had about 48% of the construction activity reported in the Dodge data over the last two years, and 63% of the reported square footage, numbers that are roughly consistent with the Portland Metro region's share of New Buildings projects.

Exhibit 3-22: Dodge Projects by Region

Region	2012		2013		2012-13	
	Number	Sq. Ft. (1,000)	Number	Sq. Ft . (1,000)	% of Projects	% of Sq. Ft.
Region 1 - North Coast	19	64	9	156	2%	1%
Region 2 - South Coast	9	52	11	143	2%	1%
Region 3- Portland Metro	349	4,574	266	10,315	48%	63%
Region 4 - Mid-Willamette	92	413	90	521	14%	4%
Region 5 - Southern Willamette	78	1,238	93	2,367	13%	15%
Region 6 - Southern Oregon	63	698	32	642	7%	6%
Region 7 - Columbia Basin	9	101	7	188	1%	1%
Region 8 - Central	63	1,165	34	464	8%	7%
Region 9 - Klamath Basin	6	7	8	21	1%	0%
Region 10 - Northeast	18	336	14	255	3%	2%
Region 11 - Eastern	6	41	4	11	1%	0%
Totals	**712**	**8,689**	**567**	**15,083**	**100%**	**100%**

Exhibit 3-23 shows the 797 Dodge new construction and additions by project type.

Exhibit 3-23: Dodge New Construction and Additions Projects by Type

Building type	Energy Trust Territory	
	Number	Sq. Ft. (1,000)
Amusement, Social and Recreational Bldgs	48	749
Apartments	103	4,558
Dormitories	9	350
Government Service Buildings	43	188
Hospitals and Other Health Treatment	87	951
Hotels and Motels	8	384
Manufacturing Plants, Warehouses, Labs	10	1,100
Miscellaneous Nonresidential Buildings	31	322
Office and Bank Buildings	101	1,272
Parking Garages and Automotive Services	16	1,241
Religious Buildings	18	67
Schools, Libraries, and Labs (nonmfg)	83	655
Stores and Restaurants	210	1,266
Warehouses (excl. manufacturer owned)	30	2,156
TOTALS	797	15,258

In Exhibit 3-24, we show the number of Energy Trust New Buildings program projects versus all Dodge projects for the years 2012-13 combined. Exhibit 3-25 shows the results in tabular form by county, and exhibit 3-26 presents the same data by region. Overall, the New Buildings program is reaching at least 58% of the Dodge project counts. Remember, however, that Dodge does not provide an accurate count of what is actually built. They include projects that may not be built, and in this accounting may include some projects that are renovations and not new construction or additions. On the other hand, Dodge does not always list the smallest projects.

In comparison to Dodge data reports, Energy Trust is reaching approximately 75% or more of projects in Josephine, Hood River, Douglas, Umatilla, Multnomah, Coos, and Klamath counties. Counties with the lowest participation rates are Lane, Marion, Benton, Jefferson, and Linn counties; all with participation rates below 50%. Note that some of these counties have a significant proportion of customers served by municipalities, which would not be eligible for the NB program.

In the Portland Metro region, the data show that the NB program reached 71% of new building projects, and the percentage participation reached 80% or higher in the Columbia Basin and South Coast regions. Again, those regions with more customers served by municipalities tended to have lower percentage participation.

Exhibit 3-24: New Buildings Projects vs. All Dodge Projects

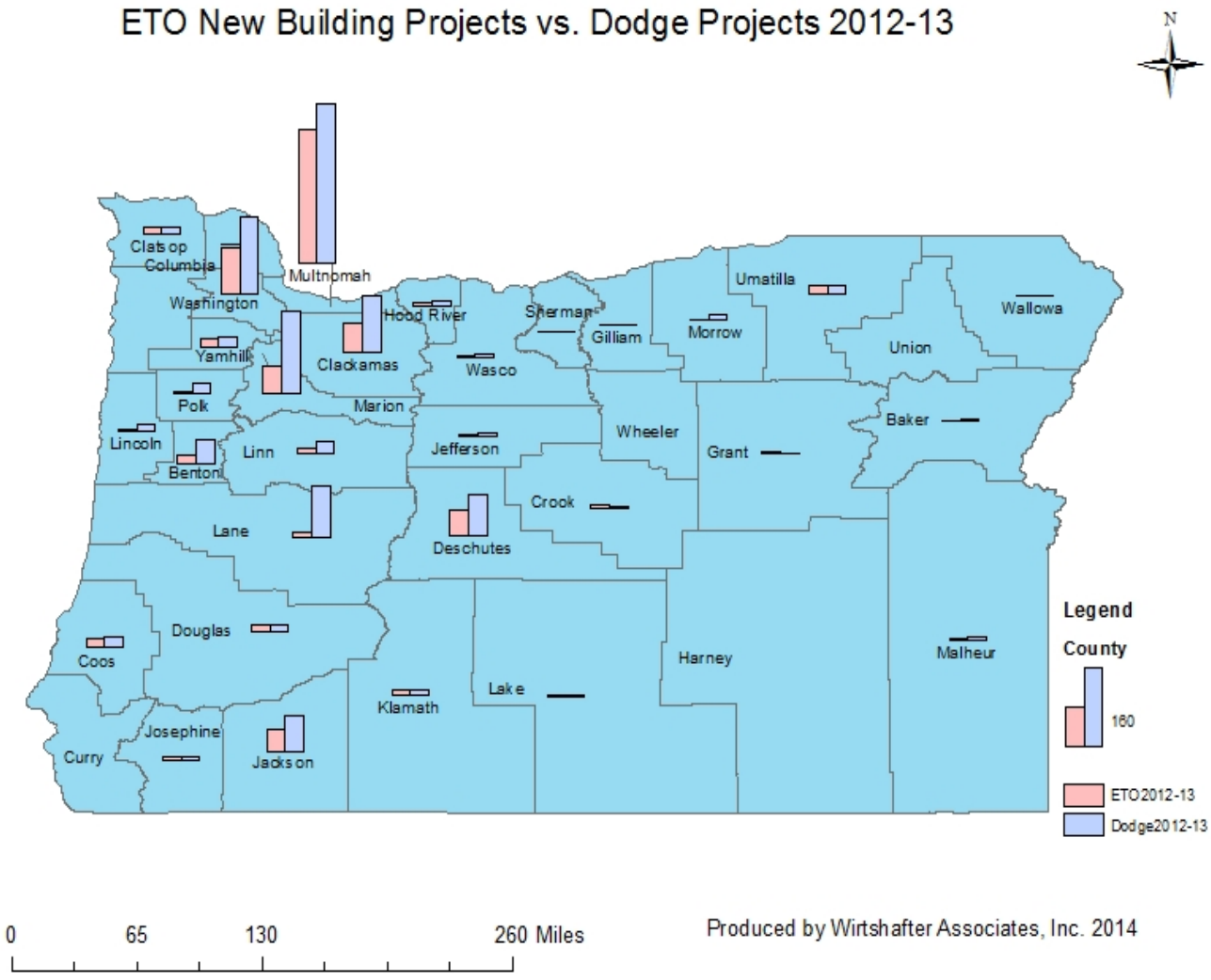


Exhibit 3-25: 2012-13 Energy Trust New Building Projects Compared to Dodge Projects

	ETO Projects	Dodge Projects	ETO Coverage
Baker County	1	4	**25%**
Benton County	16	46	**35%**
Clackamas County	58	123	**47%**
Clatsop County	11	15	**73%**
Columbia County	1	5	**20%**
Coos County	16	20	**80%**
Crook County	5	4	**125%**
Deschutes County	53	84	**63%**
Douglas County	12	14	**86%**
Gilliam County	1	1	**100%**
Grant County	3	0	**100%**
Hood River County	8	9	**89%**
Jackson County	44	74	**59%**
Jefferson County	4	9	**44%**
Josephine County	7	7	**100%**
Klamath County	10	13	**77%**
Lake County	1	1	**100%**
Lane County	12	102	**12%**
Lincoln County	3	13	**23%**
Linn County	11	23	**48%**
Malheur County	4	6	**67%**
Marion County	55	164	**34%**
Morrow County	0	9	**0%**
Multnomah County	266	315	**84%**
Polk County	4	18	**22%**
Sherman County	1	0	**100%**
Umatilla County	17	20	**85%**
Union County	0	1	**0%**
Wallowa County	3	2	**150%**
Wasco County	4	6	**67%**
Washington County	92	145	**63%**
Yamhill County	15	21	**71%**
Total	738	1,274	58%

Exhibit 3-26: 2012-13 New Building Projects Compared to All Dodge Projects – by Region

Number of projects by Region	NB program Projects	Dodge Projects	NB Program Coverage
Region 1 - North Coast	14	28	50%
Region 2 - South Coast	16	20	80%
Region 3- Portland Metro	432	609	71%
Region 4 - Mid-Willamette	59	182	32%
Region 5 - Southern Willamette	39	171	23%
Region 6 - Southern Oregon	63	95	66%
Region 7 - Columbia Basin	14	16	88%
Region 8 - Central	62	97	64%
Region 9 - Klamath Basin	11	14	79%
Region 10 - Northeast	20	32	63%
Region 11 - Eastern	8	10	80%
Total	**738**	**1,274**	**58%**

COMPARISON OF ENERGY TRUST ALLY AND DODGE PLAYERS DATA

Energy Trust provided a list of active trade and design allies with 227 names in the file. It seems as if this list is incomplete and that full linkage of each ally with each NB project is not being recorded. Remember that there were 1,305 projects recorded during this period, yet the ally database only contains 227 allies from 192 unique firms. Of these 227 allies, only 25 were listed as having done a project in the last four years, and only 10 had done more than one project during that four year span.

