EVERGREEN ECONOMICS

PWP Inc.

2018 Existing Buildings Process Evaluation

FINAL REPORT

February 7, 2019

Table of Contents

Executive Summary

Energy Trust of Oregon's Existing Buildings program began in 2003 and serves Portland General Electric (PGE), Pacific Power, NW Natural, Cascade Natural Gas, and Avista commercial customers on eligible rate schedules. The program serves customers of these utilities in Oregon and NW Natural customers in Southwest Washington. ICF has served as the program management contractor (PMC) since 2013. Recent changes to the program include the Strategic Energy Management (SEM) track now being implemented by ICF instead of internally by Energy Trust staff and a more rigorous measure development and approval process.

There are five main program tracks, each described briefly below:

- **Lighting.** The Lighting track provides rebates to commercial customers for prescriptive lighting retrofits.
- **Standard.** The Standard track offers incentives to customers for a variety of end use measures including HVAC, water heating, insulation, compressed air, grocery equipment, data center upgrades, and lodging and food service equipment.
- **Custom.** Participants in the Custom track receive a site evaluation or technical analysis study conducted by an Allied Technical Assistance Contractor (ATAC) that identifies cost effective opportunities for improvements at the customer's site; customers may elect to install these improvements and receive a rebate.
- **Direct Install.** For the Direct Install track, the PMC has sub-contracted with SmartWatt Energy to provide walkthrough audits to identify lighting upgrade opportunities along with installations of a limited number of no-cost measures, including occupancy-sensing power strips.
- **Strategic Energy Management (SEM).** The SEM track is implemented with the assistance of SEM coaches, which help identify energy savings opportunities at the customer site, lead workshops for SEM cohorts, and help participants review and refine their SEM plan over time.

This evaluation was designed to address the following primary research objectives for the Existing Buildings program:

1. Obtain a complete view of the program and commercial market;
2. Determine how best to align the program to the commercial market;
3. Identify how the program can adapt to changing market conditions;
4. Document recent and planned program changes;
5. Document program delivery successes and challenges;

6. Assess the effectiveness of current program operations;
7. Determine how well the program is serving customers;
8. Identify opportunities for new measures, services, or target markets; and
9. Develop recommendations for program delivery improvements and program partner relationships.

This evaluation focused specifically on the five main program tracks (Standard, Custom, Lighting, Direct Install, and SEM) in Oregon and Southwest Washington for the 2017 and 2018 program years. Specific emphasis was placed on the Custom and SEM tracks of the program. Other elements of the Existing Buildings program, such as pilot studies and the Pay for Performance offering, were outside the scope of this evaluation.

To achieve the evaluation objectives described above, the Evergreen team conducted the following seven tasks:

1. Market Characterization and Program Penetration Analysis
2. SEM Participation Follow-Through Analysis
3. Program Staff Interviews
4. ATAC Interviews
5. Contractor Interviews
6. Participant Interviews
7. Non-Participant Interviews

Analysis of Energy Trust of Oregon program tracking data by the evaluation team, consisting of Evergreen Economics and PWP Inc., provided an overview of the types of projects and participants in the Existing Buildings program in the last two years.[1] In 2017 and 2018 (January to August), the largest number of projects were completed in the Lighting and Standard tracks. In terms of the types of measures installed, it follows that lighting makes up the majority of measures installed in 2017-2018, followed by "Other" measures (which includes custom project studies), food service equipment, and appliances. Participants are well distributed across the various commercial sectors, with the most participants in the restaurant, retail, warehouse, and office sectors. As would be expected, the vast majority of participants are located in the Portland Metro and Northwest Oregon regions, with the fewest number of participants in Eastern Oregon and Southwest Washington.

Our approach to each evaluation task is summarized below.

[1] The date range covered in the program data provided by Energy Trust is January 2003 through August 2018.

Market Characterization and Program Penetration Analysis

The objectives of the market characterization and program penetration analysis were to gain insights about the commercial market in Energy Trust of Oregon's service territory and determine what proportion of customers has been served by the programs. This was achieved through an analysis of participant and population data. The analysis included a characterization of the commercial market in terms of number of sites, electric load, and gas load by market sector and by customer size and participation status. We also examined the proportion of customers served in terms of number of sites, electric load, and gas load by market sector and customer size, as well as program penetration by program track for each sector and geographic region.

SEM Participation Follow-Through Analysis

There were two objectives of the SEM follow-through analysis. The first objective was to determine if and to what extent participating in the SEM track of the Existing Buildings program affects a commercial customer's likelihood of completing a capital project to install energy efficiency equipment through an Energy Trust program. The second objective, which was contingent on finding that SEM does positively affect the likelihood of completing an energy efficiency capital project through the Existing Buildings program, was to estimate the impact that SEM participation has on the size of the capital project as measured by energy saved through the project (electricity and/or gas) and the size of the incentive (measured in dollars) paid to the participant.

We utilized data provided by Energy Trust on capital projects completed by participants of the Existing Buildings program from 2012 through the first half of 2018, including those in the SEM track. To achieve the first objective of the SEM follow-through analysis—determining the impact that SEM has on the likelihood that a commercial customer will complete an energy efficiency capital project through the Existing Buildings program—we utilized logistic regression. We also used the Tobit regression model to achieve the second objective of this analysis, which was to estimate the impact of SEM on energy savings from energy efficiency capital projects and the financial incentives paid to customers for completing the projects.

Program Staff Interviews

One of the early tasks of the evaluation was to conduct interviews with program staff. This included staff at Energy Trust, ICF, Evergreen Consulting Group (no affiliation with Evergreen Economics), SmartWatt, and the SEM coaches. In total, we conducted 14 interviews with staff in various roles relating to the Existing Buildings program. A few of these interviews were conducted in-person in coordination with the project kick-off meeting, and the rest were conducted by phone. All interviews lasted approximately one hour. These interviews were used to review program direction, strategies, anticipated changes, and plans for the future. We also inquired about staff perspectives on what is

going well, what is challenging, where they see opportunities for the program, and how the evaluation research could best benefit them.

ATAC Interviews

We conducted interviews with Allied Technical Assistance Contractors (ATACs) to obtain market stakeholder insights and perspectives about the Custom program track and the markets with which they interact. Specific topics covered in the interviews included how studies are typically initiated, the study assignment process used by the PMC, trends in energy studies and the broader market, sectors with significant participation potential, perceptions of the customer experience, ATAC experience and satisfaction with the program, and suggestions for improvements to the program.

In total, we completed interviews with 13 ATACs that conducted Custom project studies in the past two years (2017 or 2018) and excluded ATACs who are trade allies that Energy Trust identified for invitation to a separate survey.

Contractor Interviews

We conducted interviews of trade ally and non-trade ally contractors to obtain market stakeholder insights and perspectives about the program and the markets with which they interact. Specific topics covered in the interviews included:

- Description of their business, including the type of work conducted and sectors served;
- Length and depth of involvement in the Existing Buildings program;
- Perceived benefits and drawbacks of being a trade ally (or *not* being a trade ally in the case of non-enrolled contractors);
- Satisfaction with program processes;
- Perceptions of the commercial market;
- Customer experience with the program;
- Feedback on program training and communications; and
- Any suggestions for improvements to the program.

We ultimately completed interviews with 31 trade allies and 9 non-trade allies. These included contractors that have completed projects in the Existing Buildings program in either 2017 or 2018, excluding trade allies identified by Energy Trust for a separate survey. The sample was designed to collect insights from a mix of trade allies and non-trade allies at various activity levels (in terms of number of projects completed), but we also attempted to reach contractors from various program tracks, with a focus on non-lighting or Custom track contractors whenever possible.

Participant Interviews and Surveys

Our approach to data collection with participants varied by the program track in which they participated. For the SEM track, we completed phone interviews with 17 participants, and offered them a $10 incentive as a thank you for their time. For the Custom track, we fielded an online survey and offered a varying level of incentives depending on their response effort: $5 for completing just the multiple choice questions online, $10 for completing the multiple choice questions and the follow-up open-ended questions online, or $15 for completing the multiple choice questions online and the follow-up open-ended questions via a short follow-up phone call. Ultimately, 60 Custom track participants completed the online survey. For the Lighting, Standard, and Direct Install program tracks, we fielded an online survey and had a total of 98 participants complete the survey across these three tracks (43 Lighting, 33 Standard, and 22 Direct Install).

Across all program tracks, the general topics covered in the phone interviews or online surveys included:

- Background information on the completed project (non-SEM only);
- Sources of awareness;
- Participant awareness of the program and available information material;
- Participation benefits and program value;
- Program processes;
- Energy management practices (SEM only);
- Impacts of participation;
- Additional efficiency improvements since participation; and
- Future opportunities.

Non-Participant Interviews

The Evergreen team conducted 28 telephone interviews with a stratified sample of non-participating customers. The sample frame was based on a dataset of program-eligible commercial sites provided by Energy Trust of Oregon and screened to eliminate past program participants and further narrowed to those sites for which InfoUSA data were available; the InfoUSA data provided a contact telephone number and a contact name. Targets by sector were based on the distribution of commercial businesses in the full population of organizations eligible for Existing Buildings program services.

Interview questions were divided into a short version for respondents who were willing to provide a few minutes of their time and an extended version for interviewees willing to allocate more time and provide more in-depth responses. The short interview gauged each interviewee's familiarity with Energy Trust of Oregon, their organization's size and function, and the interviewee's likelihood of pursuing energy savings opportunities for

their organization. In addition to covering the topics in the short interview, the extended interview gauged how interviewees identified energy programs available to them and their past experiences with energy efficiency programs, and asked interviewees if they had any suggestions for Energy Trust of Oregon to better serve and reach organizations like theirs. Interviewees who completed the short interview and qualified were offered a $15 incentive to continue with the extended version of the interview.

Evaluation Recommendations

Based on the findings of the evaluation tasks described above, we have made the following recommendations for the Existing Buildings program:

- Program Operations:
  - Provide faster turnaround on incentive check processing.
  - Collect and maintain better information on non-trade allies.
- Contractor Experience:
  - Provide a single point of contact for contractors with multi-measure projects.
  - Expand training for trade allies on Docusign.
  - Provide more training resources for new or occasional users of the Lighting Tool.
  - Increase contractor awareness of marketing resources and materials.
  - Use the *Insider Newsletter* to increase awareness of available program resources.
  - Identify a program "champion" at non-trade ally firms.
  - Promote alternative trade ally status to distributors, manufacturers, and retailers that do not provide installation services.
- SEM Track:
  - Promote capital upgrades to SEM program track participants beyond the first two years of involvement.
  - Continue utilizing participant success stories for SEM marketing.
  - Consider reducing the number of SEM coaches.
  - Set expectations with SEM participants about savings they expect to achieve.
  - Expand SEM program track participants' exposure to similar participants, even across cohorts.
- Custom Track:
  - Promote awareness and use of short Technical Analysis Studies (TASs).
  - Expand outreach to smaller customers in the Custom track.
  - Be transparent about the Custom project study assignment process.

- Make sure approved or assigned Custom project studies can be completed and evaluated in a timeframe consistent with the customer's project timeline.
- Better explain the project review and approval process to ATACs.
- Provide more feedback to ATACs on how they are performing.
- Improve turnaround on payment for studies.
- Focus marketing for the Custom track on building long-term relationships with customers.
- Maintain relationships with past Custom track participants and suggest emerging opportunities as they become available.

- Non-Participating Customer Outreach and Marketing:
  - Key sectors to focus on for future opportunities include Healthcare, Office, and Retail.
  - Increase outreach to businesses outside of the Portland Metro region if greater geographic equity is desired.
  - As savings opportunities dwindle among large businesses, look for opportunities to serve medium and small businesses.
  - Incorporating the customer's utility name into marketing materials to non-participants may be more effective than using the Energy Trust name alone.
  - Focus non-participant marketing and research at the organizational level rather than at the site level.

MEMO

Date: March 21, 2019
To: Board of Directors
From: Jay Olson, Sr. Program Manager, Commercial Sector
Kathleen Belkhayat, Program Manager, Commercial Sector
Dan Rubado, Evaluation Project Manager
Subject: Staff Response to 2018 Existing Buildings Process Evaluation

The 2018 process evaluation of the Existing Buildings program conducted by Evergreen Economics showed that the program is mature, well established in the market, and generally operating well. Customers and contractors reported that their experiences working with the program were positive overall, although they identified a variety of small improvements that could be made to program operations. The market characterization included in this report provides a lot of detailed information that is difficult to boil down, but it will be useful in identifying opportunities remaining in the market and guiding program targeting efforts. While there are no obvious program blind spots in terms of markets served and program services, the evaluation identified several underserved markets that the program will pursue in the coming years, using all available efficiency measures. These include smaller businesses throughout the state, buildings outside the Portland Metro area, and facilities in the healthcare, office, retail, and restaurant sectors. In addition, the program is continuing its diversity, equity, and inclusion efforts to reach small, rural, and diverse commercial customers, in part by enrolling more diverse trade allies.

Although the evaluation doesn't highlight it, the program is facing increasing challenges with cost-effectiveness and identifying new efficiency measures. In particular, the lighting and direct install tracks are facing worsening cost-effectiveness problems that will necessitate major overhauls in program design, or reductions in the variety of measures available and their savings, in the relatively near future. Compounding these issues, the evaluation was unable to identify any big new technologies that could fill the savings gap from the approaching reduction in lighting savings. To meet these challenges, the program must rapidly innovate and develop a variety of new measures and program strategies to continue to cost-effectively serve customers and reduce energy consumption in the commercial sector.

In an attempt to increase participation in the custom track, the program has experimented with shorter, more targeted, less expensive technical studies to identify custom energy saving opportunities. The hope is that these condensed technical studies will increase project volumes in the custom track by making it more feasible for smaller businesses to participate and increasing project completion rates for larger businesses with a shorter process. Additional effort will be required to achieve these results, and the evaluation indicated that many Allied Technical Assistance Contractors were unaware that the shorter study format was an option, and some didn't think that pursuing smaller customers would be productive. This may be in part because the shorter study format was first launched in 2018 and initially tested with only a small group of ATACs. In addition, ATACs tended to see opportunities in market sectors where they had spent the most time. These factors indicate that some ATACs may need more training and direction from the program to effectively reach more customers and identify new market opportunities. Further, the program needs to assess whether the ATAC model is the best way to expand custom track participation or if they should take a more active role in recruiting customers and identifying custom projects.

The Existing Buildings PMC assumed management of the commercial SEM track in 2017. There was an initial adjustment period as the PMC figured out how best to administer SEM, coordinate all of the participants and delivery contractors, and track and claim the energy savings. Many of the commercial SEM processes have evolved since the PMC took over, but SEM operations have continued to be smooth and customers are highly satisfied. SEM continues to be a highlight for the program and the number of participants and energy savings have continued to expand. In addition, the evaluation demonstrated that SEM provides benefits in addition to the operations and maintenance and behavioral savings identified through SEM. There is also a significant educational impact that has a positive impact on the program as a whole—SEM participant sites were 26 percent more likely to complete a capital efficiency project after more than one year of SEM, compared with non-participant sites. In addition, the projects they completed were significantly larger, in terms of energy savings, than projects completed by non-participants. This cross-pollinating effect should be considered when assessing SEM delivery costs.

1 Introduction

1.1 Program Background

Energy Trust of Oregon's Existing Buildings program began in 2003 and serves Portland General Electric (PGE), Pacific Power, NW Natural, Cascade Natural Gas, and Avista commercial customers on eligible rate schedules. The program serves customers of these utilities in Oregon and NW Natural customers in Southwest Washington. ICF has served as the program management contractor (PMC) since 2013. Recent changes to the program include the SEM track now being implemented by ICF instead of internally by Energy Trust staff and a more rigorous measure development and approval process.