Tracking the participation of allies makes sense from both a project management and marketing standpoint. It is recommended that Energy Trust establish better procedures for maintaining a list of allies and their involvement in each project.

Dodge provides a list of every ally involved in each project, including the owners. Exhibit 3-27 shows that there are large numbers of allies involved in construction projects in Oregon. Many of these are shown in the Dodge data as having their primary office (i.e., the office of record for the project in question) outside of Energy Trust territory, including almost 30% located out of state.

Exhibit 3-27: Dodge Allies by Energy Trust Trade Ally Region

	Architect	Civil Engineer	Structural Engineer	Mechanical Engineer	Contractor	Owner
Central	20	4	8	5	9	33
Columbia Basin	2	0	1	1	0	13
Eastern	0	1	1	0	1	4
Klamath Basin	3	2	2	1	1	10
Mid-Willamette	32	4	9	14	20	62
North Coast	7	1	2	2	3	21
Northeast	7	1	0	0	4	21
Portland Metro	161	25	87	71	85	237
South Coast	5	1	4	2	1	14
Southern Willamette	46	6	29	25	23	71
Southern Oregon	22	4	7	5	6	37
Other Oregon	2	2	1	2	2	15
Remote State	74	2	28	44	36	87
Surrounding State	73	7	23	33	39	80
Grand Total	**454**	**60**	**202**	**205**	**230**	**705**

We attempted to try to compare the Dodge ally data to Energy Trust's. The Dodge data includes contact information for every architect, engineer, contractor, and owner associated with a new construction project. The data includes a large number of allies that are not in Energy Trust's service area. While the PMC apparently does have more information on allies available for program management and outreach purposes, Energy Trust does not appear to keep a composite database of all allies who participate in New Buildings Program projects, which made comparison with Dodge data unproductive. We strongly recommend that this be done in the future, either by Energy Trust or by its PMC, who could then make the data available to Energy Trust program managers and planners.

3.4 -- 2014 Participant Feedback

Several aspects of program participation were of particular interest in obtaining and analyzing feedback from participants for the evaluation of the current NB program. One of the primary areas of interest for this evaluation was the role of the Market Solutions (MS) offering in the decision to participate and the selection of the participation offering. Therefore, all of the 2014 participants we interviewed were – at least in theory – eligible to participate using the Market Solutions option. Our sample included participants that had decided on the MS option at the time of our surveys, those that were still undecided, and those that were eligible but had chosen an alternate participation path.

To assess participant perceptions of the early design assistance process, we also attended early design meetings or charrettes and conducted interviews with some of the participants in these meetings, as well as other individuals involved in projects that received early design assistance.

There was no formal sampling plan with statistical precision goals. Instead, we sought feedback from multiple team members for a variety of projects, including architects, engineers and consultants, as well as owners.

Program Awareness and Participation

It is evident that the NB program is well established in the marketplace, with about two-thirds of all respondents saying they had first heard of the NB program in 2012 or earlier. On the other hand, about one-third of participants interviewed were essentially unaware of the program before their current participation; those who had found out about it more recently typically did so through someone else at their firm, a colleague on the project or a NB program representative. The NB Outreach Manager was overwhelmingly the most often cited source of useful information about the program, with a number of respondents mentioning their Outreach Manager by name.

Of the 40 respondents who knew what stage their project was in when they first made contact with the NB program, 21 (52%) said it was in the programming[3] or conceptual design phase. This compares to 42% of 2012 participants who were in these stages when they had their first contact with the program, indicating that the program is generally becoming more successful in getting involved with new projects early in the design and construction process. Another 12 respondents (30%) said they were in schematic design or design development. As shown in Exhibit 3-28, the remainder were either in construction drawings/specification (10%) or in construction (7.5%).

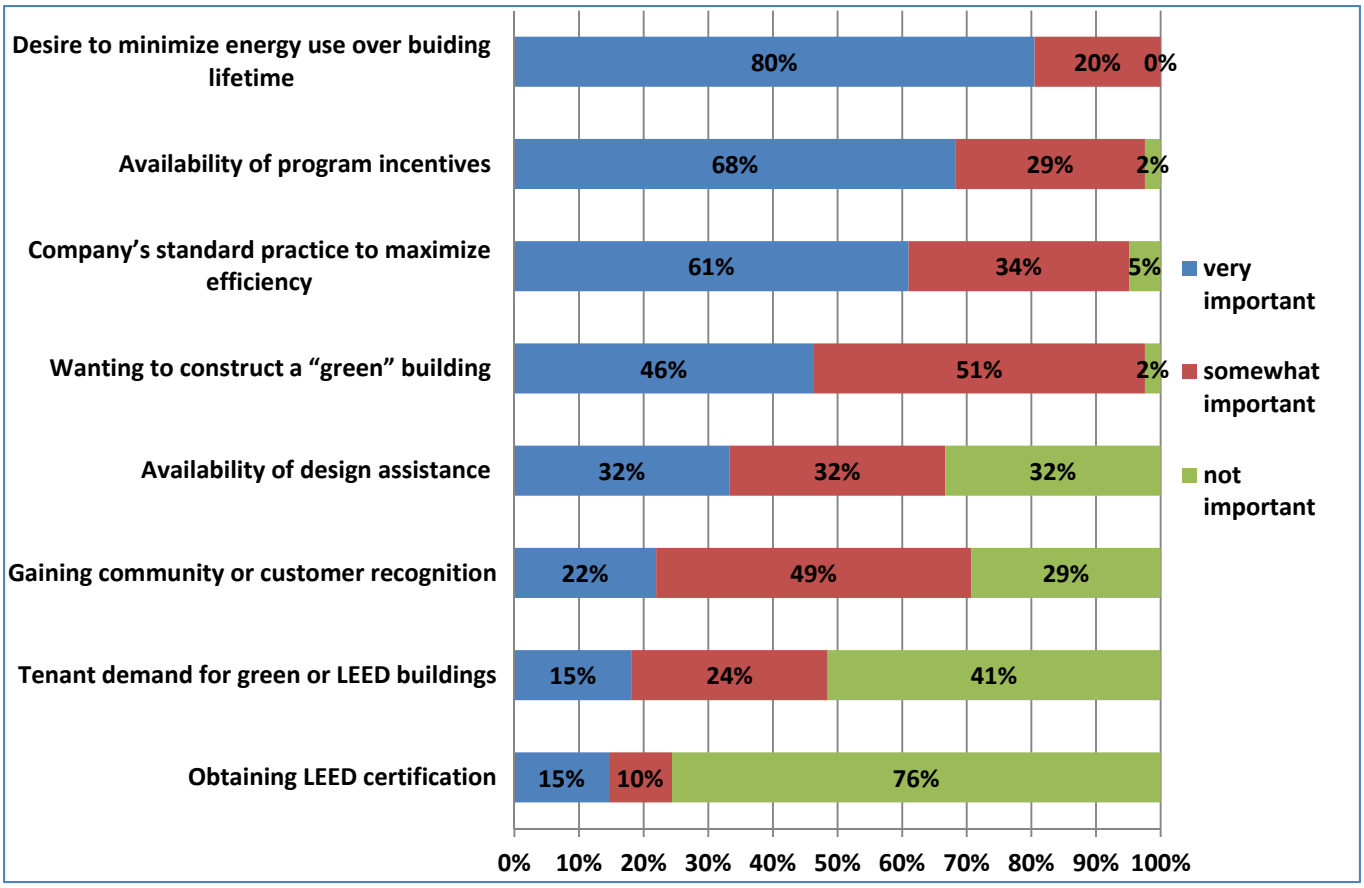
[3] In this context, programming is the design phase where the design team establishes the criteria on which the design is based, and by which it is later evaluated.

Exhibit 3-28 – Project Stage at Time of Program Contact

Stage at time of program contact	No. of Responses
Programming	10
Conceptual design	11
Schematic development	3
Design development	9
Construction drawings, specification	4
Bidding and bid review	0
Construction	3

When asked to rate the importance of various influences on their decision to participate in the NB program, respondents assigned the highest importance to the desire to minimize their new building's lifetime energy use, which was rated as very important by 80% of respondents and somewhat important by 20%. This was followed by the availability of incentives and then by their organization's standard practice of maximizing efficiency of new buildings. Note that, on the one hand, these results support the importance of NB program incentives in encouraging efficient new buildings; on the other hand, they suggest that many organizations pursue what they consider efficient design as standard practice, even though this may fall short of the most efficient design possible. The desire for LEED certification was the least important of the factors considered, with fewer than one-fourth of respondent citing this as somewhat or very important in their decision to participate in the program. Results are presented in Exhibit 3-29.

Exhibit 3-29 – Importance of Reasons for 2014 Program Participation (n=41)



To analyze barriers to participation, respondents were asked if they had any concerns about participating in the program or encountered any barriers. Most (29 of 41) said they had none. For the remainder, 5 reported concerns related to the cost of efficient design and construction, while 2 said they had been worried about the predictability and timing of incentive payments, and 2 had concerns relating on non-energy issues: asbestos abatement and earthquake-proofing. One respondent said he was somewhat concerned about participating using Market Solutions, but he noted that Energy Trust made it a great experience.