There are five main program tracks, each described briefly below:

- **Lighting.** The Lighting track provides rebates to commercial customers for lighting retrofits. A variety of lighting products are eligible, including LED lamps, LED fixtures, linear tube LEDs, exit signs, exterior lighting, and lighting controls. All lighting projects utilize the Energy Trust Lighting Tool spreadsheet. Evergreen Consulting Group (no affiliation with Evergreen Economics) implements the Lighting track of the program as a sub-contractor to the PMC.
- **Standard.** The Standard track offers a variety of end use measures including HVAC, water heating, insulation, compressed air, grocery equipment, data center upgrades, and lodging and food service equipment. Savings for these measures are prescriptive in nature, and incentives are predetermined based on the type of equipment and efficiency level. ICF handles the implementation of this program track.
- **Custom.** Participants in the Custom track receive an energy assessment conducted by an Allied Technical Assistance Contractor (ATAC) that identifies cost effective opportunities for improvements at the customer's site. The three different types of site assessments available are the Technical Analysis Study (TAS) that provides an in-depth review of a specific measure or measures, the whole site evaluation that provides a more comprehensive but less in-depth review than the TAS, and the newer Short Study that is a less detailed version of the TAS that is often more appropriate for small or medium business customers. The participant may choose to pursue some or all of the recommended efficiency upgrades. Savings for Custom measures are based on engineering estimates calculated specifically for the site and installation specifications of each project. Incentives for Custom measures are calculated using pre-set rates of dollars per kWh or therm saved and capped at a percentage of the total measure cost, which varies depending on the measure fuel type.

- **Direct Install.** For the Direct Install track, the PMC has sub-contracted with SmartWatt Energy to provide walkthrough audits to identify lighting upgrade opportunities along with installations of a limited number of no-cost measures, including occupancy-sensing power strips. A number of pre-approved lighting technologies are offered at a reduced cost to the customer, and financing is available. The Direct Install offering is focused on small business customers, and targets select zip codes for outreach by SmartWatt and utility marketing or account representatives.
- **SEM.** The SEM track is implemented with the assistance of SEM coaches, which help identify energy savings opportunities at the customer site, lead workshops for SEM cohorts, and help participants review and refine their SEM plan over time. SEM participation is an ongoing process, and participants are typically involved in the program for multiple years. A recent change in the SEM program track occurred in 2016 when ICF took over the implementation of this track from Energy Trust. There are currently four SEM coaches: Alternative Energy Systems Consulting, Inc. (AESC), CLEAResult, Strategic Energy Group (SEG), and Stillwater Energy.

A summary of the electricity and natural gas savings for each of these five program tracks in the 2017 program year is shown below in Table 1.

Table 1: Existing Buildings Program Savings by Track (2017)

Program Track	2017 Electricity Savings (kWh)	2017 Natural Gas Savings (Therms)
Lighting	64,015,860	0
Standard	17,400,685	918,981
Custom	20,022,646	683,308
Direct Install	4,554,448	0
SEM	5,587,041	205,716
Total	**111,580,680**	**1,808,005**

Analysis of Energy Trust of Oregon program tracking data by the evaluation team, consisting of Evergreen Economics and PWP Inc., provides an overview of the types of projects and participants in the Existing Buildings program in the last two years.[2] Table 2

[2] The date range covered in the program data provided by Energy Trust is January 2003 through August 2018.

summarizes the number of completed projects in each of the program tracks for 2017 and 2018 (January through August). Lighting and Standard track projects make up the majority of completed projects in both years. "Other" projects include those in the street lighting and LED buydown categories within the Existing Buildings program. Note that some projects spanned multiple years, particularly for SEM, so the 2017 and 2018 Projects columns do not sum to match the Total Recent Projects column.

Table 2: Recent Completed Projects by Program Track

Program Track	2017 Projects	2018 Projects*	Total Recent Projects
Lighting	1,810	175	1,985
Standard	1,246	255	1,500
Custom	281	57	330
Direct Install	341	79	420
SEM	53	39	55
Other	43	74	117
Total	**3,774**	**679**	**4,407**

*2018 projects include those from January through August.

Table 3 summarizes all measures installed in the last two years by commercial customers through the Existing Buildings program. Lighting makes up the majority of measures installed in this period, followed by the "Other" measure category (which includes Custom project studies), food service equipment, and appliances.

Table 3: Recent Completed Measures by Measure Type

Measure Type	2017 Measures	2018 Measures*	Total Recent Measures
Appliance	605	53	658
Compressed Air	4	0	4
Data Center	1	0	1
Food Service	714	158	872
HVAC	290	25	315
Industrial Process	1	0	1
Lighting	6,134	930	7,064
Motors	52	6	58
O & M	159	42	201
Other	929	105	1,034
Process Cooling	11	2	13
Process Heating	8	0	8
Refrigeration	16	0	16
Services	0	26	26
Water Heating	63	13	76
Weatherization	47	5	52
Total	**9,034**	**1,365**	**10,399**

*2018 measures include those from January through August.

Table 4 and Table 5 summarize the number of participants by market sector and region in the last two years. Participants are well distributed across the various sectors, with the most participants in the restaurant, retail, warehouse, and office sectors. As would be expected, the vast majority of participants are located in the Portland Metro and Northwest Oregon regions, with the fewest number of participants in Eastern Oregon and Southwest Washington.

Table 4: Recent Participation by Market Sector

Market Sector	2017 Participants	2018 Participants*	Total Recent Participants
Government	110	29	139
Grocery	317	28	345
Healthcare	114	29	143
Higher Education	64	12	76
Hospitality	98	41	139
Industrial [3]	9	1	10
Laundry/Dry Cleaner	9	2	11
Multifamily/Residential	8	0	8
Office	401	72	473
Recreation	97	29	126
Religious	127	30	157
Repair	258	61	319
Restaurant	665	144	809
Retail	443	85	528
School K-12	232	63	295
Unknown Commercial	25	4	29
Warehouse	468	50	518
Total	**3,445**	**680**	**4,125**

*2018 participants include those with projects from January through August.

[3] The industrial sector is technically served by the Production Efficiency program; however, a small number of businesses classified as "industrial" have participated in the Existing Buildings program.

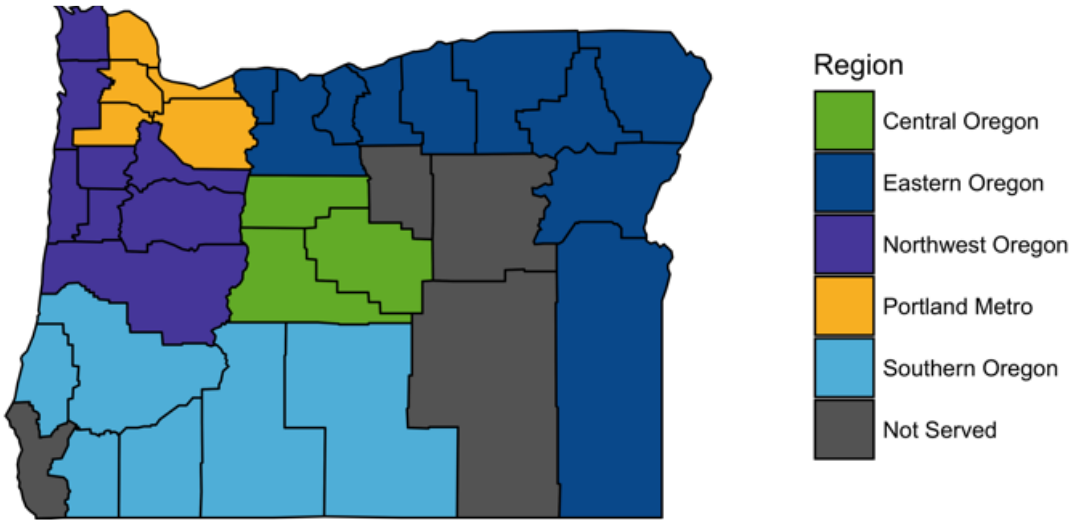
Table 5: Recent Participation by Region

Region	2017 Participants	2018 Participants*	Total Recent Participants
Central Oregon	196	48	244
Eastern Oregon	79	17	96
Northwest Oregon	727	116	843
Portland Metro	2,018	434	2,452
Southern Oregon	377	55	432
Southwest Washington	48	10	58
Total	**3,445**	**680**	**4,125**

*2018 participants include those with projects from January through August.

A map of the regions in Oregon served by Energy Trust is shown below in Figure 1. This figure does not include the three counties that Energy Trust serves in Southwest Washington: Clark, Klickitat, and Skamania. Four counties in Oregon that are outside of Energy Trust territory are highlighted in gray: Curry, Grant, Harney, and Wheeler. In addition to these four counties, Energy Trust does not serve Tillamook County. However, there are exceptions; projects from Tillamook County do appear in the data, so we have included it in the Northwest Oregon region in this figure.

Figure 1: Energy Trust of Oregon Regions



1.2 Evaluation Objectives

This evaluation was designed to address the following primary research objectives for the Existing Buildings program:

1. Obtain a complete view of the program and commercial market;
2. Determine how best to align the program to the commercial market;
3. Identify how the program can adapt to changing market conditions;
4. Document recent and planned program changes;
5. Document program delivery successes and challenges;
6. Assess the effectiveness of current program operations;
7. Determine how well the program is serving customers;
8. Identify opportunities for new measures, services, or target markets; and
9. Develop recommendations for program delivery improvements and program partner relationships.

This evaluation focused specifically on the five main program tracks (Standard, Custom, Lighting, Direct Install, and SEM) in Oregon and Southwest Washington for the 2017 and 2018 program years. Specific emphasis was placed on the Custom and SEM tracks of the program. Other elements of the Existing Buildings program, such as pilot studies and the Pay for Performance offering, were outside the scope of this evaluation.

2 Evaluation Methods

To achieve the evaluation objectives described above, the Evergreen team (Evergreen Economics and PWP Inc.) conducted the following seven tasks:

1. Market Characterization and Program Penetration Analysis
2. Strategic Energy Management (SEM) Participation Follow-Through Analysis
3. Program Staff Interviews
4. Allied Technical Assistance Contractor (ATAC) Interviews
5. Contractor Interviews
6. Participant Interviews
7. Non-Participant Interviews

The methods utilized for each of these tasks are described in the sections below.

2.1 Market Characterization and Program Penetration Analysis

2.1.1 Objectives of Analysis

The objectives of the market characterization and program penetration analysis were to gain insights about the commercial market in Energy Trust of Oregon's service territory and determine what proportion of customers has been served by the program. This was achieved through an analysis of participant and population data. The analysis included a characterization of the commercial market in terms of number of sites, electric usage, and gas usage by market sector and by customer size and participation status. We also examined the proportion of customers served in terms of number of sites, electric usage, and gas usage by market sector and customer size, as well as program penetration by program track for each sector and geographic region.

2.1.2 Description of Data

Energy Trust provided an integrated dataset of information on all known commercial sites in Energy Trust's service territory. This dataset combined Energy Trust's Customer Relationship Management (CRM) data, utility customer information (UCI) data, Project Tracking data, and third-party data from CoStar and InfoUSA. This dataset contained information on site name, site address, electric and gas provider, geographic region, annual energy usage in 2017 (kWh and therms), market sector, NAICS code, and participation status. This integrated dataset provided by Energy Trust was the main source of information used for the analysis presented in this section. Energy Trust also provided a more detailed dataset from its Project Tracking system that was used for this analysis and included information such as project name, project address, installation date, measure description, measure savings, company name, and installation contractor

information. In addition to these data provided by Energy Trust, we utilized data from the Oregon Employment Department on the number of businesses by sector as a point of comparison, and to weight our results in order to provide more useful findings.[4] To accurately compare the integrated dataset provided by Energy Trust to the Oregon Employment Department data, which are organized in terms of number of businesses, the analysis was conducted at the site level.

2.1.3 Analysis Methods

Using the data described above, the market characterization and program penetration analysis was conducted in terms of individual sites. The analysis was conducted with individual sites as the unit rather than businesses or buildings partly because Energy Trust data are structured this way but also because an individual site is the level at which most customers would participate. For example, a single business with multiple locations (e.g., a chain restaurant) will be treated as multiple sites in this analysis. A single building that contains multiple businesses (e.g., an office building or strip mall) would be counted as the multiple sites—one for each business that operates within the building.

On this site-level basis, we first characterized the total commercial building market size in terms of number of sites and annual electric and gas loads by market sector. The total market was broken out into recent program participants, past program participants, and non-participants. We also analyzed the Existing Buildings program's market penetration overall and by market segment to determine the proportion of customers served in terms of number of sites, electric and gas usage, and the overall percent reduction in usage achieved by the program. The proportion of electric or gas usage served was calculated using the 2017 energy usage data available in the integrated dataset. If a customer had a project with either electricity or gas savings between 2003 and August 2018, they were considered to have been "served" by the program.

We conducted this analysis for the Existing Buildings program overall, as well as segmented by market sector, program track, geographic region, recent/past participation, and energy usage. Recent participation was defined to be any project in the data with a "MinRecognizedDate" in the project tracking data on or since January 1, 2017. Past participation was defined to be any projects with a "MinRecognizedDate" prior to that. Energy usage categories were defined based on electric or natural gas usage as shown in Table 6. For customers that had both gas and electric usage in the data, their energy usage category was determined to be the larger of the two categories.

[4] Oregon Employment Department, Employment and Wages by Industry (QCEW), https://www.qualityinfo.org/ed-ewind/?at=1&t1=0~4101000000~00~5~0000~00~00000~2018~01

Table 6: Customer Energy Usage Categories for Market Analysis

Fuel Type	Energy Usage Category	Definition (2017 Annual Usage)
Electricity	High	500,000 kWh and above
	Medium	50,000 up to 500,000 kWh
	Low	Less than 50,000 kWh
Natural Gas	High	50,000 therms and above
	Medium	10,000 up to 50,000 therms
	Low	Less than 10,000 therms

2.2 Strategic Energy Management Participation Follow-Through Analysis

There were two objectives of the SEM follow-through analysis. The first objective was to determine if and to what extent participating in the SEM track of the Existing Buildings program affects a commercial customer's likelihood of completing a capital project to install energy efficiency equipment through the Existing Buildings program.

The second objective, which was contingent on finding that SEM does positively affect the likelihood of completing an energy efficiency capital project through the Existing Buildings program, was to estimate the impact that SEM participation has on the size of the capital project as measured by energy saved through the project (electricity and/or gas) and the size of the incentive (measured in dollars) paid to the participant.

We provide a detailed description of the data used for the SEM follow-through analysis, the specifications of the statistical models, and interpretation of the findings in Chapter 4.

2.3 Program Staff Interviews

One of the early tasks in the evaluation was to conduct interviews with program staff. This included staff at Energy Trust, ICF, Evergreen Consulting Group, SmartWatt, and the SEM coaches. In total, we conducted 14 interviews with staff in various roles relating to the Existing Buildings program. A few of these interviews were conducted in-person in coordination with the project kick-off meeting, and the rest were conducted by phone. Each interview lasted approximately one hour.

These interviews were used to review program direction, strategies, anticipated changes, and plans for the future. We also inquired about staff perspectives on what is going well,

what is challenging, where they see opportunities for the program, and how the evaluation research could best benefit them.

2.4 Allied Technical Assistance Contractor Interviews

We conducted interviews with Allied Technical Assistance Contractors (ATACs) to obtain market stakeholder insights and perspectives about the Custom program track and the markets with which they interact. Specific topics covered in the interviews included how studies are typically initiated, the study assignment process used by the program management contractor (PMC), trends in energy studies and the broader market, sectors with significant participation potential, perceptions of the customer experience, ATAC experience and satisfaction with the program, and suggestions for improvements to the program.

Our sample for ATAC interviews, summarized in Table 7, was limited to ATACs who conducted Custom project studies in the past two years (2017 or 2018) and excluded ATACs who are trade allies that Energy Trust has identified for invitation to a separate survey. The sample was stratified by program activity level (based on the number of studies completed in 2017 and 2018), which included highly active, moderately active, and lightly active ATACs. We aimed to complete 11 total interviews and exceeded our goal by completing 13 interviews with ATACs.

Table 7: ATAC Interview Allocation

Activity Level	Number of ATACs	Final Sample	Interview Target	Completed Interviews
High (More than 10 studies)	6	5	3	5
Moderate (4 to 10 studies)	7	6	3	3
Light (1 to 3 studies)	15	12	5	5
Total	**28**	**23**	**11**	**13**

For interview recruitment, we coordinated with PMC staff to have them notify the sample of ATACs that we would be contacting them for a short phone interview. Once PMC staff had notified the ATACs, we utilized email and phone calls to recruit ATACs for interviews.

2.5 Contractor Interviews

We conducted interviews of trade ally and non-trade ally contractors to obtain market stakeholder insights and perspectives about the program and the markets with which they interact. Specific topics covered in the interviews included:

- Description of their business, including the type of work conducted and sectors served;
- Length and depth of involvement in the Existing Buildings program;
- Perceived benefits and drawbacks of being a trade ally (or *not* being a trade ally in the case of non-enrolled contractors);
- Satisfaction with program processes;
- Perceptions of the commercial market;
- Customer experience with the program;
- Feedback on program training and communications; and
- Any suggestions for improvements to the program.

Our original sample, interview targets, and interview completes are shown in Table 8. This summary includes contractors that have completed projects in the Existing Buildings program in either 2017 or 2018, and excludes any trade allies identified by Energy Trust for a separate survey. The sample was designed to collect insights from a mix of trade allies and non-trade allies at various activity levels, but we also attempted to reach contractors from various program tracks, with a focus on non-lighting or Custom track contractors whenever possible. The targeted number of completes was subject to the availability of sufficient sample points, and we found in conducting interviews with non-trade allies that there were far fewer non-trade allies reflected in the data than anticipated. In addition, a number of contractors believed to be non-trade allies turned out to be enrolled trade allies after additional research. More discussion of the issues surrounding data and the available sample for non-trade allies is included in the Interview Findings section.

Table 8: Contractor Interview Allocation

Contractor Type	Activity Level*	Number of Contractors	Available Sample	Original Interview Target	Interviews Completed
Trade Ally	High	9	9	5	8
Trade Ally	Moderate	14	11	7	7
Trade Ally	Light	26	26	10	16
Non-Trade Ally	High	33	7	12	6
Non-Trade Ally	Moderate	56	16	13	2
Non-Trade Ally	Light	1,260	131	13	1
Total		**1,398**	**200**	**60**	**40**

*Contractor activity level was classified as follows: high, more than 10 projects in 2017 or 2018; moderate, 3 to 10 projects in 2017 or 2018; light, 1 or 2 projects in 2017 or 2018.

The interviews were semi-structured, capturing both quantitative and qualitative data. Trade ally interviews were structured to allow for more depth and exploration of satisfaction with program processes and support as well as market topics, and most interviews lasted 25 to 35 minutes. Interviews with non-trade allies were somewhat shorter since these contractors have less frequent interactions with the PMC and the program. Results from these interviews were analyzed by activity level and by primary program track, whenever possible.

For interview recruitment, we coordinated with PMC staff to have them notify the sample of trade allies that we would be contacting them for a short phone interview. Once PMC staff notified trade allies, we utilized email and phone calls to recruit both trade allies and non-trade allies for interviews.

2.6 Participant Interviews and Surveys

Our approach to data collection with participants varied by the program track in which they participated. The remainder of this section describes the data collection methods used for the SEM track, the Custom track, and the Lighting, Standard, and Direct Install tracks together.

2.6.1 Strategic Energy Management Track

The Evergreen team conducted telephone interviews in October 2018 for participants in the Existing Buildings program's SEM track.[5] The specific topics covered in the interviews included:

- Sources of awareness;
- Participation benefits and program value;
- Program processes;
- Energy management practices;
- Impacts of participation; and
- Future opportunities.

Participants were originally categorized as either recent participants (participated in SEM in the last two years) or past participants (participated in SEM more than two years ago, going back to 2012). However, due to the lack of recall among older past participants, the recruitment efforts shifted to focus outreach exclusively on participants in the last five years.

For recruitment, we contacted potential interview participants via email and phone calls up to three times and offered an incentive of $10 for completing the 25- to 30-minute phone interview.

The goal was to complete 25 interviews with recent participants and 5 interviews with past participants for a total of 30 interviews. As shown in Table 9, 57 participants were available for recruitment;[6] we called and emailed them to encourage participation in the interviews. In total, 17 total participants opted to complete either a phone interview (12) or an online survey (5), 16 of those being recent participants and 1 being a past participant.

[5] The initial strategy was to field web surveys, but due to lack of response and response detail, the Evergreen team opted to conduct phone interviews with SEM participants.

[6] Some additional SEM participants had been set aside for impact evaluation follow-ups or allocated to process evaluation follow-ups for other tracks.

Table 9: SEM Track Respondents by Participation Timing

Participation Timing	Available Sample	Unable to Reach	Reached	Completed Interviews
Past SEM	10	9	1	1
Recent SEM	47	28	19	16
Total	**57**	**37**	**20**	**17**

Table 10 shows the number of completed interviews by market sector, as well as the total number of contacts in the sample from each business type. Table 11 shows the completed interviews by Energy Trust of Oregon region.

Table 10: SEM Track Completed Interviews and Sample by Sector

Sector	Completed Interviews	Available Sample	Percentage of Completes	Percentage of Sample
Government	4	11	24%	20%
Grocery	1	2	6%	4%
Healthcare	3	5	18%	9%
Higher Education	2	10	12%	16%
Office	3	22	18%	38%
Recreation	1	4	6%	7%
School K-12	3	3	18%	6%
Total	**17**	**57**	**100%**	**100%**

Table 11: SEM Track Completed Interviews and Sample by Region

Region	Completed Interviews	Available Sample	Percentage of Completes	Percentage of Sample
Central Oregon	6	7	35%	12%
Eastern Oregon	0	1	0%	2%
Northwest Oregon	2	6	12%	11%
Portland Metro	9	38	53%	67%
Southern Oregon	0	5	0%	9%
Total	**17**	**57**	**100%**	**100%**

2.6.2 Custom Track

A participant web survey—implemented via the online survey platform Qualtrics—was fielded in October 2018 for participants in the Existing Buildings program's Custom track. The surveys were designed to provide insight into the participant experience with the Existing Buildings program. Specific topics included:

- Background information on the completed project;
- Participant awareness of the program and available information material;
- Program benefits and processes;
- Impacts of the program audits and assessments;
- Additional efficiency improvements made since participation; and
- Impacts of organizational services supporting efficiency investments.

Participants were originally categorized as either recent participants (completed a Custom track project in the last two years) or past participants (completed a Custom track project more than two years ago, going back to 2012). However, due to the lack of recall among initial past participants, the recruitment efforts shifted to focus outreach exclusively on participants in the last five years.

Potential respondents were contacted via email up to three times and were offered varying levels of incentives depending on their response effort: $5 for completing just the multiple choice questions, $10 for completing the multiple choice questions and the follow-up open-ended questions via Qualtrics, or $15 for completing the multiple choice questions and the follow-up open-ended questions via a short phone call.[7]

As shown in Table 12, 73 participants engaged with the web survey; however, only 60 participants actually completed the survey (by completing at least the majority of multiple choice questions), as the remaining 13 indicated during the initial screening that they did not recall the project and could not answer the remaining survey questions. The initial goal was to complete 40 surveys with recent participants and 20 surveys with past participants for a total of 60. Ideally, participants would opt to complete the multiple-choice and follow-up open-ended questions to help provide more thorough context regarding their program experience. However, 61 percent of the participants that completed the survey said they would prefer to just answer the multiple choice portions,

[7] The initial incentive strategy did not include a $5 incentive for completing just the multiple choice questions. Evergreen Economics implemented this strategy approximately halfway through the recruitment process to help increase the response rate.

while an additional 14 percent said they would like to follow up with a phone call and then did not respond to contact attempts by the Evergreen team.

Table 12: Summary of Custom Track Respondents by Completion Type

	Respondents		Completions			
Participation Timing	Total	Insufficient Recall	Total	Partial	Full	Full + Optional Open-Ended
Past Custom	30	7	23	2	18	3
Recent Custom	43	6	37	2	29	6
Total	**73**	**13**	**60**	**4**	**47**	**9**

Table 13 shows the number of completed surveys across the various market sectors, as well as the total number of contacts in the sample from each business type. Table 14 shows the completed surveys by Energy Trust of Oregon region.

Table 13: Custom Track Completed Surveys and Sample by Sector

Sector	Completed Surveys	Available Sample	Percentage of Completes	Percentage of Sample
Government	5	61	8%	6%
Grocery	1	20	2%	2%
Healthcare	3	75	5%	8%
Higher Education	6	18	10%	2%
Hospitality	4	48	7%	5%
Industrial	0	16	0%	2%
Laundry/Dry Cleaner	4	5	7%	1%
Multifamily	0	23	0%	2%
Office	12	221	20%	22%
Recreation	4	37	7%	4%
Religious	7	72	12%	7%
Repair	0	19	0%	2%
Restaurant	2	91	3%	9%
Retail	1	72	2%	7%
School K-12	10	92	17%	9%
Unknown	1	86	2%	9%
Warehouse	0	31	0%	3%
Total	**60**	**987**	**100%**	**100%**

Table 14: Custom Track Survey Completes and Sample by Region

Region	Completed Surveys	Available Sample	Percentage of Completes	Percentage of Sample
Central Oregon	3	47	5%	5%
Eastern Oregon	4	33	7%	3%
Northwest Oregon	15	176	25%	18%
Portland Metro	30	583	50%	59%
Southern Oregon	4	123	7%	12%
Southwest Washington	4	24	7%	2%
Unknown	0	1	0%	0%
Total	**60**	**987**	**100%**	**100%**

Given the relative match between the completed sample and the underlying population, there was no need to weight survey results for Custom participants presented in this report.

2.6.3 Lighting, Standard, and Direct Install Tracks

We completed a total of 98 surveys with participants across the Lighting, Standard, and Direct Install program tracks. The surveys were completed through an online survey administered via Qualtrics, similar to the Custom survey described above. Specific topics were also similar to the Custom survey and included:

- Background information on the completed project;
- Participant awareness of the program and available information material;
- Program benefits and processes;
- Impacts on the program audits and assessments;
- Additional efficiency improvements since participation; and
- Impacts of organizational services supporting efficiency investments.

Participants were originally categorized as either recent participants (completed a project in the last two years) or past participants (completed a project more than two years ago, going back to 2012). However, due to the lack of recall among initial past participants, the recruitment efforts shifted to focus exclusively on participants in the last five years. We initially aimed to complete 70 surveys; however, due to the comparatively large samples for each of these tracks and the challenges in reaching our targets for SEM interviews and Custom surveys, we aimed to exceed our initial target for the Lighting, Standard, and

Direct Install tracks and did so by completing a total of 98 surveys. Table 15 summarizes the number of completed surveys, the initial targets, the amount of distributed survey invites, and the total sample points across the three program tracks. Table 16 and Table 17 summarize the number and percentage of completed surveys and available sample by sector and region.

Table 15: Summary of Lighting, Standard, and Direct Install Participant Surveys and Sample

Program Track	Completed Surveys	Target	Survey Invitations Sent	Available Sample
Lighting	43	40	600	2,702
Standard	33	20	475	2,123
Direct Install	22	10	275	588
Total	**98**	**70**	**1,350**	**5,413**

Table 16: Lighting, Standard and Direct Install Survey Completes and Sample by Sector

Sector	Completed Surveys	Available Sample	Percentage of Completes	Percentage of Sample
Government	3	116	3%	2%
Grocery	0	197	0%	4%
Healthcare	2	172	2%	3%
Higher Education	0	32	0%	1%
Hospitality	1	163	1%	3%
Industrial	0	9	0%	0%
Laundry/Dry Cleaner	1	27	1%	0%
Multifamily	0	8	0%	0%
Office	15	630	15%	12%
Recreation	4	161	4%	3%
Religious	9	311	9%	6%
Repair	10	436	10%	8%
Restaurant	16	1,452	16%	27%
Retail	22	960	22%	18%
School K-12	3	110	3%	2%
Unknown	3	62	3%	1%
Warehouse	9	567	9%	10%
Total	**98**	**5,413**	**100%**	**100%**

Table 17: Lighting, Standard, and Direct Install Survey Completes and Sample by Region

Region	Completed Surveys	Available Sample	Percentage of Completes	Percentage of Sample
Central Oregon	8	301	8%	6%
Eastern Oregon	3	136	3%	3%
Northwest Oregon	30	1,105	31%	20%
Portland Metro	48	3,197	49%	59%
Southern Oregon	7	560	7%	10%
Southwest Washington	1	113	1%	2%
Unknown	1	1	1%	1%
Total	**98**	**5,413**	**100%**	**100%**

For recruitment, we sent participants an email with a link to the online survey followed by a reminder email to respondents that had not completed the survey approximately 24 hours after the initial outreach. Recruitment emails were sent to waves of about 200 participants to start, followed by smaller, more targeted waves of about 50 participants each once initial completion targets were met. Participants in these tracks were not offered an incentive for completing the online survey.

2.7 Non-Participant Interviews

The Evergreen evaluation team conducted 28 telephone interviews with a stratified sample of non-participating customers in October and November 2018**.** Table 18 lists the initial targets and completed interviews by sector, and Table 20 shows the geographic distribution of the sample and completed interviews. We discuss challenges in reaching non-participants and lessons learned in the Interview Findings section of this report.

The sample frame was based on a dataset of program-eligible commercial sites provided by Energy Trust of Oregon and screened to eliminate past program participants and further narrowed to those sites for which InfoUSA data were available; the InfoUSA data provided a contact telephone number and a contact name. InfoUSA data were available for about 15 percent of sites. Targets by sector were based on the distribution of commercial subsectors in the full population of organizations eligible for Existing Buildings program services and their relative energy consumption.

Initial targets were divided into small, medium, and large sites (based on site energy consumption), but the evaluation team dropped that distinction due to challenges in reaching sampled organizations. Overall, the distribution of interviewed organizations

included a relatively even mix of small, medium, and large energy users (based on the usage of the sampled site).

Recruitment consisted of multiple calls to the telephone number associated with the sampled organization and location in InfoUSA. Interviewers cold-called contact numbers for organizations in each of the 11 sectors. After making initial contact with the organizations, interviewers asked to speak with the individual at each organization responsible for making energy equipment decisions. Once the decision maker was reached, interviewers proceeded with the interview process.

Interview questions were divided into a short version for respondents who were willing to provide a few minutes of their time and an extended version for interviewees willing to allocate more time and provide more in-depth responses. The short interview gauged each interviewee's familiarity with Energy Trust of Oregon, their organization's size and function, and the interviewee's likelihood of pursuing energy savings opportunities for their organization.

In addition to covering the topics in the short interview, the extended interview gauged how interviewees identified energy programs available to them and their past experiences with energy efficiency programs, and asked interviewees if they had any suggestions for Energy Trust of Oregon to better serve and reach organizations like theirs. Interviewees who completed the short interview and qualified were offered a $15 incentive to continue with the extended version of the interview.

Table 18: Non-Participant Completed Interviews and Sample by Sector

Sector	Completed Interviews	Target	Percentage of Interviews	Percentage of Target
Hotel	3	3	11%	100%
Medical	3	10	11%	30%
Office	2	10	7%	20%
Public	3	4	11%	75%
Recreation	1	4	4%	25%
Religious	6	6	21%	100%
Repair	2	6	7%	33%
Restaurant	0	8	0%	0%
Retail	0	10	0%	0%
School	6	6	21%	100%
Warehouse	2	3	7%	67%
Total	**28**	**70**	**100%**	**40%**

Table 19: Non-Participant Interview Sample and Completions by Region

Region	Completed Interviews	Available Sample	Percentage of Completes	Percentage of Sample
Central Oregon	2	192	7%	6%
Eastern Oregon	4	280	14%	9%
Northwest Oregon	6	735	21%	23%
Portland Metro	10	1,105	36%	35%
Southern Oregon	6	827	21%	26%
Southwest Washington[1]	0	0	0%	0%
Total	**28**	**3,139**	**100%**	**100%**

[1] We did not sample southwest Washington for the non-participant interviews.