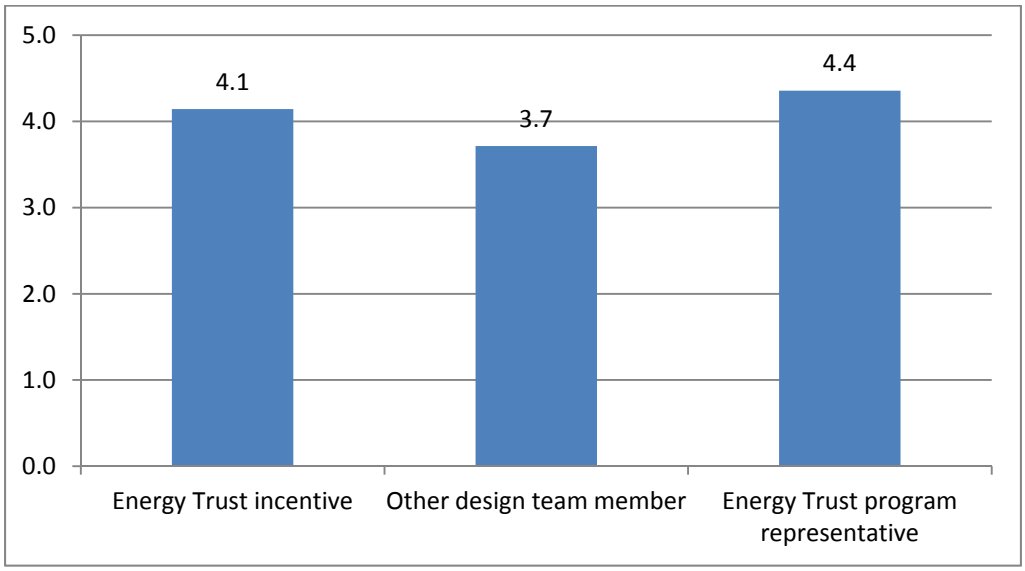
Regarding their satisfaction with the application process, 95% of respondents provided a rating of 4 or 5 on a 1 to 5 scale, with a mean rating of 4.5 (n=37) and no ratings lower than 3. Several commented on the assistance provided by program staff to facilitate the application process.

Early Design Assistance

Among the 2014 participants interviewed, 14 participants said they had used the Early Design Assistance (EDA) option of the NB program. First, respondents were asked about the extent to which several factors influenced their decision to hold a charrette or design team meeting, using a 1-to-5 point scale, where 1 is no influence and 5 is a great deal of influence. Results, shown in Exhibit 3-30, indicate that the program incentive was more influential than suggestions from other

design team members, but less influential than the NB program representative, further emphasizing the thorough job done by Outreach Managers in promoting program offerings. However, these differences are not statistically significant.

Exhibit 3-30 – Influences on Decision to Hold Early Design Meeting, 1-5 scale (n=14)



When asked to describe their experience and overall changes that emerged from the EDA meeting, the respondents gave an array of answers. Five emphasized that the meetings focused on overall energy reduction, helped set the direction for the project or helped maximize incentives; two said it effectively brought all members of the design team together, two said it helped solve specific problems or identify specific measures, and two said it confirmed the design team's overall approach. Specific changes resulting from the meetings included greater emphasis on lighting (three respondents) and adoption of specific HVAC technologies (two), while one respondent said that it had "set the stage for a more integrated design process." Two respondents said there were no specific changes and two felt it was too early to tell, since the design had not been finalized.

Only two respondents had suggestions on how to improve the EDA meetings. One owner who has participated in charrettes for several projects said that "there were too many options for a lay person at the meeting" and suggested a 'one sheeter' that summarizes the options under consideration. A Sustainability Manager at an architecture firm who has also participated in several New Buildings charrettes said that "they really need to look at the component parts of these meetings to make them more meaningful and take it beyond a conventional building design review." She noted, however, that these early design meetings are very important to both their projects and their project teams.

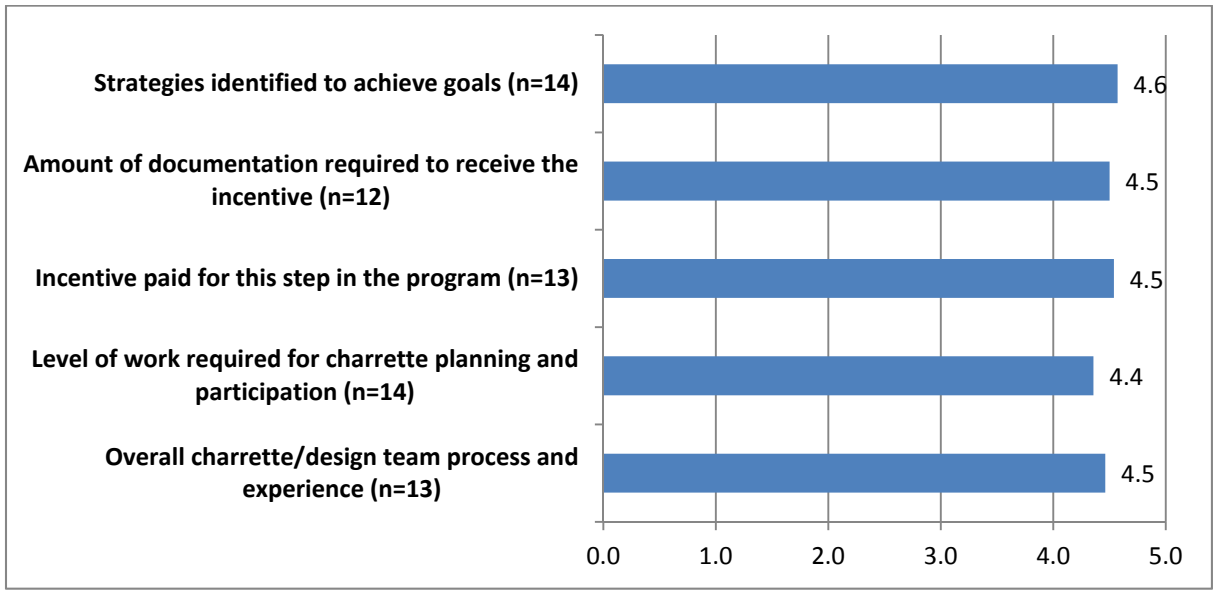
EDA participants were also asked whether they would have held the design meeting or charrette if the Energy Trust incentive and information had not been available. Of the 14 who responded, 4

(28%) said they would have held the exact same meeting; the rest said they would not have held such a meeting. When asked how often they normally do a charrette or design team meeting on projects of this size, responses ranged from "this was the first one" to "100 percent of the time."

The levels of satisfaction with various aspects of EDA are presented in Exhibit 3-31. The overall high level of satisfaction is noteworthy, with 92% rating it 4 or 5 out of 5, or a mean rating of 4.5 out of 5. Comments offered by respondents include:

- *"We would not have been able to get all the players on the same team without that meeting."(Owner)*
- *"It worked very well on this project."(Owner's Construction Manager)*
- *"It was very positive for the project in that we looked at areas for energy efficiency we might have missed otherwise, especially lighting."(Architect)*

Exhibit 3-31 – Satisfaction with Early Design Assistance, 1-5 scale



The evaluation team also had some observations about the Early Design meetings based on those that we attended in person, covering various building types and involving several Outreach Managers. Overall, we found that the meetings did, in fact, meet their primary goal of engaging all members of the design team as intended, and that they focused on energy-related design issues. However, the process may not be optimal.

For example, in one meeting for a project being designed to qualify for LEED, the Outreach Manager went through existing plans and determined if the plan would qualify for rebates. There was little discussion of alternative equipment or designs that would have been more efficient,

although that may have been because this team is building to LEED and because this is a repeat program participant who is aware of available options.

Because of the way in which this and several other EDA meetings involved review of existing plans or approaches, there was some sense that the Outreach Managers were playing defense rather than offense. Ideally, one would want the design team to take available NB participation options and incentives into account as they prepare their preliminary design. Some teams may have done that, but it seemed that in several cases the initial design was done before program options were considered. Providing the lead architect and/or design engineer with a summary of systems and options to consider before the EDA meeting might ensure that all options are considered and discussed at the meeting.

Selection of Market Solutions or Other Participation Options

One of the primary areas of interest for this evaluation was the role of the Market Solutions offering in the decision to participate and the selection of the participation offering. Market Solutions offers market-specific incentive packages to owners who construct or renovate restaurant, retail, office, grocery, primary school or multifamily buildings less than 70,000 square feet. Building owners are given an easy path to achieve up to 20 percent energy savings beyond Oregon code, without the added cost of energy modeling.

All of the 2014 participants we interviewed were – at least in theory – eligible to participate using the Market Solutions option. That is, they were a) in the schools, grocery, offices, retail, multifamily or restaurant sector and b) were less than 70,000 square feet. Our sample included participants that had decided on the MS option at the time of our surveys, those that were still undecided, and those that were eligible but had chosen an alternate participation path.

When we asked respondents whether they had discussed Market Solutions or options with program staff, many struggled with this question because they did not recall discussing various participation options in these terms. Essentially, there were three groups of respondents.

First, there were relatively few who knew about the MS option, had discussed it with the OM and the design team, and were able to explain why they had chosen to use it or not. This accounted for just about 10 of the 41 respondents. Some of these participants were enthusiastic about this option, and seemed to respond to the tiered system of “good”, “better” and “best” design options. Participants who chose Market Solutions offered the following comments:

- *Market Solutions made the most sense for this project; the savings were not there to make it worthwhile to do energy modeling. This has taken a lot of unnecessary modeling out of the process, and the owner is comfortable with it.*
- *We chose Market Solutions because it was the best fit for our under 50k square foot building.*

- *The multifamily Market Solutions track was the best for this project and going for "Best" provided the highest incentives.*
- *Market Solutions was tailored for school projects; it's been a painless process with a good rebate coming back to the owner.*
- *It gives us a clear plan and informs us as to what measures will give best overall value for the project.*

We did not find any participants who said they would not have participated if it had not been for the MS option; it seemed that all of them made the decision to participate, and then selected the best participation alternative for their project.

Several other respondents said they had heard about Market Solutions and considered it, but had chosen an alternative path, usually prescriptive.