3 Market and Program Penetration Analysis Results

Table 20 below shows the distribution of commercial customer sites by business sector, energy usage, and participation status. Sector information was determined based on the field "MarketType" in Energy Trust's CRM data and then filled in based on NAICS code if CRM data were not available. Energy usage information was based on annual energy usage data for 2017.[8]

The row for the unknown commercial sector shows that the vast majority of non-participants do not have business sector information in the data, and as a result were assigned to an "unknown" category. More information is known about participants due to their involvement in the program, and as a result, business sector information is well populated for the majority of participants.

[8] As described in the Evaluation Methods section, energy usage categories based on annual kWh usage were Low – less than 50,000 kWh, Medium – 50,000 to less than 500,000 kWh, and High – 500,000 kWh or more. Energy usage categories based on annual therm usage were Low – less than 10,000 therms, Medium – 10,000 to less than 50,000 therms, and High – 50,000 therms or more. When customers had both electric and gas usage available in the data, their usage category was determined to be the higher of the two categories.

Table 20: Summary of Commercial Sites by Sector, Participation Status, and Energy Usage – Unweighted, January 2003 – August 2018

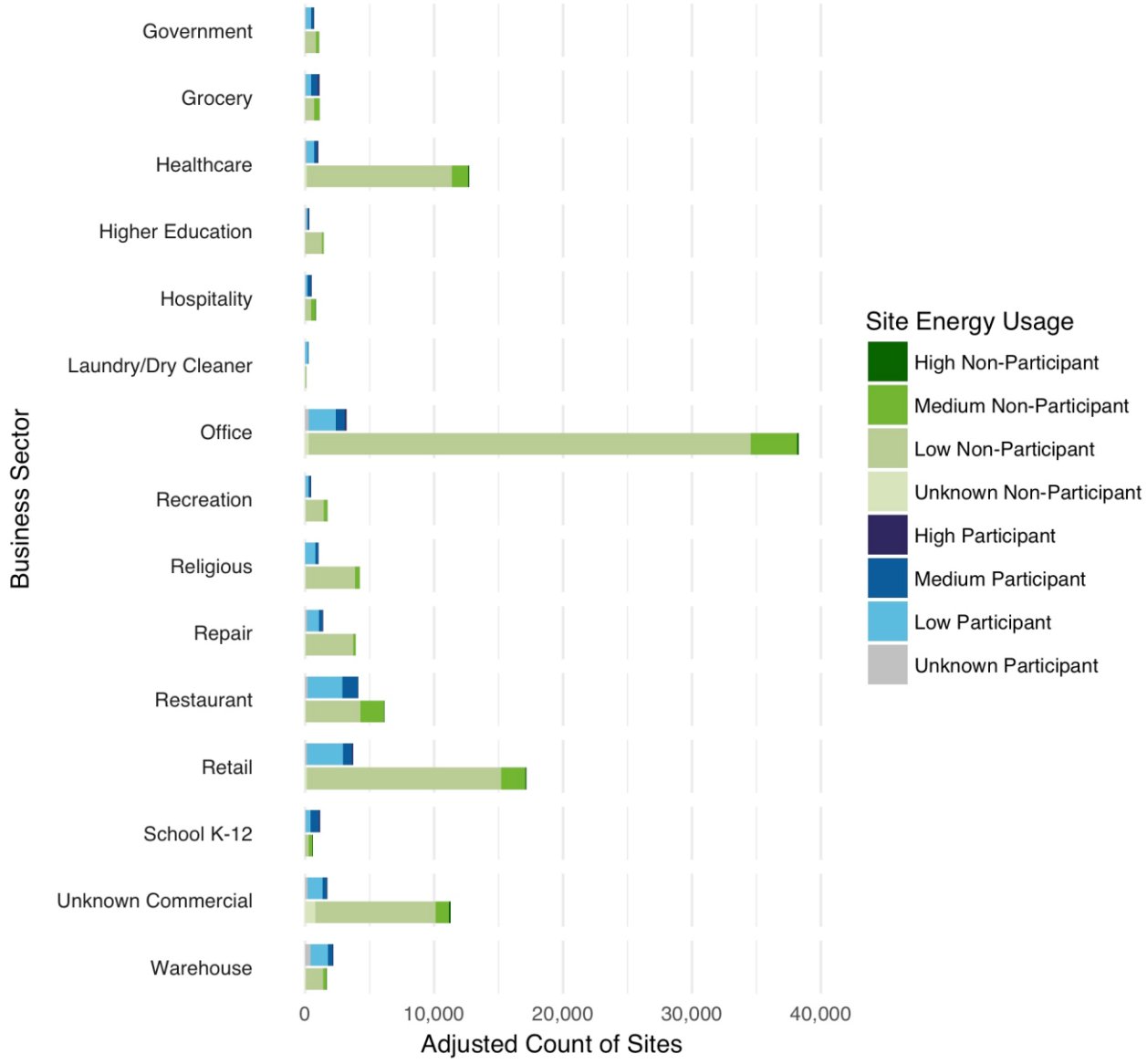
Sector	Total Commercial Sites	Total Participants	Total Non-Participants	Total High Usage Sites	Total Medium Usage Sites	Total Low Usage Sites	Total Unknown Usage Sites
Government	1,069	707	362	59	270	711	29
Grocery	1,610	1,129	481	162	685	714	49
Healthcare	3,592	1,006	2,586	116	474	2,885	117
Higher Education	497	299	198	31	84	280	102
Hospitality	834	523	311	71	391	341	31
Laundry/Dry Cleaner	331	262	69	2	64	257	8
Office	6,732	3,213	3,519	164	994	5,281	293
Recreation	813	470	343	52	195	515	51
Religious	2,365	1,044	1,321	22	334	1,990	19
Repair	3,628	1,382	2,246	16	414	3,060	138
Restaurant	6,224	4,104	2,120	38	1,829	4,181	176
Retail	7,154	3,709	3,445	108	1,077	5,817	152
School K-12	1,393	1,183	210	137	753	449	54
Unknown Commercial	114,446	1,731	112,715	1,001	10,746	94,598	8,101
Warehouse	2,483	2,173	310	33	412	1,623	415
Total	**153,171**	**22,935**	**130,236**	**2,012**	**18,722**	**122,702**	**9,735**
Percentage of Total Sites	**100%**	**15%**	**85%**	**1%**	**12%**	**80%**	**6%**

Due to the fact that business sector information was frequently unavailable for non-participants, we utilized Oregon Employment Department information on the distribution of businesses by sector (based on NAICS code) to weight our analysis. We relied on the assumption that the non-participant population would have a similar distribution across sectors compared to the overall population of commercial businesses. We then weighted the Energy Trust non-participants that had sector information according to the known distribution of commercial sectors in the general population. This weighting scheme means the count of non-participant sites by sector more accurately reflects the distribution of the population, but is not exact. As a result, the numbers of non-participants shown in the tables and charts in the remainder of this section are approximate values. The result of this weighting is shown in Table 21 and Figure 2. The table is simply a re-creation of the one above, except with the weighted results. The distribution of non-participant sites in this table is more in line with the commercial population, and fewer sites are classified as Unknown Commercial. Figure 2 shows that the largest numbers of participants have been in the restaurant, retail, and office sectors but that there are still a large number of sites in the office, retail, and healthcare sectors that have yet to be reached. The unknown commercial sector also makes up a significant number of non-participants.

Table 21: Summary of Commercial Sites by Sector, Participation Status, and Energy Usage – Weighted, January 2003 – August 2018

Sector	Total Commercial Sites	Total Participants	Total Non-Participants	Total High Usage Sites	Total Medium Usage Sites	Total Small Usage Sites	Total Unknown Usage Sites
Government	1,788	707	1,081	71	409	1,271	37
Grocery	2,236	1,129	1,107	170	902	1,108	56
Healthcare	13,750	1,006	12,744	214	1,452	11,873	211
Higher Education	1,729	299	1,430	31	196	1,388	114
Hospitality	1,358	523	835	86	597	634	41
Laundry/Dry Cleaner	331	262	69	2	64	257	8
Office	41,485	3,213	38,272	283	4,243	36,429	530
Recreation	2,208	470	1,738	64	431	1,646	67
Religious	5,271	1,044	4,227	24	565	4,645	37
Repair	5,306	1,382	3,924	20	501	4,631	154
Restaurant	10,238	4,104	6,134	61	3,029	6,945	203
Retail	20,868	3,709	17,159	168	2,598	17,843	259
School K-12	1,803	1,183	620	166	958	623	56
Unknown Commercial	12,992	1,731	11,261	138	1,361	10,531	962
Warehouse	3,825	2,173	1,652	42	615	2,736	432
Total	**125,188**	**22,935**	**102,253**	**1,540**	**17,921**	**102,560**	**3,167**
Percentage of Total Sites	**100%**	**18%**	**82%**	**1%**	**14%**	**82%**	**3%**

Figure 2: Distribution of Commercial Sites by Sector, Energy Usage, and Participation Status



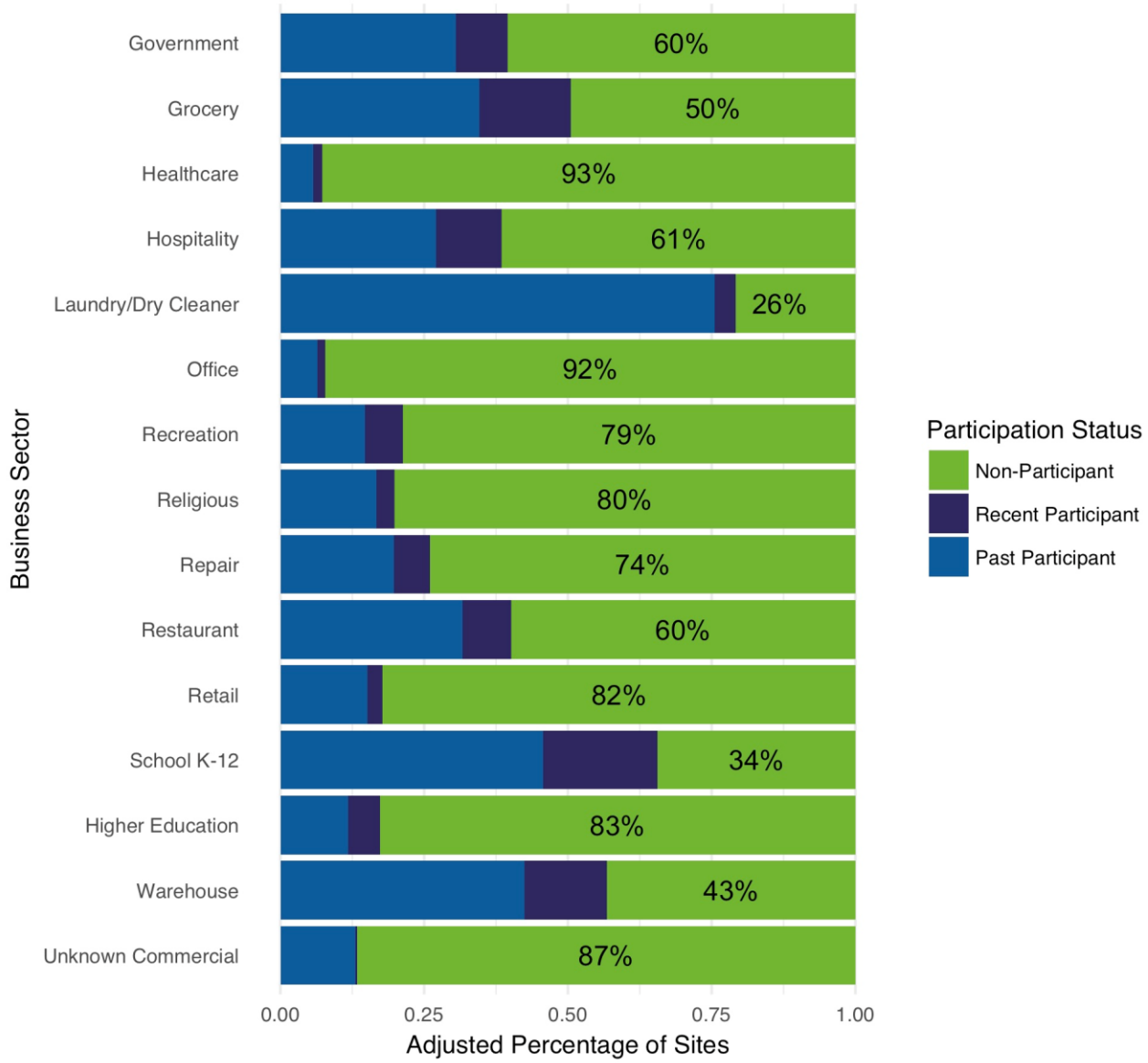
To delve deeper into the number of sites served by the program and those remaining to be reached, we summarized participation status by business sector. This analysis can be seen in Table 22 and Figure 3 and shows that the largest number of non-participants are in the office, retail, and healthcare sectors. The percentages shown in Figure 3 represent the percentage of sites in each sector that are non-participants. Sectors in which a relatively sizeable proportion of sites have already participated include the laundry/dry cleaners, K-12 schools, and warehouse sectors. The program has reached a fairly high proportion of

restaurants, but there are still over 6,000 sites in this sector that have not participated. In this analysis, recent participants are defined as those with a project that has a "MinRecognizedDate" in the project tracking data between January 1, 2017 and August 2018, and past participants are those with projects prior to January 1, 2017.

Table 22: Count of Sites by Participation Status and Sector, January 2003 – August 2018

Sector	Past Participants	Recent Participants	Total Participants	Total Non-Participants	Total Sites
Government	545	162	707	1,081	1,788
Grocery	773	356	1,129	1,107	2,236
Healthcare	779	227	1,006	12,745	13,751
Higher Education	204	95	299	1,430	1,729
Hospitality	368	155	523	835	1,358
Laundry/Dry Cleaner	250	12	262	69	331
Office	2,673	540	3,213	38,272	41,485
Recreation	324	146	470	1,738	2,208
Religious	878	166	1,044	4,227	5,271
Repair	1,047	335	1,382	3,924	5,306
Restaurant	3,244	860	4,104	6,133	10,237
Retail	3,147	562	3,709	17,159	20,868
School K-12	825	358	1,183	621	1,804
Unknown Commercial	1,697	34	1,731	11,261	12,992
Warehouse	1,622	551	2,173	1,652	3,825
Total	**18,376**	**4,559**	**22,935**	**102,254**	**125,189**
Percentage of Total Sites	**15%**	**4%**	**18%**	**82%**	**100%**

Figure 3: Distribution of Sites by Sector and Participation Status (Percentages Indicate Non-Participants)

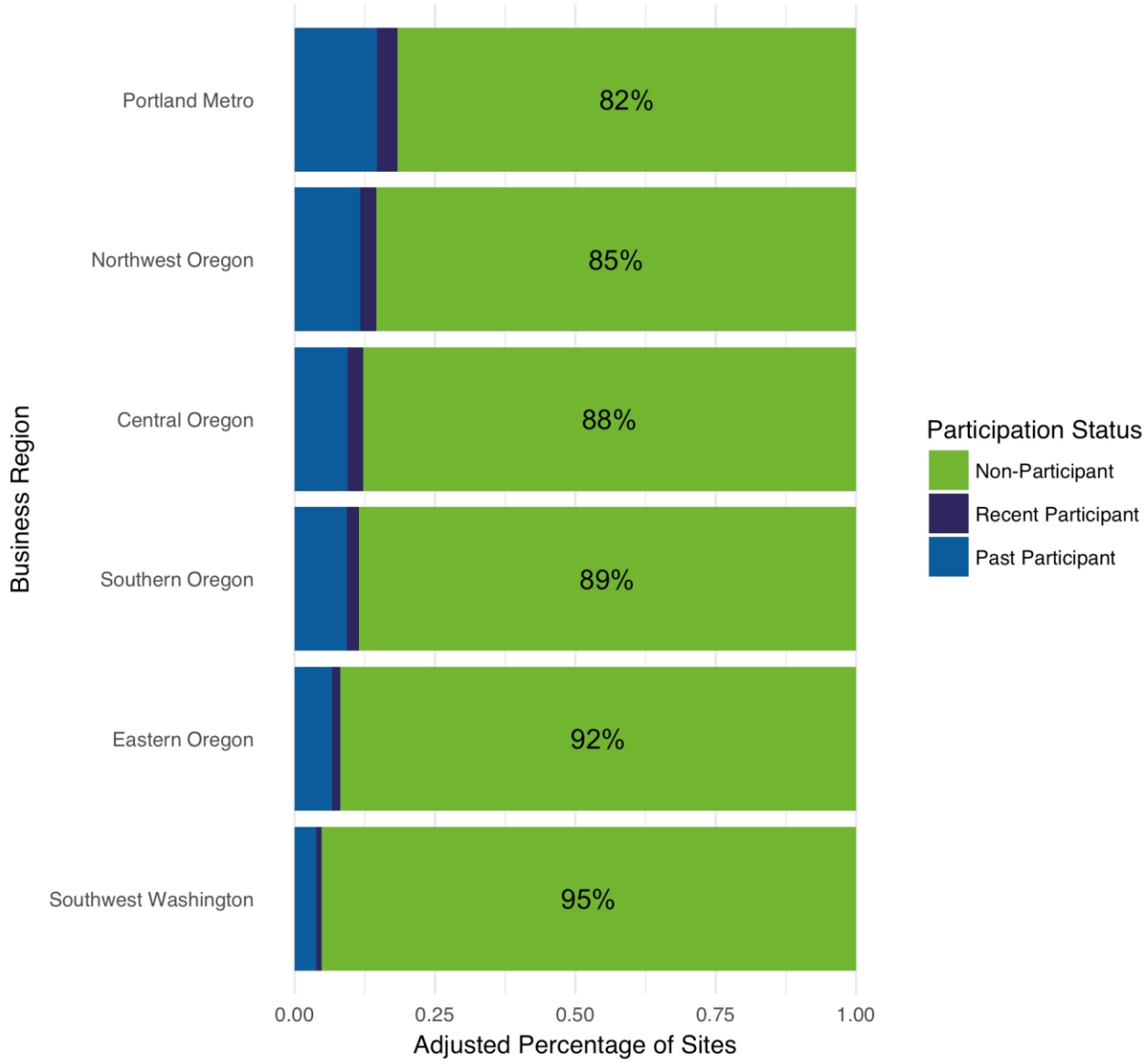


We repeated this same analysis of participation status by Energy Trust service region and by site energy usage. The results of this analysis in terms of region are shown in Table 23 and Figure 4 below. As would be expected, the greatest number of sites and participants are in the Portland Metro region. Additionally, the Portland Metro region has the highest participation rate (18% of sites have participated), whereas Southwest Washington has both the smallest number of participants and the lowest participation rate (only 5% of sites have participated).

Table 23: Count of Sites by Region and Participation Status, January 2003 – August 2018

Region	Past Participants	Recent Participants	Total Participants	Total Non-Participants	Total Sites	Participation Rate
Central Oregon	991	289	1,280	9,236	10,516	12%
Eastern Oregon	521	116	637	7,175	7,812	8%
Northwest Oregon	3,727	920	4,647	27,323	31,970	15%
Portland Metro	10,717	2,672	13,389	59,689	73,078	18%
Southern Oregon	2,179	504	2,683	20,826	23,509	11%
Southwest Washington	241	58	299	5,983	6,282	5%
Total	**18,376**	**4,559**	**22,935**	**130,232**	**153,167**	**15%**
Percentage of Total Sites	**12%**	**3%**	**15%**	**85%**	**100%**	**N/A**

Figure 4: Distribution of Sites by Region and Participation Status (Percentages Indicate Non-Participants)



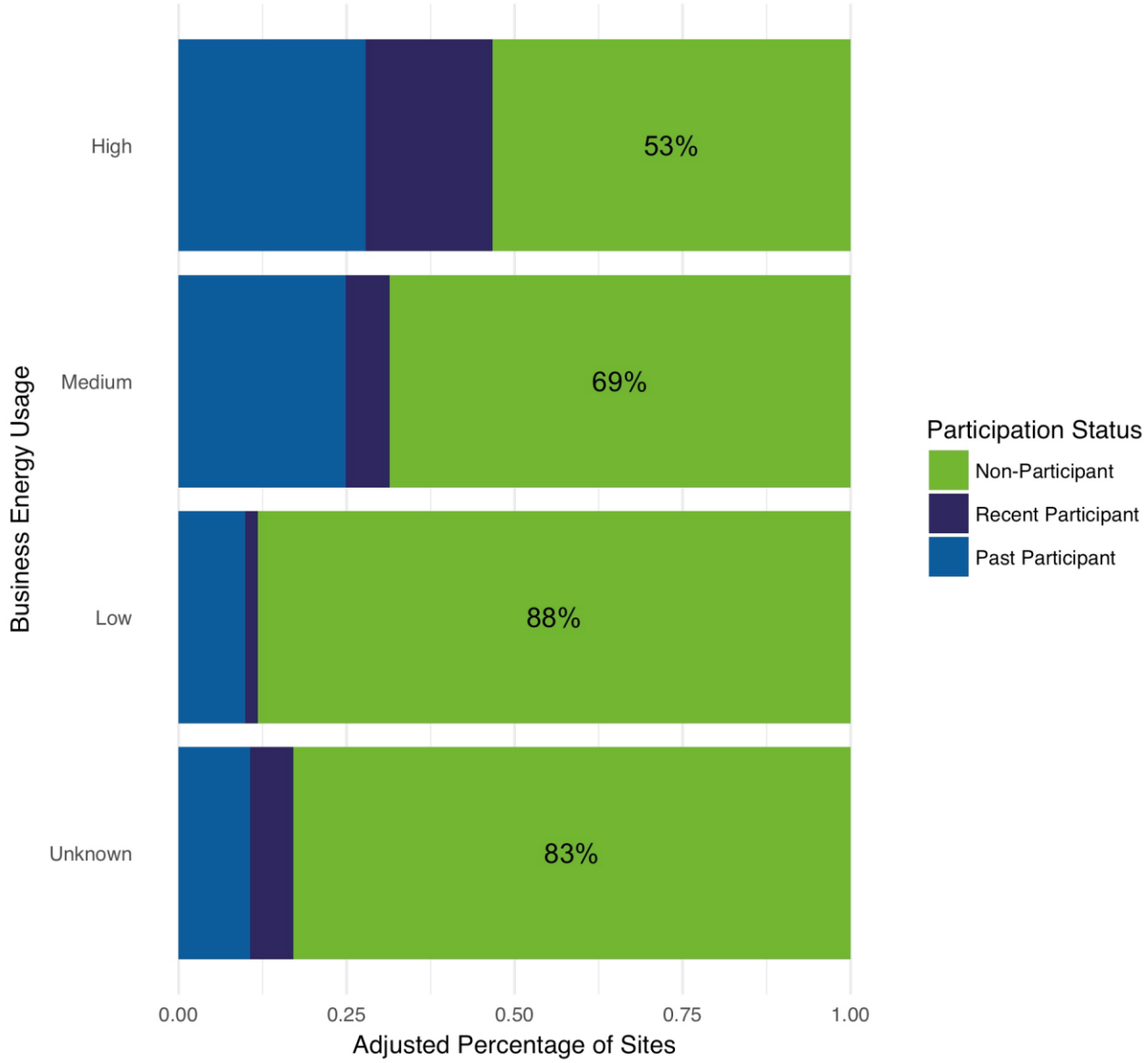
The summaries of participation status by site energy usage are shown in Table 24 and Figure 5 below. As would be expected, there are a very large number of low energy usage sites, fewer medium usage sites, and even fewer high usage sites. The highest participation rate is from high usage sites, with 47 percent of all high usage commercial sites having participated in the Existing Buildings program. Medium usage sites have the next highest participation rate, at 31 percent, followed by low usage sites, with a 12 percent participation rate. This indicates that the Existing Buildings program is reaching a high

proportion of sites with the greatest energy usage and potentially with the greatest energy savings opportunities.

Table 24: Count of Sites by Energy Usage and Participation Status, January 2003 – August 2018

Business Energy Usage	Past Participants	Recent Participants	Total Participants	Total Non-Participants	Total Sites	Participation Rate
High	559	381	940	1,072	2,012	47%
Medium	4,649	1,229	5,878	12,844	18,722	31%
Low	12,134	2,324	14,458	108,244	122,702	12%
Unknown	1,034	625	1,659	8,076	9,735	17%
Total	**18,376**	**4,559**	**22,935**	**130,236**	**153,171**	**15%**
Percentage of Total Sites	**12%**	**3%**	**15%**	**85%**	**100%**	**N/A**

Figure 5: Distribution of Sites by Energy Usage and Participation Status (Percentages Indicate Non-Participants)



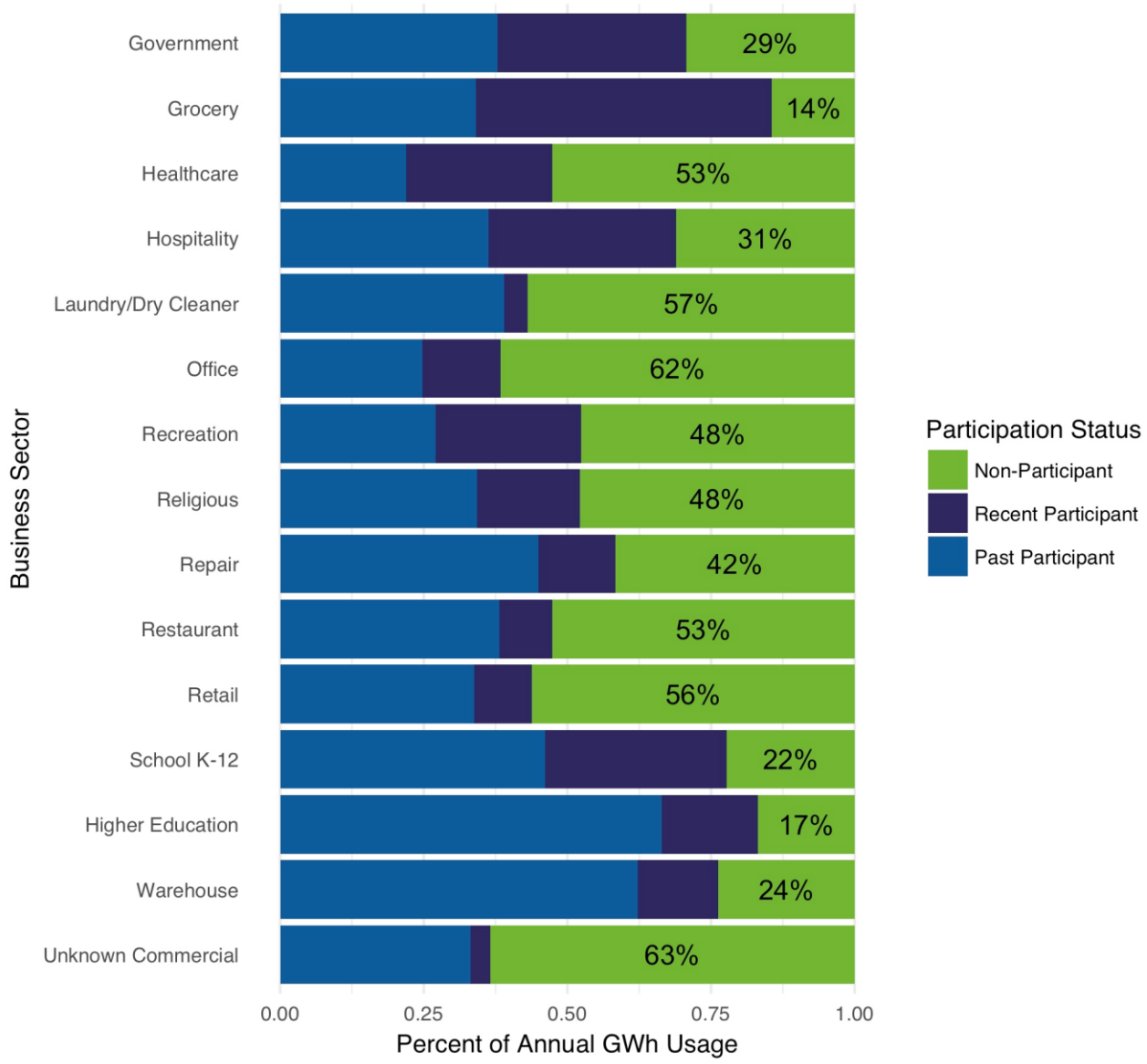
We also conducted this analysis in terms of annual electricity and gas usage rather than number of sites, to summarize annual usage by business sector and participation status. This analysis for electricity usage in terms of annual gigawatt hours (GWh) can be seen in Table 25 and Figure 6; the analysis shows that offices are again a dominant sector in terms of electricity usage and have a significant amount of potential remaining in non-participants. The percentages shown in Figure 6 represent the percentage of annual GWh usage by non-participants in each sector. Retail, healthcare, and restaurants are the next

largest sectors in terms of electricity usage, and all have a notable amount of non-participant usage remaining to be served.

Table 25: Annual Electricity Usage (GWh, 2017) by Sector and Participation Status, January 2003 – August 2018

Sector	Past Participants (GWh)	Recent Participants (GWh)	All Participants (GWh)	All Non-Participants (GWh)	All Sites (GWh)
Government	100	87	187	78	265
Grocery	221	334	556	93	649
Healthcare	255	295	550	612	1,162
Higher Education	173	44	217	44	261
Hospitality	106	95	201	91	291
Laundry/Dry Cleaner	6	1	7	9	15
Office	516	282	798	1,284	2,083
Recreation	67	63	131	119	249
Religious	86	45	131	120	250
Repair	90	27	116	83	200
Restaurant	334	81	415	462	877
Retail	422	125	547	703	1,250
School K-12	203	140	343	99	441
Unknown Commercial	181	19	199	346	546
Warehouse	200	45	245	76	321
Total	**2,960**	**1,682**	**4,643**	**4,218**	**8,861**
Percentage of Total GWh Usage	**33%**	**19%**	**52%**	**48%**	**100%**

Figure 6: Distribution of Sites by Sector and Participation Status – Annual Electricity Usage (Percentages Indicate Non-Participants)

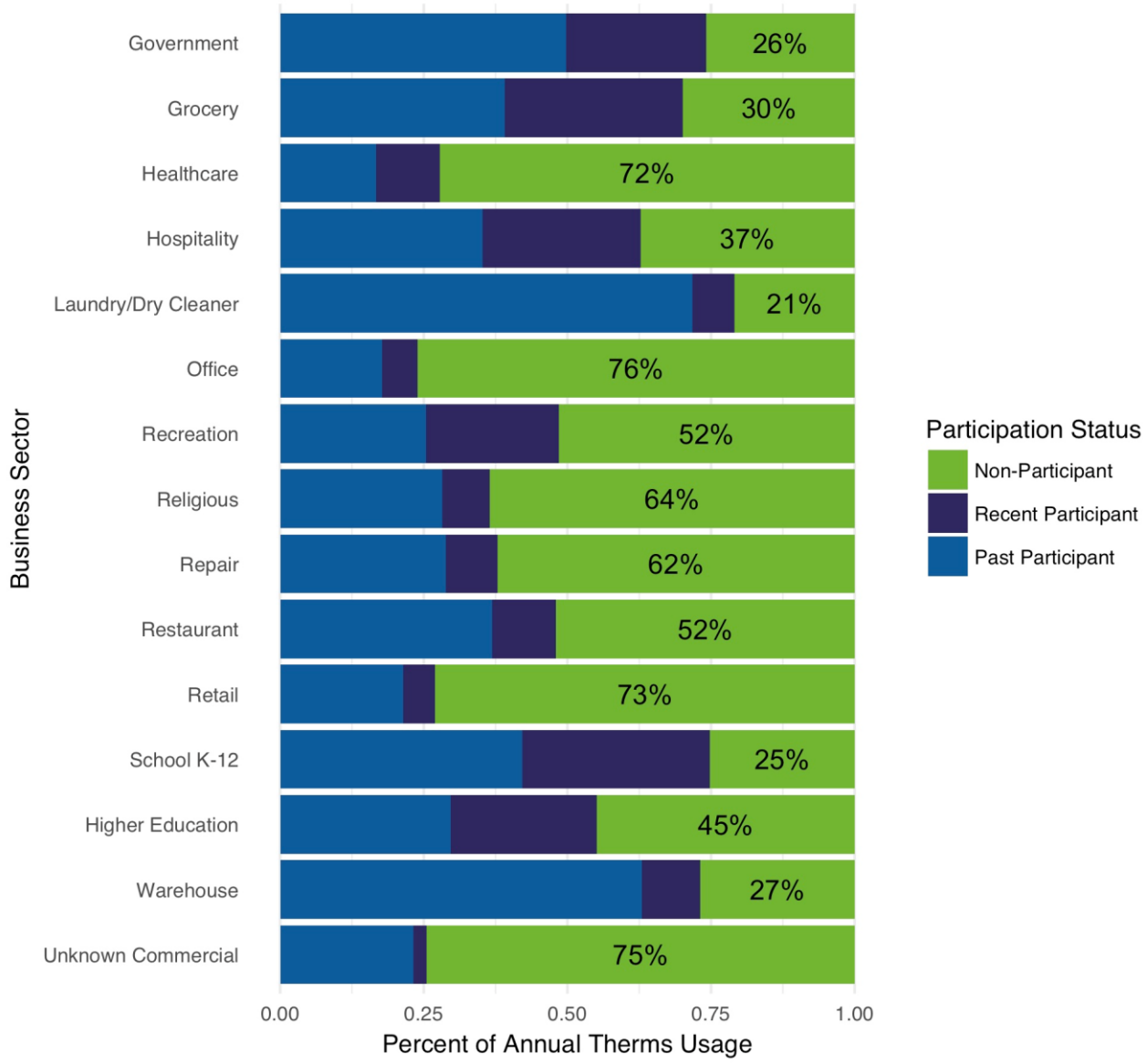


This same analysis for natural gas usage in terms of total annual therms (in millions) can be seen in Table 26 and Figure 7 and shows that the restaurant sector has the greatest annual usage, followed closely by the office sector. The numbers shown in Figure 7 represent the annual therm usage (millions) of non-participants in each sector. The office sector has the largest amount of therm usage for non-participants, followed by the restaurant, retail, and healthcare sectors.