- *We looked at ROI for measures we were considering and went with a custom approach.*
- *We would not have gotten as great an incentive with Market Solutions; we did better with a measure-specific approach.*
- *We wanted to use an Energy Recovery Ventilation system; Energy Trust helped us do the calculations and we were able to do that. I think that's why we did not do Market Solutions.*

Although their projects technically would qualify for Market Solutions, several participants said they only participated on a very limited scale and were not aware of Market Solutions (all quotes below are from restaurant owners).

- *We only got incentives on two pieces of kitchen equipment.*
- *I don't remember. I believe I only qualified for one measure; an incentive on a gas dryer.*
- *We had kitchen equipment only for this project.*

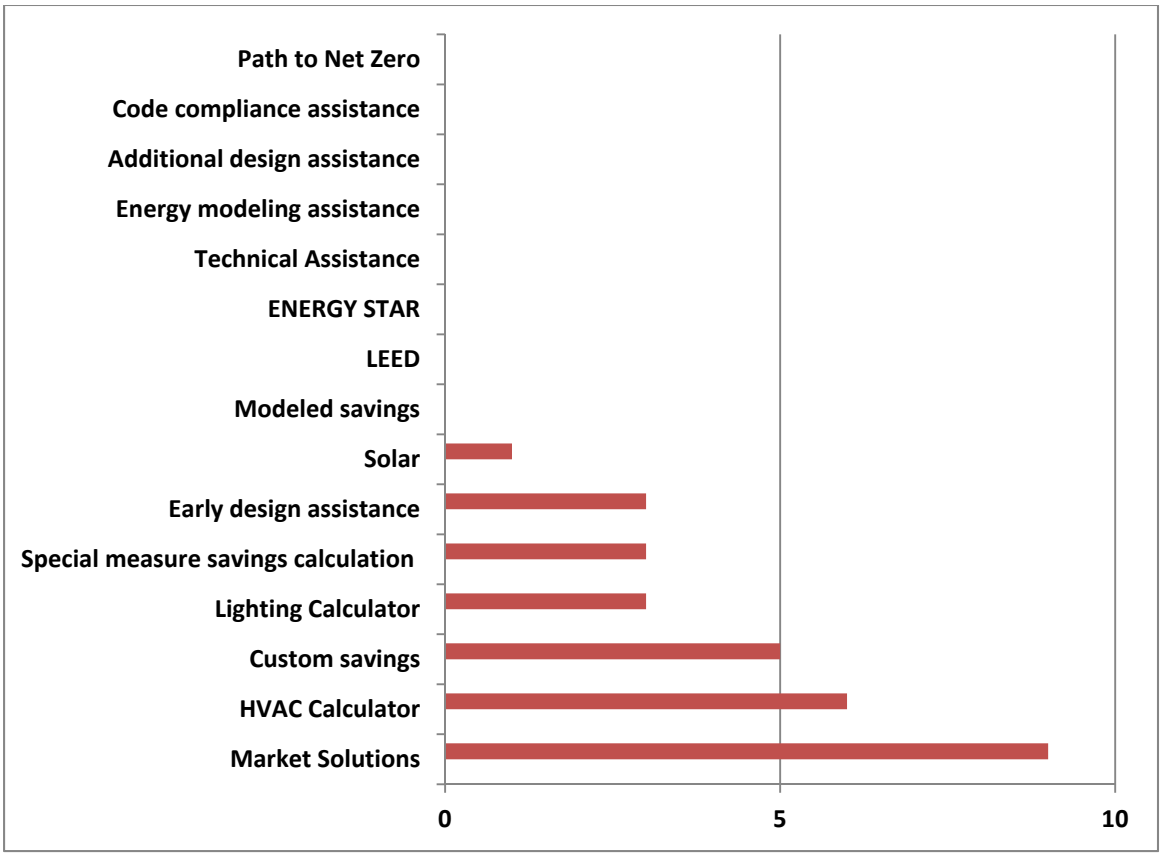
In all, 16 respondents were able to identify at least one participation option that they had discussed, but the remainder – more than half -- were only vaguely aware that there were various participation options, and either said someone else made that decision or that they chose the option that offered the greatest incentive within their budget constraints, or something similar. Several offered comments that they had discussed alternatives with the Outreach Manager in general terms and had chosen what was best for their project, but did not recall specific options. While most participants seemed to be content to have the Outreach Manager guide them through the selection of options, one respondent commented that "*there could have been clearer lines of*

communication as to what incentives/options are worth exploring, but that may have been our team's fault for not looking into it more as well."

Results for respondents who were able to identify options that they considered are presented in Exhibit 3-32. Since all the projects in the sample were, in theory, eligible for Market Solutions, it is not surprising that this was the most often mentioned option. Similarly, the fact that these were all relatively small projects limits the potential for energy modeling, which explains why that option was not reported. What is surprising is that none of the respondents mentioned (unprompted) the use of design assistance, since 14 did in fact receive that.

As was suggested in the previous evaluation report, it may be worth summarizing the various participation options in a handout that the design team can review as decisions are being made. Similarly, once the team – either independently or with input from NB program staff – has made a decision, participants would benefit from a summary statement describing the approach selected. This is not so that participants know what "path" they have chosen, but to help build an understanding among owners and allies of the overall efficiency options available when a new building is designed and built, particularly since many owners as well as allies are repeat participants..

Exhibit 3-32 – Number of Participants Considering Various Options (n=16)

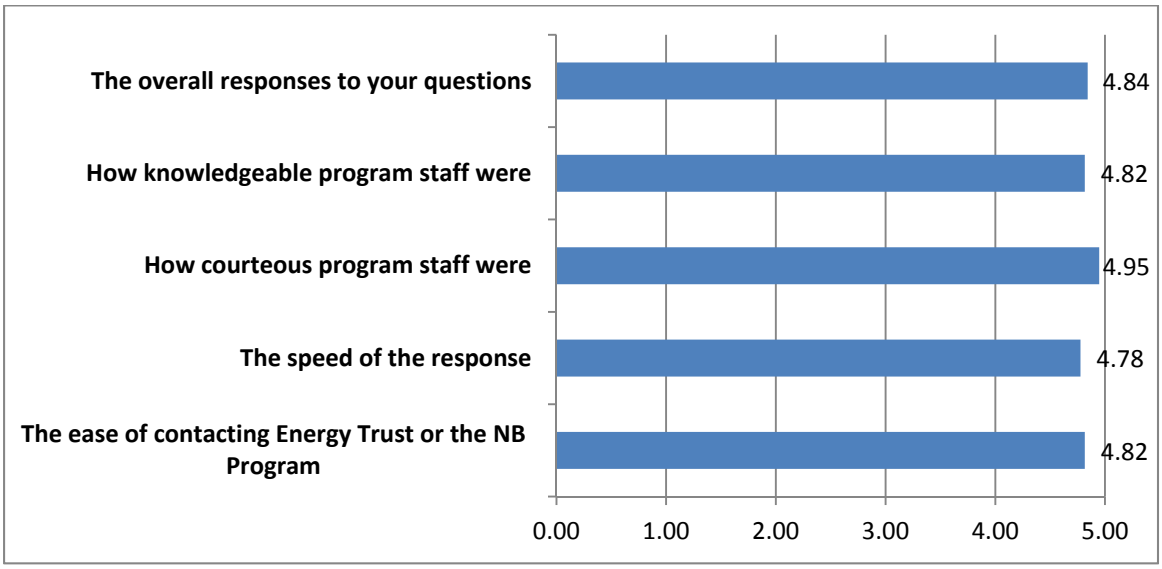


Among those who were listed in the tracking data as "undecided" at the time the sample was pulled, a handful were still undecided when first interviewed. We followed up with 4 of those participants; two had since selected the MS option, one had chosen individual measures, and the fourth was still undecided.

Program Satisfaction and Suggestions

Participants said they communicated frequently with NB program personnel, and most were very pleased with the quality of their communications. Respondents gave mean ratings of 4.7 or higher on a 1-to-5 scale for each of 5 aspects of communications, as summarized in Exhibit 3-33 below. There were no responses below 3 for any of the items. These results are supported by the many comments offered regarding the high quality of the assistance offered by program staff.

Exhibit 3-33 – Satisfaction with Communications, 1-5 scale (n=38)



Finally, respondents were asked about their overall satisfaction with the New Buildings program, and were then asked to give an explanation for their rating. Overall program satisfaction averaged 4.55, with 97% of the 39 respondents providing "4" or "5" ratings.

Both the overall satisfaction scores and the satisfaction with communications are somewhat higher for these 2014 participants than for the 2013 participants, as described in the next section. Differences are not statistically significant, however.

While almost all of the reasons offered for the ratings reiterated the respondents' satisfaction with the program and its staff, a few participants expressed concerns, all minor.

- One found the participation process somewhat complicated: *"It took a while to for me to understand the process as this is our first time through it; the program is great but not perfect."*

- Another respondent felt that they did not receive as much support this time as on a previous project: *"There was a slower reaction time in getting back to me; the program did not bring as many ideas to this project as the first one we did with Energy Trust."*

- Finally, one participant said that she wishes it was "*easier to find the forms on line; I found them, but it was not easy, was a bit of a maze*."

- One comment that was often made by 2012 program year participants, but was conspicuously absent this year, was concern about the uncertainty surrounding the final incentive. Since all these 2014 participants were Market Solutions candidates, the clearly defined good, better, best levels of performance and incentives seem to have minimized that concern.

3.5 Results – 2013 Participant Feedback

The purpose of this section is to present the results of a survey conducted in early 2014 to assess the satisfaction of customers who participated in the Energy Trust of Oregon New Buildings program in 2013. These results were previously presented to Energy Trust in a memo dated March 20, 2014.