Table 26: Annual Natural Gas Usage (Million Therms, 2017) by Sector and Participation Status, January 2003 – August 2018

Sector	Past Participants (Million Therms)	Recent Participants (Million Therms)	All Participants (Million Therms)	All Non-Participants (Million Therms)	All Sites (Million Therms)
Government	5.0	2.5	7.5	2.6	10.1
Grocery	2.4	1.9	4.3	1.8	6.1
Healthcare	4.5	3.0	7.5	19.6	27.2
Higher Education	1.3	1.1	2.4	2.0	4.4
Hospitality	3.7	2.8	6.5	3.9	10.4
Laundry/Dry Cleaner	1.3	0.1	1.5	0.4	1.9
Office	7.8	2.7	10.5	33.4	43.9
Recreation	2.6	2.4	5.0	5.3	10.3
Religious	3.3	1.0	4.3	7.5	11.8
Repair	1.7	0.5	2.3	3.7	6.0
Restaurant	16.7	5.0	21.7	23.5	45.3
Retail	6.0	1.6	7.6	20.5	28.1
School K-12	9.8	7.6	17.3	5.8	23.1
Unknown Commercial	3.6	0.4	4.0	11.6	15.6
Warehouse	4.5	0.7	5.2	1.9	7.1
Total	**74.3**	**33.3**	**107.6**	**143.6**	**251.2**
Percentage of Total Therm Usage	**30%**	**13%**	**43%**	**57%**	**100%**

Figure 7: Distribution of Sites by Sector and Participation Status – Annual Natural Gas Usage (Percentages Indicate Non-Participants)

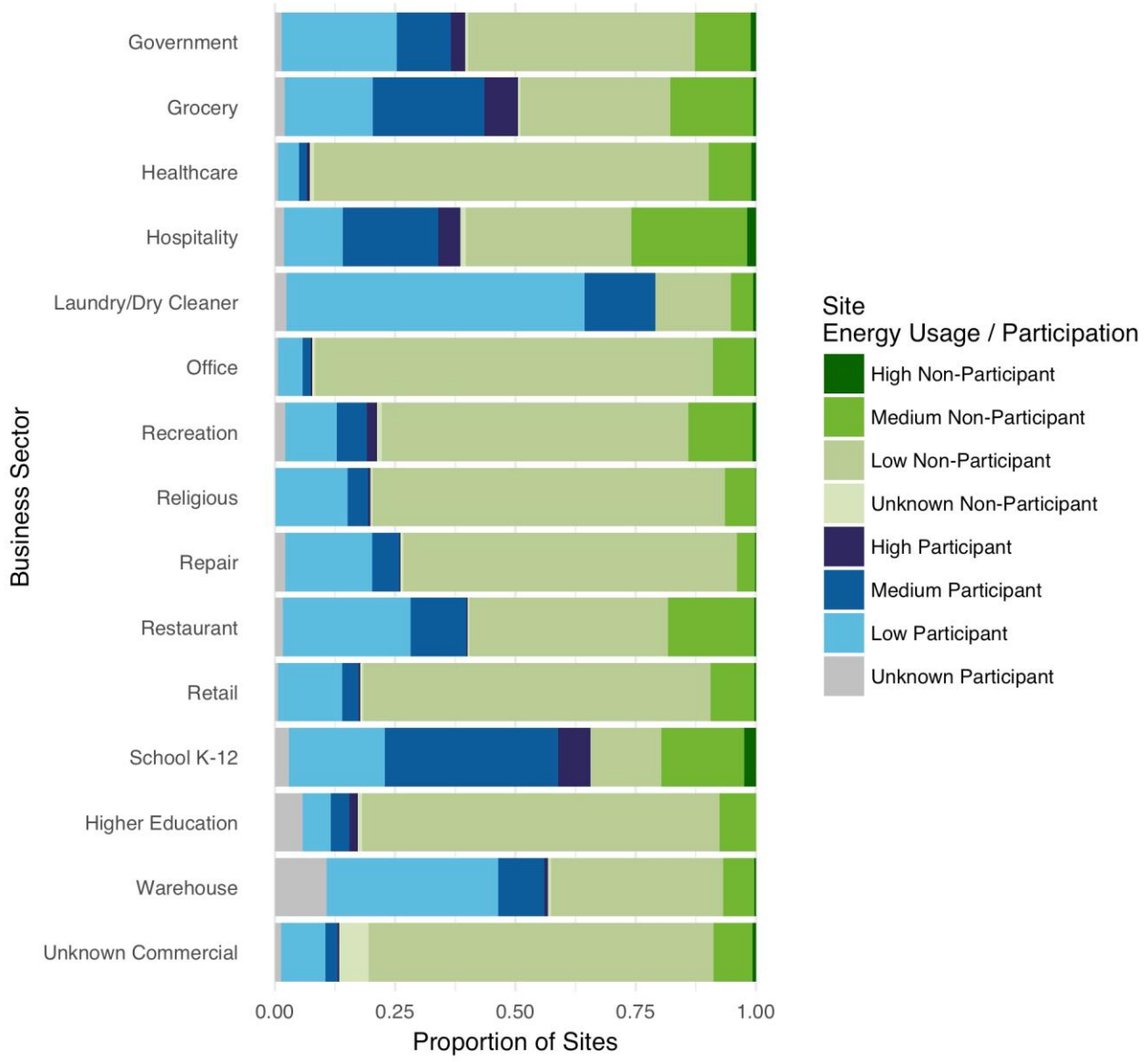


We next analyzed the proportion of sites served in each sector by energy usage, where sites were grouped into categories of high, medium, and low energy usage based on their annual 2017 usage as described earlier in this section. We show the proportion of sites served in each sector in Figure 8, which essentially reflects the program's penetration in the market. Any sites without energy usage information in the data are excluded from this

chart.[9] In terms of the proportion of the population served so far, the Existing Buildings program has reached the majority of laundry/dry cleaners, K-12 schools, and warehouses. About half of sites in the grocery sector have been reached by the program. Conversely, the healthcare, office, and unknown commercial sectors have the largest proportion of populations yet to be served by the program. The unknown commercial population is difficult to characterize and target for participation, but it could be assumed that sites in that sector follow a similar distribution across sectors as the rest of the population.

[9] Of all commercial sites, 28.5 percent did not have kWh usage information, 59.5 percent did not have therm usage information, and 6.5 percent did not have any energy usage information.

Figure 8: Proportion of Sites Served by Sector and Energy Usage



Analogous to the chart above, Figure 9 and Figure 10 show the proportion of sites served by the program to date in terms of their electric and gas usage. This analysis is also broken out by site energy usage. In Figure 9, site energy usage was determined based on annual electric usage in 2017, and in Figure 10, it was determined based on annual natural gas usage in 2017. Sites without either electric or natural gas usage data are excluded from these two charts.

Figure 9 shows that program participants represent a large proportion of electric usage in the grocery, higher education, K-12 schools, and warehouse sectors. Overall, it appears that many of the largest sites (in terms of electricity usage) have been served across a

variety of sectors. For most sectors, the majority of sites not yet served by the program are in the medium and small energy usage categories.

Figure 9: Proportion of Sites Served in Terms of Electricity Usage by Sector and Usage Category

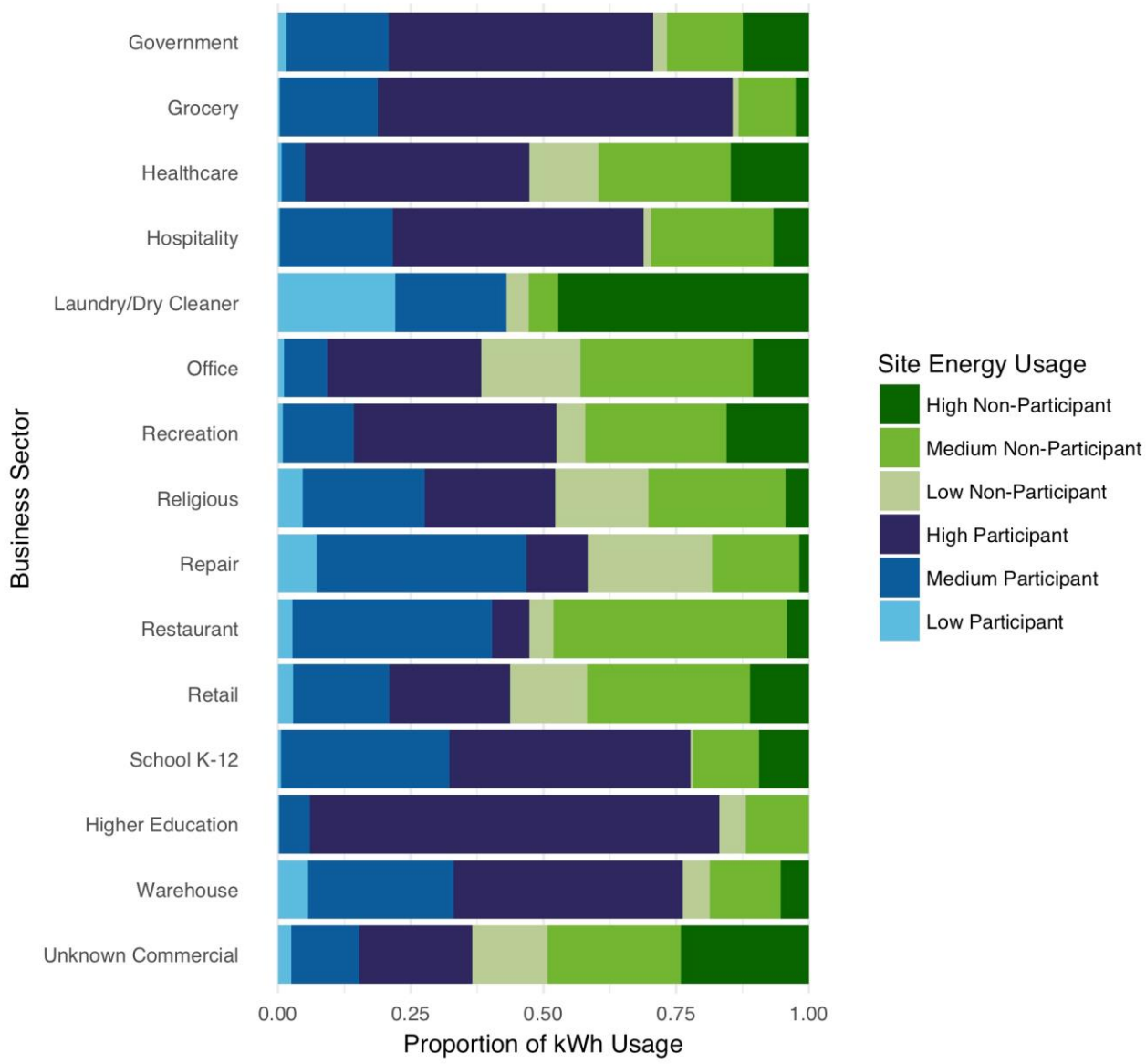
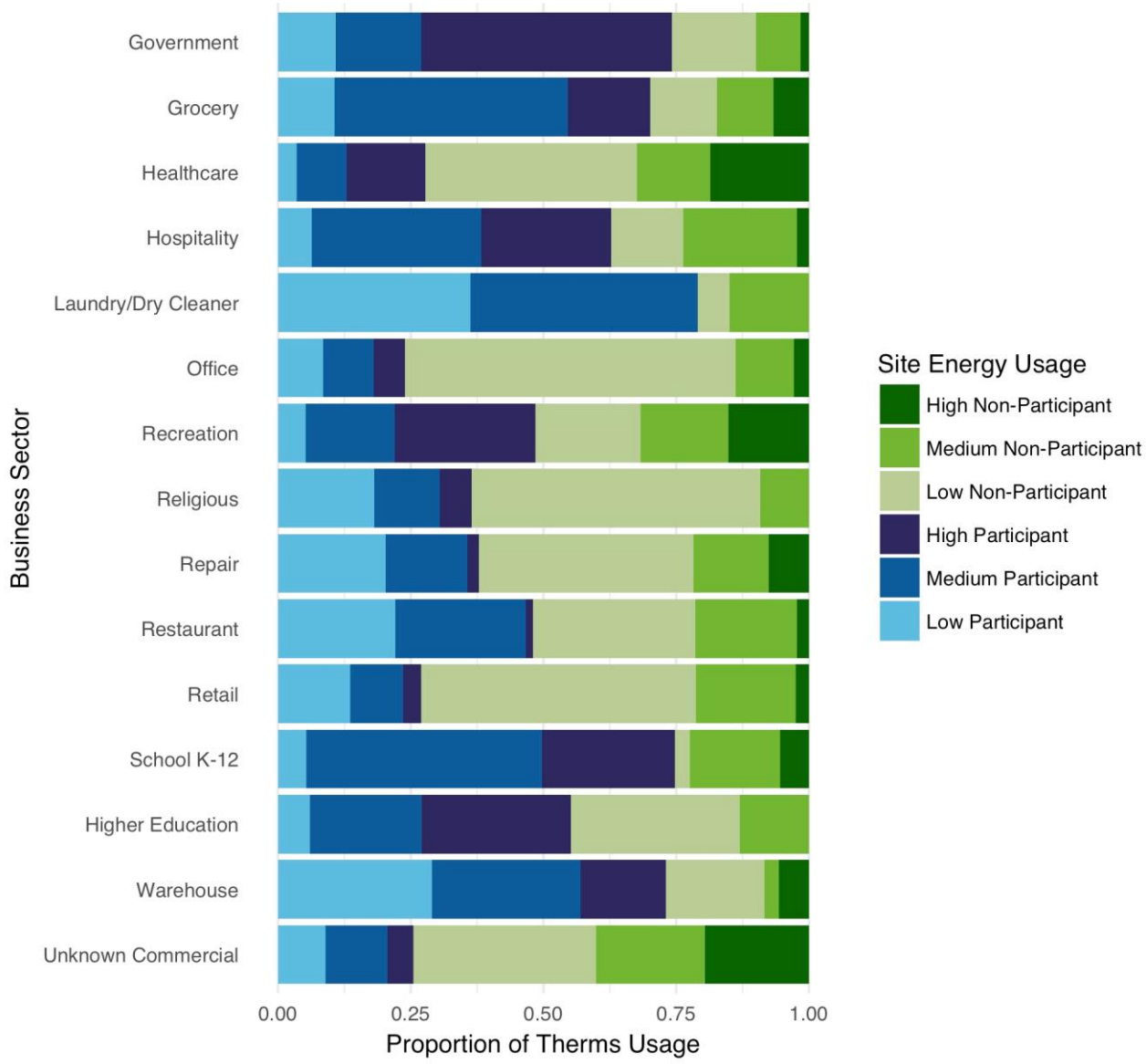


Figure 10 shows that program participants represent a large proportion of natural gas usage in the laundry/dry cleaner, K-12 schools, government, and warehouse sectors. Overall, there is more natural gas usage among non-participants compared with the electric usage shown in the chart above. Offices, retail, and healthcare are three sectors where there is still a large proportion of sites that have not been served by the program in

terms of their natural gas usage, and most of these sites are in the low energy usage category.

Figure 10: Proportion of Sites Served in Terms of Gas Usage by Sector and Usage Category



The total percentage of sites served by the program in terms of their electricity and natural gas usage that is graphically represented in Figure 9 and Figure 10 is summarized in Table 27 below. Overall, a higher proportion of sites have been served in terms of electricity usage (52%) compared with natural gas usage (43%). Table 28 and Table 37 show this same analysis by site energy usage category and region.

Table 27: Proportion of Sites Served in Terms of Electric and Natural Gas Usage by Sector, January 2003 – August 2018

Sector	Percentage of Sites Served (Electric Usage)	Percentage of Sites Served (Gas Usage)
Government	71%	74%
Grocery	86%	70%
Healthcare	47%	28%
Higher Education	83%	55%
Hospitality	69%	63%
Laundry/Dry Cleaner	43%	79%
Office	38%	24%
Recreation	52%	48%
Religious	52%	36%
Repair	58%	38%
Restaurant	47%	48%
Retail	44%	27%
School K-12	78%	75%
Unknown Commercial	37%	25%
Warehouse	76%	73%
Total	**52%**	**43%**

Table 28: Proportion of Sites Served in Terms of Electric and Natural Gas Usage by Energy Usage Category, January 2003 – August 2018

Energy Usage Category	Percentage of Sites Served (Electric Usage)	Percentage of Sites Served (Gas Usage)
High	64%	45%
Medium	46%	31%
Low	52%	55%
Total	**52%**	**43%**

Table 29: Proportion of Sites Served in Terms of Electric and Natural Gas Usage by Region, January 2003 – August 2018

Region	Percentage of Sites Served (Electric Usage)	Percentage of Sites Served (Gas Usage)
Central Oregon	69%	24%
Eastern Oregon	40%	33%
Northwest Oregon	49%	37%
Portland Metro	58%	52%
Southern Oregon	40%	16%
Southwest Washington	N/A	17%
Total	**52%**	**43%**

We also examined the savings achieved to date by the Existing Buildings program as a percentage of overall usage by sector. Note that the energy savings in this analysis includes any projects conducted between January 2003 and August 2018, while the energy usage data is an annual value from 2017. For all projects, we include first year savings, regardless of whether the lifetime of measures from some earlier projects would have ended by now. Table 30 below summarizes this information and shows that overall savings as a percentage of usage is slightly higher for electricity than for natural gas. For electricity savings, the greatest savings as a percentage of usage has been for the warehouse sector. On the other end of the spectrum, restaurants have had the smallest amount of electricity savings relative to overall usage. In terms of natural gas, the higher

education sector has achieved the most savings as a percentage of usage, and the hospitality, repair, and retail sectors have the lowest savings as a percentage of natural gas usage.

Table 30: Electric and Natural Gas Savings as a Percentage of Usage by Sector

	Electricity (GWh)			Natural Gas (Million Therms)		
Sector	**Total Savings**	**Participant Usage (2017)**	**Savings as a Percentage of Usage**	**Total Savings**	**Participant Usage (2017)**	**Savings as a Percentage of Usage**
Government	54	187	22%	1.65	7.52	18%
Grocery	168	556	23%	0.79	4.30	16%
Healthcare	115	550	17%	3.10	7.55	29%
Higher Education	68	217	24%	2.05	2.41	46%
Hospitality	40	201	17%	0.74	6.50	10%
Laundry/Dry Cleaner	1	7	17%	0.55	1.48	27%
Office	207	798	21%	3.07	10.51	23%
Recreation	41	131	24%	1.24	4.97	20%
Religious	25	131	16%	0.58	4.30	12%
Repair	47	116	29%	0.26	2.27	10%
Restaurant	30	415	7%	2.74	21.75	11%
Retail	169	547	24%	0.87	7.58	10%
School K-12	52	343	13%	3.05	17.31	15%
Unknown Commercial	55	199	22%	1.02	3.97	20%
Warehouse	114	245	32%	0.65	5.18	11%
Total	**1,187**	**4,643**	**20%**	**22.37**	**107.59**	**17%**

Finally, we looked at the proportion of sites served to date in terms of program track, both by sector (Figure 11) and by geographic region (Figure 12). Program track was determined based on a hierarchy that gave priority to tracks in the order of SEM, Custom, Direct Install, Standard, Lighting, and Other, so that the total in Figure 11 sums to 100 percent.

Figure 11: Proportion of Sites Served by Sector and Program Track, January 2003 – August 2018

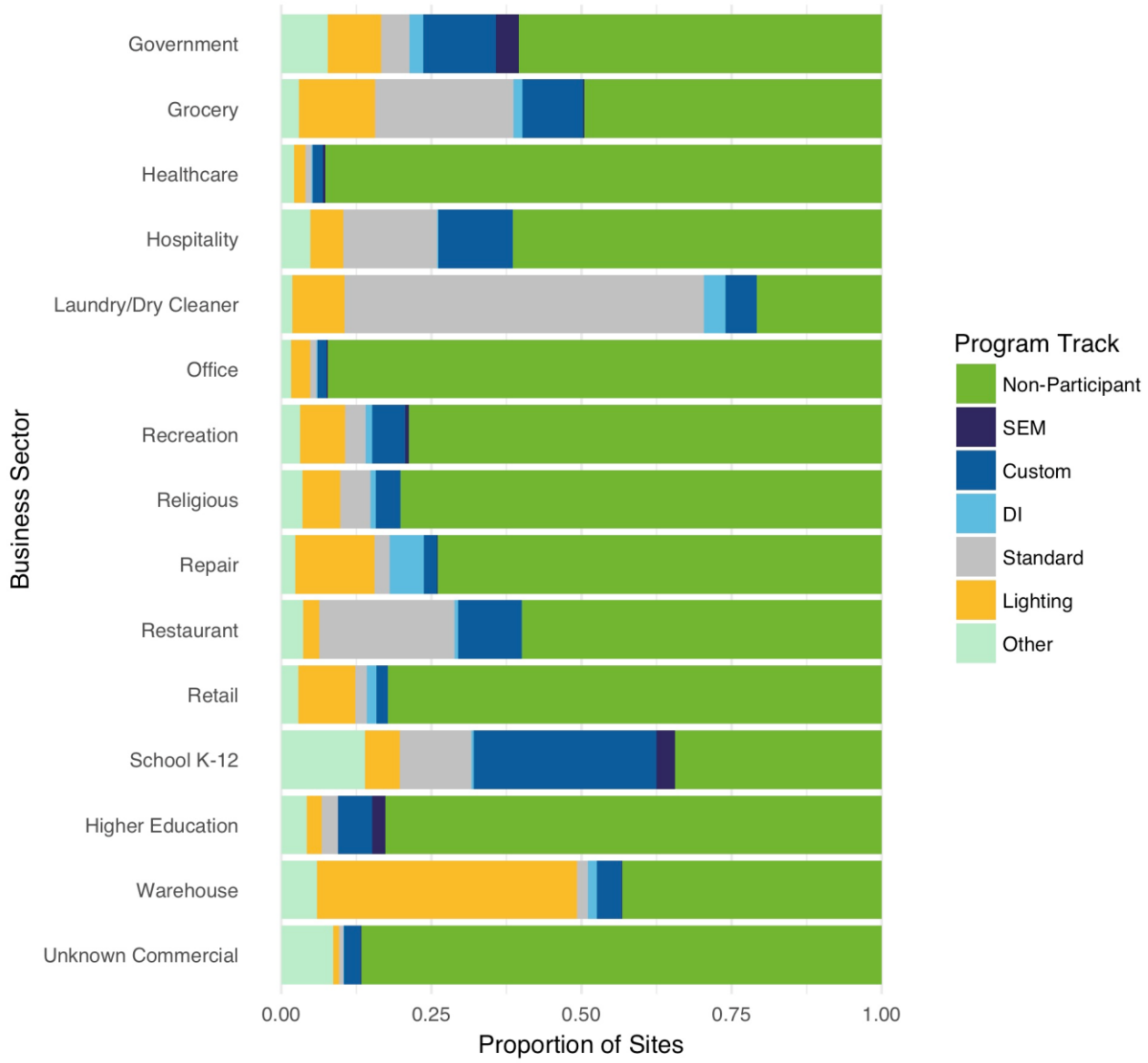
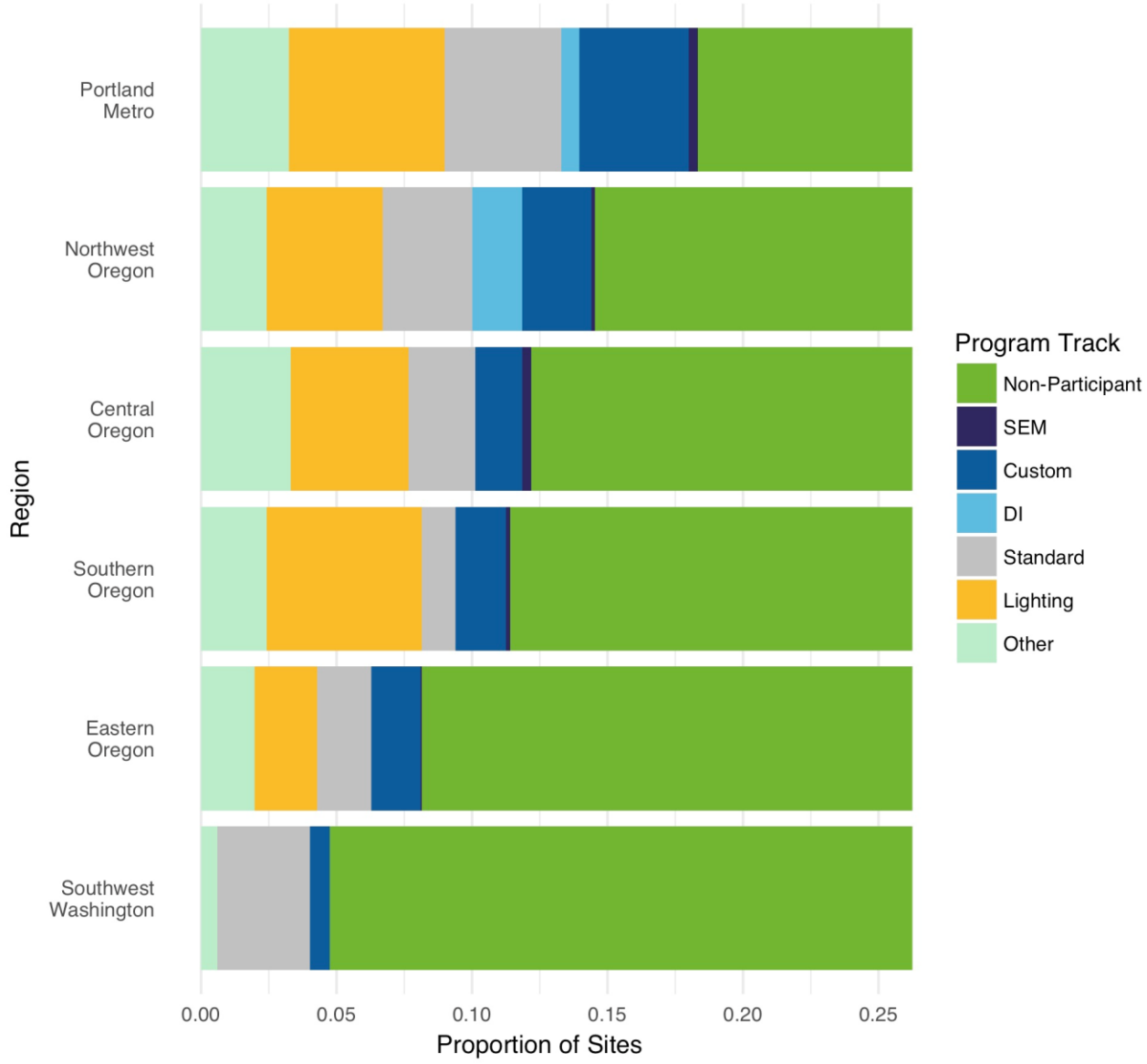


Figure 12: Proportion of Sites Served by Region and Program Track, January 2003 – August 2018 *



*Note that the maximum value of the horizontal axis is set at 0.25 to more clearly show the breakout of track participation within each region.

Implications for the Existing Buildings Program

Based on the findings of the market characterization and program penetration analysis presented above, it appears that:

- The healthcare, office, and retail sectors are key areas to focus on for future participant opportunities. In terms of the number of sites yet to be served and the

electric and natural gas load not yet reached by the program, these sectors have the most potential for future participation. On the other end of the spectrum, the laundry/dry cleaner and K-12 schools sectors have been well served by the Existing Buildings program.

- There is opportunity for more participation outside of the Portland Metro region if greater geographic equity is desired. Participation to date has primarily come from the Portland Metro region, which is not surprising given the large number of businesses concentrated in this area. However, even when taking the number of sites in each region into account, the Portland Metro region has a disproportionally higher participation rate than other regions around the state and in Southwest Washington. The lowest participation rates (number of participating sites as a percentage of total sites) were for Eastern Oregon and Southwest Washington.
- A significant number of small and medium businesses have not yet participated in the program. The Existing Buildings program has served a large proportion of customers with high electricity and natural gas usage, but a significant number of sites still remain to be served in most sectors. This indicates that many of the yet-to-be-reached sites are smaller (in terms of energy usage) than many of the sites participating to date. While smaller in terms of energy usage, there are likely still a large number of sites with cost-effective savings opportunities.

4 Strategic Energy Management Participation Follow-Through Analysis Results

4.1 Summary of the Data Used in the Analysis

Energy Trust provided a summary dataset of capital projects completed by participants of the Existing Buildings program from 2012 through June 2018, including those in the SEM track. These data include information on the start and end date of SEM enrollment (where applicable), as well as capital project installation dates, program track, kwh and therm savings, and incentive amounts. Each record in the data set was classified as to whether the customer was an SEM participant and whether the site was participating in SEM.[10]

Table 31 shows the number of capital projects initiated each year through the Existing Buildings program for 2012 through the first six months of 2018. The first two rows of the table show the annual and cumulative number of capital projects initiated by businesses that were not engaged in SEM in the current or previous years. Rows three and four show the same information, but for participants that were engaged in SEM. Rows five and six show the proportion of capital projects initiated by customers that were engaged in SEM. Overall, customers engaged in SEM constitute a relatively small proportion of participants in the Existing Building program. Nevertheless, between 2012 and 2018, the proportion of capital projects initiated through the Existing Buildings program by participants currently or previously engaged with SEM grew rapidly, increasing from 0.7 percent in 2012 to 8.8 percent in the first six months of 2018.

[10] The dataset was at the project level. More than one project could be completed at a site, and a customer could be associated with more than one site.