Methodology

The evaluation team completed 35 surveys with owners or owners' representatives who participated in the NB program in 2013. The survey instruments were designed to gather information about participant satisfaction, program processes and incentives, and how decisions are made about energy efficient features and equipment.

The sample for this task was developed from a listing of projects that had received incentives in 2013, and targeted only those contacts identified as owners or owner's representatives. Surveys were conducted from February 25 through March 11, 2014. A disposition of survey calls is presented below.

Exhibit 3-34– Call Disposition

Disposition	No.
Total calls	141
Completed	35
Bad/Wrong Number	16
Busy/no answer	4
Contact gone/retired/ unavailable	6
Left Voice Mail or message	70
Scheduled but did not show	7
Project abandoned/postponed	3

Results

Participant satisfaction with each of several broad aspects of NB program participation is discussed below. Note that most of the differences in mean satisfaction for various aspects of program delivery are not statistically significantly. The 90% confidence interval around the lowest mean satisfaction response (4.36) is +.54, while that around satisfaction with the program overall (4.54) is +0.24, where the confidence interval is calculated as the standard error (standard deviation over the square root of n) times the critical t value of 1.65. For aspects of program participation that some respondents may not have been involved in, the number of responses is smaller and the confidence interval wider.

What is clear is that satisfaction with the program is generally high, with mean satisfaction levels for all aspects of program delivery averaging more than 4.3 on a 1-to-5 scale. Bearing in mind the limited statistical significance that can be attached to results, we offer discussions of satisfaction with the various aspects of program delivery in sequence, starting with the application process.

As shown in Exhibit 3-35, participants who received help preparing the application, as more than half did, were highly satisfied with that assistance, with 95 percent of respondents providing ratings of 4 or 5. The overall enrollment process and ease of preparing the application received somewhat lower ratings. One owner commented that “It took forever and it was not easy to use; we never seemed to have the right information.” Another respondent, in referring to the Market Solutions offering, said that she felt that “Energy Trust did not have the program completely figured out before they implemented it. It was tough to get information on incentives in terms of measures for good, better or best.” While most respondents said their lighting designer or contractor had been responsible for using the lighting and HVAC calculators, those who did use them reported no problems, with all who used them offering ratings of 4 or 5.

Exhibit 3-35 – Satisfaction with Enrollment Process

Component of program delivery	Satisfaction: 1 to 5 scale		
	Mean	n	% 4 or 5
Enrollment Process			
Enrollment process and paperwork	4.45	33	88%
Help you received in preparing the application	4.68	19	95%
Ease of preparing the application	4.43	28	93%
Ease of using Lighting Calculator workbook	4.71	7	100%
Ease of using HVAC Calculator workbook	4.67	6	100%

For those who sought approval from Energy Trust prior to purchasing equipment, results regarding satisfaction with the approval process are presented in Exhibit 3-36, and show that satisfaction was generally high, if somewhat less so for the timeliness of the approval process. The only comment offered on this topic came from the same individual cited above who had said the program was prematurely implemented and noted that "this created lots of redundant work for the engineering firm on the project." It is worth noting the very high level of satisfaction with the post-installation inspection; of the 22 respondents who were aware of receiving such an inspection, all but 1 provided a rating of 5.

Exhibit 3-36 – Satisfaction with Approval Process

Component of program delivery	Satisfaction: 1 to 5 scale		
	Mean	n	% 4 or 5
Approval Process			
Information required regarding the project and equipment	4.57	14	93%
Timeliness of the approval process	4.36	14	79%
Amount of the incentive approved	4.86	14	100%
Post-installation inspection	4.95	22	100%

Participants were generally very satisfied with the communication provided by program staff, according to results summarized in Exhibit 3-37. As shown in the table, mean satisfaction was slightly lower with the speed of the response to inquiries, but, again, this difference was not statistically significant.

Exhibit 3-37 – Satisfaction with Communications

Component of program delivery	Satisfaction: 1 to 5 scale		
	Mean	n	% 4 or 5
Communication			
The ease of contacting Energy Trust or the NB Program	4.65	34	97%
The speed of the response	4.62	34	91%
How courteous program staff were	4.94	34	100%
How knowledgeable program staff were	4.73	33	97%
The overall responses to your questions	4.76	33	97%

Finally, participating owners were asked about their satisfaction with the measure or completed building for which they received an incentive and their overall satisfaction with the program, presented in Exhibit 3-38. Note that some of those interviewed may have participated in 2013 through one of the program's technical or design assistance paths and therefore would not have answered the question regarding satisfaction with the building or measure. Overall satisfaction averaged 4.54 and ranged from 2 to 5, with 89 percent of respondents providing 4 or 5 ratings. The 90% confidence interval around the mean satisfaction with the program overall is+.24.

Exhibit 3-38 – Overall Satisfaction

Component of program delivery	Satisfaction: 1 to 5 scale		
	Mean	n	% 4 or 5
Overall			
The building or measure for which you received incentive	4.61	28	89%
Overall satisfaction with the New Buildings Program	4.54	35	89%

Most of the explanations for overall satisfaction were very positive, and included such comments as:

- *The project felt like a real partnership between our architect and Energy Trust.*
- *Regardless of the incentives, it's a great resource for us for our projects, especially the technical expertise we can draw on.*
- *It was handled very well; nice and smooth; did not take a lot of my time.*
- *It's a very valuable tool to make improvements to buildings that we might not otherwise have done.*
- *Very happy as a small business owner to have a program like this.*

There were also some negative comments to explain ratings of 2 or 3, which were each provided by two respondents:

- *In spite of the premature launch of the [Market Solutions] program, our Energy Trust rep did an amazing job to try to help us through it.*
- *Energy Trust had a hard time understanding and crediting our passive design model.*
- *The facility has been operating for a year and we still have not realized the savings I had expected*
- *We liked the incentives, but not the hassle of the lost paperwork and the extra work it created.*

Any suggestions for improvement tended to echo the issues raised in the explanations above. In addition to multiple positive comments, participants offered the following.

- *They need to test new programs like this [Market Solutions] much more thoroughly before they're launched.*
- *I would like a better understanding for both this and future projects on how the NB program really benefits the end users – which, in this project situation, are our company and also the tenants who pay utility bills. This info may have been somewhere in the process, but I am not aware of it.*
- *I wish we had gotten involved earlier in the process, not when in construction.*
- *It seems like later in the process Energy Trust brought in the appropriate people for this project; they should have been involved early on* [from the participant who made the comment about passive design, above].
- *The program is ever changing and it's hard to keep up with the changes; it should stay the same for at least a couple of years at a time.*
- *They need to be more timely in processing payment of incentives, especially to a small business like ours.*

3.6 Results – Trade and Design Ally Issues, Concerns and Feedback

As noted earlier, several of the goals of the evaluation centered on trade and design allies. Specifically:

- Is the NB program perceived as relevant by allies?
- How satisfied are allies with their experience in the program?
- Are women and minority-owned ally firms participating in proportion to their numbers?

This section addresses these and other ally-related research objectives, starting with a concern that arose in 2013 and threatened to undermine the relevance and effectiveness of the NB program in the eyes of allies. Next, we analyze the participation of woman and minority-owned firms as allies, followed by a discussion of ally feedback on program design and the participation process. Finally, we present conclusions and recommendations regarding ally issues.

LEDS AND QUALIFYING PRODUCTS LIST

At the end of 2013 and in early 2014, many potential program participants – both owners and allies – were finding it more difficult to meet the NB program's requirement that all LED bulbs and fixtures be on the Qualifying Products List (QPL), which required that LED products go through a 10 month certification cycle. The QPL was designed to act as a quality control measure by ensuring that LEDs installed through and incented by the NB program met key performance and longevity standards. However, a program manager explained that, "among manufacturers, the cycle of innovation is happening so fast they leapfrog themselves, bringing the next generation LEDs to market before the 10-month QPL test is complete. As a result New Buildings can qualify older generations of product, but not the most recent…."

The results were that 1) projects with LED lighting made by industry-leading manufacturers and specified by reputable lighting designers were being rejected for NB incentives, thereby undermining the credibility of Energy Trust and the NB program, and 2) growing numbers of projects were bypassing NB participation rather than select older generation LEDs that were on the QPL. A lighting designer said that "more and more, we are running into bureaucratic hurdles as we look at using newer LED products. One of our biggest road blocks to integrating the Energy Trust process more holistically in our projects is the need to have LED products receive a very specific certification in order to be recognized and incented by the Energy Trust." One program staff member estimated that "80% of design-build is not involved with Energy Trust because of the QPLs." Other examples cited by allies included:

- A regional water treatment project did not submit to Energy Trust due to QPL requirements.
- A major retail distribution center purchased LED fixtures direct from the manufacturer to get a better price and to avoid having to worry about QPLs.
- An apparel company had 11 buildings with LED pendants that were not yet listed on QPLs.
- A regional food market group did not want to work with Energy Trust due to QPL requirements.

This was a major concern because the QPL requirement affected not only leading-edge allies that in the past had pushed innovative custom projects, but also small contractors and design build projects, many of which were choosing LEDs to hit the 15% lighting power density (LPD) reduction for Market Solutions. Program managers identified a total of 10 projects in 2013 that could have lost a significant amount of savings because of non-QPL lighting.

In response to requests from Program Managers, Energy Trust issued a memo in May 2014 that allowed alternate quality control procedures for LEDs. On projects where a lighting designer

certified by the National Council on Qualifications for the Lighting Profession (NCQLP) is part of the project team, the designer's judgment can be used in conjunction with manufacturer's data and other test reports to determine whether an LED qualifies. When there is no NCQLP-certified lighting designer, program staff can use test results and other information such as longevity data from manufacturers to determine if LEDs are eligible.

In practice, program staff and allies have used both of the above methods. For most larger projects, there is, in fact, a certified lighting designer that is part of the project team. For smaller projects, including many of those that are eligible for Market Solutions, program staff are able to leverage the results from larger projects; once a specific LED has been used by a certified designer on one project, NB staff can take that as an indication that the same LED would be acceptable on another, smaller project. In addition, the NB program's lighting consultant, Evergreen, has been able to review data for new offerings from highly reputable manufacturers and determine that these products would qualify for the QPL, even though they have not been certified.

Alternatively, if the vast majority of fixtures on a lighting job meet either the QPL or the other criteria described above, NB staff are unlikely to disqualify the project for a handful of fixtures that have not been formally vetted. Finally, some projects require lighting types that are not addressed by the QPL. A program lighting professional cited a case where vandal-proof fixtures were specified for a prison; the QPL did not have any products in this category, but because the lighting was made by a recognized manufacturer and was otherwise similar to previously verified LEDs, the fixtures were approved.

The solution to the QPL problem clearly relies heavily on the professionalism and judgment of lighting designers active in the new construction market. One lighting professional working on the NB program explained that this is effective in the new construction market because lighting decisions typically involve the owner, the architect and the lighting designer – all of whom have an interest in ensuring that high quality lighting is specified and installed.

The resolution of this problem, which was having notable short term impacts and could potentially have hampered the long-term effectiveness of the NB program, demonstrates the ability of the program to respond to changing market conditions. Program managers listened to feedback from allies and asked Energy Trust's Planning Department to address the market's concern. While a more rapid response might have ensured that additional savings were captured in 2013, the timing of the program modification ensured that the effect of the QPL would be limited in 2014. A lighting designer for the program management contractor said that there has been a "tremendous improvement" in the ability of new construction projects to accept high quality LED lights that are not yet on the QPL.

RESULTS – WOMAN- AND MINORITY-OWNED ALLY PARTICIPATION

A second issue raised at the outset of the process evaluation was the extent to which the program has engaged woman- and minority-owned (WMO) trade and design allies. This section of the report presents a summary of our findings regarding this issue. These results have been previously made available to Energy Trust and NB program staff to provide timely feedback on this issue.

Methodology

We used Dun and Bradstreet (D&B) data obtained through Hoovers.com to identify woman- and minority-owned businesses in Oregon so that we could determine whether WMO businesses have participated as allies in the NB program in proportion to their representation in the overall new construction industry. This involved the following steps:

- Using D&B data, identifying the total population of potential allies (i.e., firms whose business falls into selected NAICS codes) in Oregon.
- Matching NB allies to firms in the D&B data.
- Using the D&B data's flags for woman ownership and minority ownership, and tabulating how many of the NB program allies are WMO.
- Comparing the percentage of allies that are WMO to the percentage of comparable firms in the total population that are WMO.

A review of the list of 191 New Buildings allies provided by Energy Trust suggested that most of them would fall into the following NAICS categories:

- Architects (NAICS 541310)
- Engineers (NAICS 541330)
- Nonresidential building construction general contractors (NAICS 2362)
- Electrical contractors (NAICS 238210)
- Plumbing and HVAC contractors (NAICS 238220)

Energy Trust provided access to a D&B database of all firms in the state, which gave us the overall number of Oregon firms in each NAICS code and the percentage of those firms that are WMO. For the Electrical and Plumbing and HVAC contractor categories, purchasing access to the many firms in this NAICS code would have been too expensive, so we screened on those firms with 10 or more employees as being the most likely to participate in a commercial program such as NB.

The above NAICS categories contained 5,289 Oregon firms, including 360 (6.8%) identified as woman-owned and 169 (3.2%) identified as minority-owned, as summarized in Exhibit 3-39.

Exhibit 3-39 – D&B Oregon Population

Ally Type	No.	Woman Owned	%	Minority Owned	%
Total targeted firms	**5,289**	**360**	**6.8%**	**169**	**3.2%**
Architects	675	65	9.6%	18	2.7%
Engineers	1,468	95	6.5%	67	4.6%
Non-residential general contractors	1,023	90	8.8%	50	4.9%
Electrical contractors >10	167	20	12.0%	5	3.0%
Plumbing/HVAC contractors >10	1,956	90	4.6%	29	1.5%

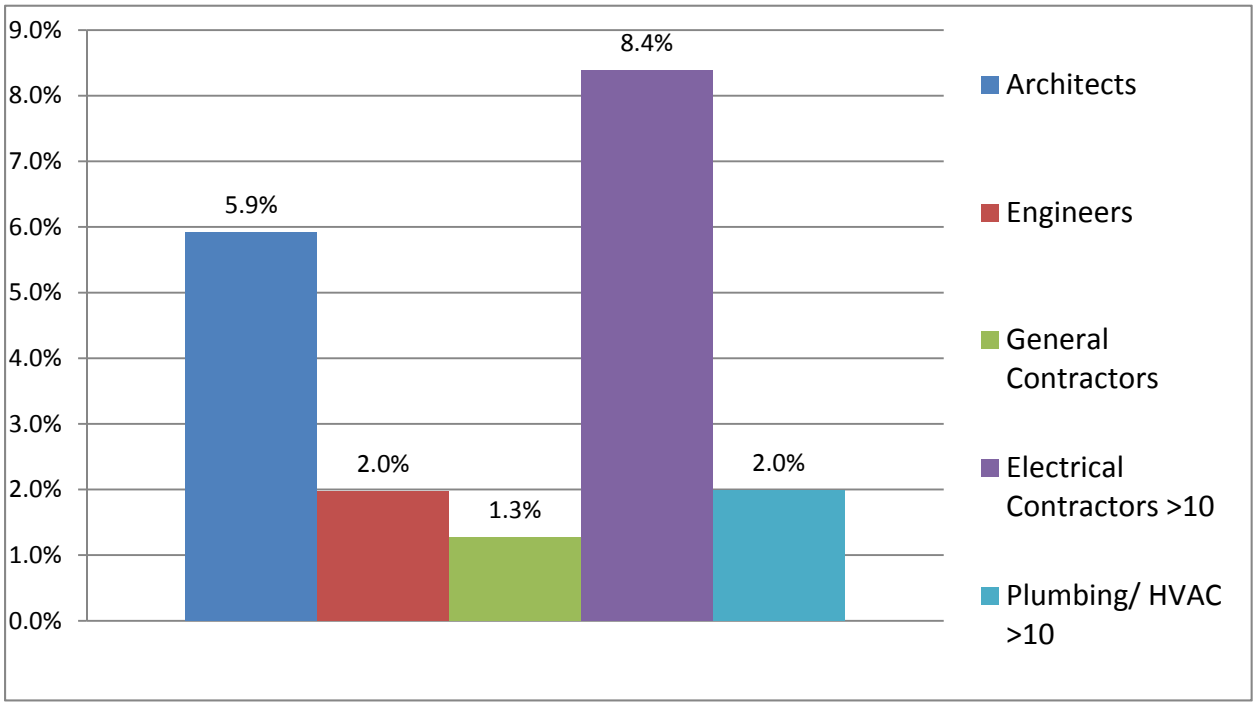
An initial comparison of the list of 191 NB allies against the above population found 100 matches. However, we subsequently searched the remaining 91 individual company names to see if some allies might be included under other NAICS codes, other names, or the less-than-10-employee category that we had screened out earlier. This second step added 36 firms to the list of those whose WMO status we could determine using D&B data.

Our subsequent comparison of WMO allies as a percentage of the total was conducted using only the 136 firms whose status we were able to verify, on the assumption that these allies would be representative of the remaining 29% of the population.

Results

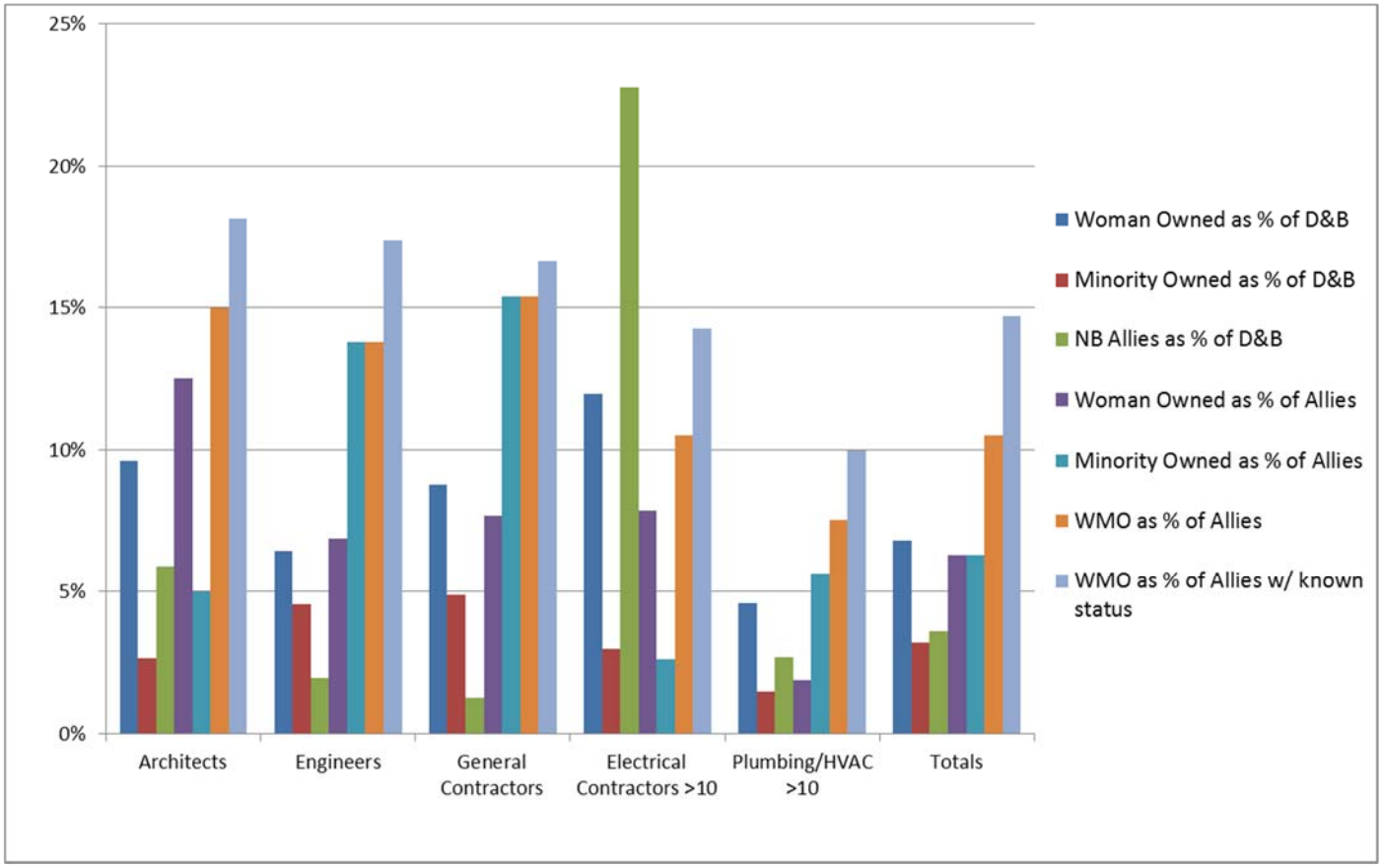
First, we looked at the percentage of the total D&B population of each type of firm represented in the pool of NB allies, comparing the number of various categories of allies to the targeted NAICS codes. As shown in Exhibit 3-40 below, electrical contractors with 10 or more employees are more likely than other businesses to be trade allies, with more than 8% registered as allies. Note that the percentages for electrical contractors and HVAC/plumbing contractors were calculated using the number of allies (14 electrical and 39 HVAC/plumbing) confirmed by D&B data as having 10 or more employees.

Exhibit 3-40 – NB Allies as Percent of D&B Oregon Population



Regarding WMO status, of the 136 New Buildings allies whose status we were able to verify, 12 were woman-owned and 12 were minority-owned. Because some firms had both woman- and minority-owned status, the total number of WMO allies was 20. This represents 14.7% of the 136 allies with verified status. As can be seen from Exhibit 3-41, this percentage is greater than the percentage of WMO firms in the overall population. Results for various categories are summarized in Figure 2 below and show that woman-owned allies make up a larger share of architects and electrical contractors, while minority ownership is more common among engineers and general contractors.

Exhibit 3-41 – WMO Allies as Percent of Total by Business Type



Conclusion

Although it is not clear that this was set as a specific goal, Energy Trust appears to have done a good job in encouraging candidate WMO firms to become involved with the NB program as allies. In all categories except woman-owned electrical contractors and woman-owned plumbing/HVAC contractors, the percentage of WMO allies exceeds the percentage of WMO firms in the total population.

RESULTS –ALLY FEEDBACK ON THE NEW BUILDINGS PROGRAM

As described in the previous section discussing woman- and minority-owned allies, most trade and design ally firms formally signed up as allies with the NB program are architects, engineers, electrical/lighting designers, and general or specialty contractors. However, among the 12 non-owner respondents interviewed for 2014 projects, 5 were either consultants or project managers not employed by the owner, indicating that the number and range of allies involved with NB projects is broader than suggested by the initial listing of businesses.

Even though many allies are frequent program participants (more than half said they had worked on other NB projects), they were not much more aware of participation options, including Market Solutions, than owners were. Like owners and their representatives, most allies said they relied on the program Outreach Manager to guide the selection of participation options, observing that it was ultimately the owner's choice to make.

Similarly, when architects or design engineers led some of the early design meetings we observed, the initial designs or approaches they presented often did not reflect a detailed knowledge of NB program options. Overall, ally respondents did share the owners' positive perceptions of the EDA process, with several mentioning the value of bringing the whole design team together to discuss energy-related design issues. One architect said the design meeting helped solidify the owner's commitment to making efficiency a high priority, which gave his firm greater direction in how to proceed with the design.

At 4.33, ally satisfaction with the program applications process was slightly lower than the 4.5 for all respondents, although the difference was not statistically significant. Overall satisfaction with the NB program was also high for the 12 allies interviewed. All but 1 of the 12 provided a satisfaction rating of 4 or 5, for an average score of 4.25.

4. Conclusions and Recommendations

Conclusions

Key findings reported throughout this report are summarized below.

- The NB program continues to meet its goals and the needs of new building owners and trade and design allies. Savings come from a diverse mix of participants in terms of track, building type, fuel, utility, and geographic region. To achieve its goals, however, the program remained heavily dependent on data centers, which accounted for half of 2013 kWh savings.

- The NB program continues to achieve these savings above and beyond one of the most stringent building codes in the country, and is engaging most of the key designers, engineers and owners in the Oregon market.

- A comparison of NB participation data to Dodge new construction data from McGraw-Hill showed that, overall, the NB program is reaching at least 58% of the Dodge project counts. Note, however, that Dodge data include projects that may not be built, and in this accounting may include some projects that are renovations and not new construction or additions. Dodge also does not always list the smaller projects that would qualify for the Market Solutions offering, so the NB program's share of overall projects is probably higher.

- The Market Solutions offering of the NB program has been helpful in assisting many commercial projects under 70,000 square feet, which made up more than three-fourths of participants in 2013. However, most of the 2014 participants we spoke to who were eligible for Market Solutions were not fully aware of or did not understand this option. In fact, as was the case in the previous process evaluation, participants – whether owners or other members of the design team -- were generally unaware of the alternative participation tracks available to them, and relied on NB program staff to help them identify the appropriate path to participation.

- The NB program appears to be engaging with more of its participants early in the design and construction process, with over half the 2014 participants we spoke to having made contact with the program when their project was in the programming or conceptual design phase – up from 42% in 2012.

- This has helped encourage more design teams to conduct early design meetings and charrettes, including about one-third of the Market Solutions-eligible 2014 participants we interviewed. Participants who took advantage of Early Design Assistance from the NB program were very satisfied with it, with all but one giving it a "4" or "5" rating on a 1-to-5 scale where 5 represented the highest satisfaction level.

- In the EDA meetings that the evaluation team observed, it seemed that greater awareness of NB program options before the initial design was developed could have led to a more thorough evaluation of efficient design alternatives during the meetings.

- As the commercial new construction market has revived, program staff have had to work hard to keep up with all the new construction projects so that the NB program can capitalize on them. The faster pace of the market also made the QPL for LED lighting a greater challenge, since there was more pressure on designers to go with unlisted products rather than wait for the QPL to catch up. Energy Trust successfully revised the requirements for LED lighting in a way that maintained quality control but provided greater flexibility to projects wanting to use LEDs.

- Energy Trust appears to have done a good job in encouraging candidate WMO firms to become involved with the NB program as allies. In all categories except woman-owned electrical contractors and woman-owned plumbing/HVAC contractors, the percentage of WMO allies exceeds the percentage of WMO firms in the total population.

- Among 2013 participants, satisfaction with the program was generally high, with mean satisfaction levels for all aspects of program delivery averaging more than 4.3 on a 1-to-5 scale. Among individual program elements, the only items to receive average ratings of less than 4.5 were the enrollment process and paperwork (4.45), the ease of preparing the application (4.43) and the timeliness of the approval process for those who sought approval from Energy Trust prior to purchasing equipment (4.36).

- Current participants are also very pleased with the NB program, NB staff and the level of communication and support they receive. Overall program satisfaction among 2014 participants (whose projects were still in progress) averaged 4.55, with 97% of the 39 respondents providing “4” or “5” ratings. Almost all of the reasons offered for the ratings reiterated the respondents’ satisfaction with the program and its staff, with no major concerns mentioned.

- One comment that was often made by 2012 participants, but was conspicuously absent among current year participants, was concern about the uncertainty surrounding the final incentive. Since all these 2014 participants were Market Solutions candidates, the clearly defined “good”, “better”, “best” levels of performance and incentives seem to have minimized that concern.

Recommendations

Several recommendations that were made in the 2012 process evaluation report have been or are being implemented by the NB program. The program is continuing its outreach to smaller projects through the use of the Market Solutions offering and working with design-build projects;

however, the design-build status of projects is still not included in the tracking data. In addition, the recommendation that paperwork be streamlined to the extent possible appears to have resulted in fewer participant concerns expressed by 2014 participants regarding the complexity of the application process. Similarly, we heard no concerns regarding NB staff turnover, so any that is taking place is being handled smoothly. Recommendations that have not, to our knowledge, been implemented include:

- Supplementing the EDA incentive with a small bonus incentive for the architect, engineer, or green building consultant to prepare a follow-up report that details what measures were ultimately incorporated into the design and why.

- A mechanism for reinforcing participant awareness that they received design assistance if no early design meeting was held.

- To encourage innovation, offer a bonus incentive for the first 5 or 10 projects using an emerging energy efficient technology.

Based on the conclusions summarized above and other findings throughout the report, the following recommendations are designed to help ensure that NB program efforts remain on track and address any aspects of program delivery that may inhibit participation.

- Provide greater visibility to the Market Solutions offering, particularly among trade and design allies, but also among owners. Use of the good-better-best levels of performance and incentives appears to resonate with participants, and might be an effective way to expand awareness of Market Solutions.

- Because all aspects of energy efficiency increasingly emphasize a behavioral approach, it would be appropriate to provide NB participants with guidance on efficient building operations. Since Market Solutions provides a good-better-best set of criteria for design, it may be worth developing a similar set of good-better-best operational guidelines for each building type.

- Continue to use the EDA meetings to bring together all the members of the design team, but make the meetings more effective by:

    - Before the meeting, providing a summary of program options to whoever prepares the preliminary design so that those options are initially taken into account and can be more effectively discussed at the meeting.

    - Providing owners (and others) with a one-page summary of the key options under consideration at the meeting, as well as a summary of the outcome.

- As a parallel effort, consider providing an incentive for a post-completion project debriefing where the participants who attended the design meeting discuss the final as-built project and compare it to what was discussed initially. Such a discussion would provide valuable feedback, particularly to the allies who will be working on other, similar projects in the future.

Several of our recommendations are specifically related to allies, in part because the comparison of Dodge "players" data to program tracking data showed that there are multiple potential allies who are not currently touched by the program. Trade and design allies are very valuable in leveraging NB program resources, and Energy Trust needs to more systematically cultivate the ally relationship beyond firms who actually signed up with the program.

- Program tracking data should include, for each project, the names and contact information for all the key allies working on each project: architect, engineer, lighting designer, electrical contractor, mechanical contractor, general contractor, third party construction or project manager and green building consultant. At the time of program participation, this information is readily available, and while it may be more cumbersome to enter multiple contacts for each project, doing so would help build a much more complete database of firms who are touched by the program. While Energy Trust's own tracking system may not be structured to accommodate this information, the PMC for the program should be encouraged to provide it to Energy Trust periodically so that program and portfolio planners can improve their outreach and marketing efforts.

- Even firms that work on a participating project but do not interact directly with program staff or with program application forms or other paperwork should be included in Energy Trust's tracking data,, and perhaps be sent a "thank you for participating in the Energy Trust New Buildings program; contact us to learn more" card upon project completion.

- Allies should receive more information and education on program offerings. The lack of understanding of the Market Solutions offering among many allies is one indication of the need for this. More fundamentally, the NB program is inevitably going to change as the Oregon Code changes, so periodic information and training updates must be provided.

- Many ally organizations may have only a single employee who is knowledgeable about and active in the NB program, so a concerted effort should be made to have at least two people at each organization available to act as NB program contacts. The fact that the Oregon new construction market is rebounding suggests that more people will be changing jobs, and it is important that program ties to ally firms be maintained when key personnel leave.

- Energy Trust's willingness to listen to allies on the issue of the LED QPL helped avert the potential loss of participation and savings on this issue; actively seeking out feedback

from all groups of trade and design allies will ensure that any similar issues can be quickly identified and addressed.

- Many allies have been involved in multiple NB projects over the years, and it may be appropriate to recognize both the length and activity level of their involvement; perhaps with a special designation on the Energy Trust website.

Appendix: 2014 New Buildings Program Participant Satisfaction

March 3, 2015

From: Philippus Willems, PWP Inc.

To: Sarah Castor, Senior Evaluation Project Manager, Energy Trust of Oregon

Re: 2014 New Buildings Program Participant Satisfaction

The purpose of this memo is to present the results of a survey conducted to assess the satisfaction of customers who participated in the Energy Trust of Oregon New Buildings (NB) program in 2014.

Methodology

The evaluation team completed 37 surveys with owners or owners' representatives who participated in the NB program with a project completed in 2014. The survey instrument was designed to gather information about participant satisfaction with program processes, staff and incentives.

The sample for this task was developed from a list of projects that had closed in 2014, and targeted only those contacts identified as owners or owner's representatives. This task was complicated by the fact that the recently completed process evaluation of the 2013-14 program had surveyed current participants during 2014 to get their feedback on the Market Solutions offering while they were engaged with the program. All 2014 participants who had already been contacted were removed from the 2014 satisfaction sample, as were owners who had been contacted in the past year for other surveys. This left a total of 129 candidate projects, two of which had more than one owner contact. Surveys were conducted from February 2 through 23, 2015, and all potential respondents were called. A disposition of survey calls is presented below.

Table 1 – Call Disposition

Disposition	No.
Total calls	127
Completed	37
Bad/Wrong Number	3
Busy/no answer	5
Contact gone/retired/ unavailable	6
Left Voice Mail or message	69
Scheduled but did not show	5
Language barrier	2

Results

Participant satisfaction with each of several broad aspects of NB program participation is discussed below. Note that most of the differences in mean satisfaction for various aspects of program delivery are not statistically significantly. The 90% confidence interval around the lowest mean satisfaction response (4.50) is ±.20, while that around satisfaction with the program overall (4.78) is ±0.13, where the confidence interval is calculated as the standard error (standard deviation over the square root of n) times the critical t-value of 1.65. For aspects of program participation that some respondents may not have been involved in, the number of responses is smaller and the confidence interval wider.

Satisfaction with the program is high, with mean satisfaction levels for all aspects of program delivery averaging more than 4.5 on a 1 to 5 scale. Bearing in mind the limited statistical significance that can be attached to differences in results, we offer discussions of satisfaction with the various aspects of program delivery in sequence, starting with the application process.

As shown in Table 2, participants who received help preparing the application, as more than 80% did, were highly satisfied with that assistance, with 100% of respondents providing ratings of 4 or 5. The overall enrollment process and ease of preparing the application received only slightly lower ratings. One owner commented that "I like having the program, but the application was difficult for me." Another respondent felt that "the paperwork can be a little convoluted." Most respondents said their lighting designer or HVAC contractor had been responsible for using the calculators; the four who did use the lighting calculator reported no problems, with all four offering ratings of 4 or 5.

Table 2 – Satisfaction with Enrollment Process

Component of program delivery	Satisfaction: 1 to 5 scale		
	Mean	n	% 4 or 5
Enrollment Process			
Enrollment process and paperwork	4.50	36	86%
Help you received in preparing the application	4.93	30	100%
Ease of preparing the application	4.64	33	97%
Ease of using Lighting Calculator workbook	4.50	4	100%
Ease of using HVAC Calculator workbook	na	0	na

For those who sought approval from Energy Trust prior to purchasing equipment, results regarding satisfaction with the approval process are presented in Table 3, and show that satisfaction was generally high, and only very slightly less so for the amount of the incentive approved. It is worth noting the very high level of satisfaction with the post-installation inspection; of the 26 respondents who were aware of receiving such an inspection, 25 of 26 provided a rating of 5 and the remaining respondent provided a rating of 4.

Table 3 – Satisfaction with Approval Process

Component of program delivery	Satisfaction: 1 to 5 scale		
	Mean	n	% 4 or 5
Approval Process			
Information required regarding the project and equipment	4.62	21	95%
Timeliness of the approval process	4.62	21	90%
Amount of the incentive approved	4.57	21	95%
Post-installation inspection	4.96	26	100%

Participants were also very satisfied with the communication provided by program staff and with program staff overall. More than half of respondents (54%) said they communicated with program staff at least 6 times during the course of their project. As shown in Table 4, mean satisfaction was at least 4.76 for all questions, and all participants rated each component a 4 or 5.

Table 4 – Satisfaction with Communications

Component of program delivery	Satisfaction: 1 to 5 scale		
	Mean	n	% 4 or 5
Communication			
The ease of contacting Energy Trust or the NB Program	4.77	35	100%
The speed of the response	4.76	37	100%
How courteous program staff were	4.97	37	100%
How knowledgeable program staff were	4.89	37	100%
Your overall interaction with program staff	4.84	37	100%

Finally, participating owners were asked about their satisfaction with the measure or completed building for which they received an incentive and their overall satisfaction with the program, presented in Table 5. For both questions, satisfaction averaged 4.78 and ranged from 3 (one respondent) to 5, with all but one respondent (97.3%) providing 4 or 5 ratings. As noted earlier, the 90% confidence interval around the mean satisfaction with the program overall is $\pm$.13.

Table 5 – Overall Satisfaction

Component of program delivery	Satisfaction: 1 to 5 scale		
	Mean	n	% 4 or 5
Overall			
The building or measure for which you received an incentive	4.78	37	97%
Overall satisfaction with the New Buildings Program	4.78	37	97%

When respondents were asked why they had given the rating they did, most of the explanations

for overall satisfaction were very positive, and included such comments as:

- Staff was great at following up and helping with paperwork; without Energy Trust follow-up the project could have fallen off the radar.
- NB staff bent over backwards to work with the US Government procurement process.
- Staff was great to work with and very knowledgeable; the project delivered energy efficiency savings as promised.
- Program staff made it easy for a nontechnical person like me to participate.
- Going to high efficiency LEDs and HVAC equipment is the way to go; this program helps defray some of upfront costs to get there.
- The incentive was great and enabled us to install LED lighting that would not have been utilized on this project without the program.

The one rating of 3 was explained with the comment "the Existing Buildings program provides more generous incentives than the New Buildings program." Several respondents who rated their overall satisfaction as 4 offered the following explanations:

- The process can be a little opaque; you're not certain of the incentive you're going to get.
- Sometimes it's hard to know just where your project is in the process; it's a little obtuse.
- It seems at times they were a little understaffed and took a little long to get back to us.

When asked to offer any suggestions for improvements, in addition to repeating positive comments, participants offered the following.

- In the program documentation they should make it easier to identify the added value the program brings to the payback analysis calculations.
- For lighting, Energy Trust requires Energy Star fixtures, which are very difficult to find even for many LEDs that meet performance targets; they should just specify performance characteristics for lighting and not require Energy Star.
- Energy Trust should design a special process tailored to federal projects.

A final indicator of owner satisfaction with the NB program is the fact that almost half of respondents (49%) were repeat participants, with nearly 25% saying they had participated four or more times.