Table 31: Capital Projects Initiated by Participants With and Without SEM Experience

Experience of Participant with SEM		2012	2013	2014	2015	2016	2017	2018*
Participants Not Engaged With SEM in Current or Prior Years	**1.** Count of Capital Projects Initiated During Year	2,772	1,835	1,780	2,691	3,525	3,414	1,122
	2. Count of Capital Projects Initiated Since 2012	2,772	4,607	6,387	9,078	12,603	16,017	17,139
Participants Engaged with SEM in Current or Prior Years	**3.** Count of Capital Projects Initiated During Year	19	52	109	172	228	256	108
	4. Count of Capital Projects Initiated Since 2012	19	71	180	352	580	836	944
5. Annual Proportion of Capital Projects Initiated by Participants Engaged with SEM in Current or Any Prior Years		0.7%	2.8%	5.8%	6.0%	6.1%	7.0%	8.8%
6. Cumulative Proportion of <u>All</u> Capital Projects Initiated <u>Since 2012</u> by Participants Engaged with SEM in Current or Any Prior Years		0.7%	1.5%	2.7%	3.7%	4.4%	5.0%	5.2%

*Includes only January through June of 2018.

Table 32 shows the average annual *ex ante* kWh savings per site for participants that participated in SEM in the current or any previous year and for participants that were not engaged in SEM in that year or in any previous year. In each year, SEM-engaged sites averaged greater kWh savings from capital projects, but average savings for all sites decreased over time.

Table 32: Average Site-Level Electricity Savings from Capital Projects Initiated by Participants With and Without SEM Experience

Experience of Participant with SEM	2012	2013	2014	2015	2016	2017	2018*
Average Site-Level kWh Savings from Capital Projects Initiated by Participants Engaged in SEM in Current or Any Prior Years	171,737	194,054	209,179	138,344	88,331	62,798	47,193
Average Site-Level kWh Savings from Capital Projects Initiated by Participants Not Engaged in SEM in Current or Any Prior Years	49,449	64,518	61,820	31,857	30,248	33,181	27,008

*Includes only January through June of 2018.

Table 33 shows the average annual *ex ante* therm savings per site for participants that participated in SEM in the current or any previous year and for participants that were not engaged in SEM in that year or in any previous year. In each year, SEM-engaged sites averaged greater therm savings from capital projects.

Table 33: Average Site-Level Natural Gas Savings Per Site from Capital Projects Initiated by Participants With and Without SEM Experience

Experience of Participant with SEM	2012	2013	2014	2015	2016	2017	2018*
Average Site-Level Therm Savings from Capital Projects Initiated by Participants Engaged in SEM in Current or Any Prior Years	2,070	4,946	3,989	3,471	2,644	2,189	1,830
Average Site-Level Therm Savings from Capital Projects Initiated by Participants Not Engaged in SEM in Current or Any Prior Years	623	546	330	481	444	446	371

*Includes only January through June of 2018.

Table 34 shows the number of sites that began their first SEM engagements each year between 2011 and 2018 and the proportion of these sites that initiated a capital project through the Existing Buildings program in that year and each subsequent year. In total,

there were 496 customer sites that participated in SEM over this period, and these customer sites initiated a total of 944 capital projects.[11]

Table 34: Percentage of Customer Sites Engaged in SEM that Initiated a Capital Project

Year that Site First Engaged in SEM *	Sites that Began SEM Engagement	Year Capital Project Was Initiated						
		2012	2013	2014	2015	2016	2017	2018**
2011	54	35%	43%	57%	50%	43%	43%	13%
2013	108		27%	48%	58%	56%	37%	14%
2014	94			28%	51%	57%	56%	14%
2015	109				31%	77%	78%	17%
2016	12					50%	67%	8%
2017	86						55%	57%
2018	33							12%

* First SEM start date was September 25, 2011; no SEM engagements had a 2012 start date.
** Includes only January through June 2018

4.2 Specifying the Statistical Models

As part of our evaluation of model specifications, we examined the timing between SEM engagement and initiation of a capital project.[12] To do this, we created indicator variables of engagement in SEM and then statistically tested the impact of these variables on the likelihood that the SEM participant will initiate a capital project through the Existing Buildings program. We created and considered for inclusion in the models the following indicator variables:

- **SEM Current:** equals 1 if the site is currently participating in SEM, else 0.
- **SEM Prior:** equals 1 if the site participated in SEM in previous year, else 0.
- **SEM Prior 2:** equals 1 if the site participated in SEM two years earlier, else 0.
- **SEM Prior 3:** equals 1 if the site participated in SEM three years earlier, else 0.

These variables were not mutually exclusive with respect to SEM participation. Therefore, for a given year, a site could have a value of 1 for one, two, three, or all four of these indicator variables. We found that SEM Current and SEM Prior had a statistically

[11] The 944 capital projects include only those Existing Buildings capital projects begun in the same year that the SEM engagement began or in a subsequent year. Capital projects initiated in earlier years are not considered in Table 34.
[12] Model specification is the process for determining which explanatory variables to include and to exclude from a regression model.

significant and positive impact on the likelihood of initiating a capital project through the Existing Buildings program. As a result, these two variables were included in our final model specifications.

4.3 Description of Models

Logistic Regression Models

To achieve the first objective of the SEM follow-through analysis—determining the impact that SEM has on the likelihood that a commercial customer site will complete an energy efficiency capital project through the Existing Buildings program—we utilized logistic regression. The logistic regression model is a non-linear, S-shaped distribution function that constrains the estimated probabilities to lying between zero and one (i.e., 0 percent up to 100 percent chance of occurring). The logistic function is mathematically straightforward to estimate (using statistical software), and the estimated probabilities are easy to calculate and fall within the zero-to-one interval.

The dependent variable in each of the logistic regression models is a binary indicator that is equal to 1 if the commercial customer site completed one or more capital projects during a calendar year and 0 if the commercial customer site did not. The explanatory variables of interest in each of the regression models are the indicators of SEM participation described in the section above. The models also include explanatory variables to control for other factors such as building size, calendar year, location of building (geographic region), and energy provider. In specifying the models in this way, we did not compare sites participating in the Existing Buildings program to sites that did not participate in the program. Rather, for those sites that did participate in the Existing Buildings program, we estimated the impact that participating in SEM has on the decision by a business to initiate a capital project.[13]

[13] The data files provided to us by Energy Trust for this analysis only included sites that completed a capital project through the Existing Buildings program and sites that participated (or are participating) in SEM. The data did not include sites that did not complete a capital project. Therefore, we cannot compare participating sites to non-participating sites, which would include thousands of sites that have never completed a capital project through Energy Trust's Existing Buildings program (or perhaps any other Energy Trust program). Instead, for the universe of sites that have completed a capital project through the Existing Buildings program, we analyzed the impact that participating in SEM had on the decision to initiate a capital project.

An example of the empirical logistic regression models we estimated is as follows:

Equation 1: Logistic Regression Model to Estimate Likelihood of Completing an Energy Efficiency Capital Project

$$Capital_{it} = a_0 + b_1 SEM_{it} + b_2 SEM_{it-1} + b_3 Year_t + b_k Control_{it} + u$$

Where:

$Capital_{it}$ = Indicator variable that the i-th customer completed a capital project in the t-th year

SEM_{it} = Indicator variable customer is currently participating in SEM

SEM_{it-1} = Indicator variable customer participated in SEM in previous year

$Year_t$ = Trend variable to control for year

$Control_{it}$ = Array of variables to control for other factors

a, b = Coefficients to be estimated in the model

u = Random error term, assumed log-normal

We estimated three separate logistic regression models. The first model estimated how participation in SEM affects the likelihood that a commercial customer site completes any energy efficiency capital project. The second model estimated how participation in SEM affects the likelihood that a commercial customer site completes an energy efficiency capital project that saves electricity. The third model estimated how participation in SEM affects the likelihood that a commercial customer site completes an energy efficiency capital project that saves natural gas. The first three rows of Table 35 provide more information on the three logistic regression models.

The coefficients estimated in a logistic regression model possess little intuitive meaning beyond their sign (negative or positive). However, we used the coefficients to estimate the marginal effect that SEM has on the probability of completing an energy efficiency capital project through the Existing Buildings program. For binary variables, such as SEM participation, marginal effects measure how the probability of completing a capital project changes as the value of the binary variable is switched from zero to one, while holding the values of all other variables constant. For continuous variables such as building size, marginal effects measure how the probability of completing a capital project changes as the value of the continuous variable increases by one unit, while holding all other variables constant. Since SEM is represented in the logistic regression models as an indicator variable, the marginal effect is equal to the impact that participating in SEM has on the likelihood that a commercial customer site completes an energy efficiency project.

Table 35: Summary of Estimated Statistical Models

Model		Key Dependent Variable	Modeling Approach
1	Likelihood of Completing a Capital Project	Binary Variable: Completed one or more capital projects during year = 1; else 0	Logistic Regression
2	Likelihood of Completing a Capital Project that Saved kWh	Binary Variable: Completed one or more kWh-saving capital projects during year = 1; else 0	
3	Likelihood of Completing a Capital Project that Saved Therms	Binary Variable: Completed one or more therm-saving capital projects during year = 1; else 0	
4	Total *Ex Ante* kWh Savings from Capital Projects	Total *ex ante* electricity savings from capital projects during year	Tobit Regression
5	Total Incentives Paid for kWh Savings from Capital Projects	Total amount paid by Energy Trust for electricity saved through capital projects	
6	Total *Ex Ante* Therm Savings from Capital Projects	Total *ex ante* natural gas savings from capital projects during year	
7	Total Incentives Paid for Therm Savings from Capital Projects	Total amount paid by Energy Trust for natural gas saved through capital projects	

Tobit Regression Models

We also used the Tobit regression model to estimate the impact of SEM on energy savings from energy efficiency capital projects and the financial incentives paid to customers for completing the projects. The Tobit regression model is used when the distribution of the dependent variable is censored.[14] We structured the data used to estimate the Tobit regressions as a panel with commercial customer sites representing the cross-sectional aspect of the panel and year (2013 though 2017) representing the time-series aspect of the panel. Since not all customer sites completed a capital project in every year, the dependent variable is censored at zero.

A Tobit model accounts for the statistical bias that arises when some portion of observations on the dependent variable are censored at zero (or another value). The bias arises because we only observe those commercial customer sites that chose to complete an energy efficiency capital project during a specific year *and* had the resources, opportunity, and time to complete the project. We are not able to differentiate commercial customer

[14] In econometrics, censoring refers to instances where the variable of interest is observed only for an individual under specific circumstances, such as participation in the Existing Building program. The distributions of energy savings and incentive payments, therefore, are "censored" at zero.

sites that wanted to complete an energy efficiency capital project, but could not because of limited resources, opportunities, or time, from those commercial customer sites that did not want to complete an energy efficiency capital project. Equation 2 shows an example of the Tobit models we used to estimate electricity savings and incentives paid for electricity savings. For each of the Tobit models, if the commercial customer site did not complete any capital projects with expected electricity savings during a given year (or did not receive an incentive from Energy Trust for electricity savings from one or more capital projects), the value of the dependent variable is zero.

Equation 2: Example of Tobit Regression Models, Electricity Savings

$$kWh_{it} = a_0 + b_1 SEM_{it} + b_2 SEM_{it\text{-}1} + b_3 Year_t + b_k Control_{it} + u$$

$$kWh(\$)_{it} = a_0 + b_1 SEM_{it} + b_2 SEM_{it\text{-}1} + b_3 Year_t + b_k Control_{it} + u$$

Where:

kWh_{it} = Electricty savings from capital projects completed by the i-th customer in the t-th year

$kWh(\$)_{it}$ = Incentive paid for electricity savings from capital projects by the i-th customer in the t-th year

SEM_{it} = Indicator variable customer is currently participating in SEM

$SEM_{it\text{-}1}$ = Indicator variable customer participated in SEM in previous year

$Year_t$ = Trend variable to control for year

$Control_{it}$ = Array of variables to control for other factors

a, b = Coefficients to be estimated in the model

u = Random error term, assumed log-normal

We estimated four separate Tobit regression models. Two of the models estimated the impact that SEM participation had on *ex ante* electricity savings from energy efficiency capital projects and incentives paid by Energy Trust for electricity savings. The other two models estimated the impact that SEM participation had on *ex ante* natural gas savings from energy efficiency capital projects and incentives paid by Energy Trust for natural gas savings. Rows 4 through 7 of Table 35 provide more information on the four Tobit regression models.

To derive estimates of the marginal effect that an explanatory variable has on the dependent variable in a Tobit regression, the estimated coefficients are scaled by the proportion of values of the dependent variable that are not equal to zero. The scaled coefficients represent the marginal effect that participating in SEM has on the dependent variable (e.g., *ex ante* electricity savings from a capital project). Since SEM is represented in the Tobit regression models as an indicator variable, the marginal effect of participating in SEM is relative to not participating in SEM.

In total, Evergreen estimated seven econometric models: three logistic regression models and four Tobit models. In considering alternative specifications, we considered a number

of variables related to a site's participation in SEM. These included the number of years of SEM participation, participation in current year, participation in each of the past three years, and years since SEM participation. Our *a priori* assumption was that current and/or recent participation in SEM would be a positive predictor of capital project completion, *ex ante* savings, and incentives paid by Energy Trust for energy savings.[15] Likewise, we assumed that commercial sites that participated in SEM but then left the program would be less likely to complete a capital project in each consecutive year. Our consideration of alternative specifications confirmed these assumptions. For each of the seven models, we included the two variables of SEM participation described earlier in this section:

1. An indicator variable of SEM participation in the year the capital project occurred (1 if yes; else 0)
2. An indicator variable of SEM participation in the year prior to when the capital project occurred (1 if yes; else 0)

Each of the seven regression models also included additional variables to control for other factors that may affect the decision of a commercial customer to complete an energy efficiency capital project. We present the results of the regression models after presenting and discussing the marginal effects that SEM participation has on completing an energy efficiency capital project.

The explanatory variables included in the models are defined in Table 36.

[15] Note: *ex ante* energy savings from a capital project and the incentive paid for completing a capital project are highly positively correlated.

Table 36: Definitions of Explanatory Variables Included in Regression Models

Variable	Definition	Expected Impact
SEM Current	Indicator variable of SEM participation in year that capital project occurred (i.e., the current year)	Positive
SEM Prior	Indicator variable of SEM participation in the year prior to when capital project occurred	Positive
Portland	Indicator variable if building is located in Portland Metro area	Uncertain
Bldg. Size	Size of building in millions of square feet	Positive
PGE	Indicator variable equal to 1 if PGE is electricity provider; else 0	Uncertain
PP	Indicator variable equal to 1 if Pacific Power is electricity provider; else 0	Uncertain
NWN	Indicator variable equal to 1 if NW Natural is gas provider; else 0	Uncertain
Year	Year in which capital project occurred (Tobit models)	Uncertain

4.4 SEM Impact on Capital Project Completion

Table 37 shows the marginal effect that SEM participation has on the dependent variable in each of the seven models. Estimates of the marginal effects of SEM are shown separately for the current year (i.e., the year in which the capital project was completed) and the prior year, as well as for the composite of the two years (i.e., enrolled in SEM in the current year and in the prior year). All of the estimated marginal effects are statistically significant at the 0.01 level.

Table 37: Marginal Effects that SEM Participation Has on Capital Projects Completed During or After SEM Engagement

Model		Marginal Effect of SEM			
		Currently Enrolled in SEM	Enrolled in SEM Last Year	Enrolled in SEM in Current and Last Year	
				Point Estimate	95% Conf. Int.
1	Completed Any Capital Project	16.6%	9.2%	25.8%	18.5% – 33.1%
2	Completed a Capital Project that Saved kWh	14.8%	6.8%	21.6%	15.2% – 27.9%
3	Completed a Capital Project that Saved Therms	12.3%	6.0%	18.3%	12.7% – 24.0%
4	Total *Ex Ante* kWh Savings from Capital Projects	49,092	29,704	78,796	47,429 – 110,162
5	Total Incentives Paid for kWh Savings from Capital Projects	$5,694	$1,770	$7,465	$4,963 – $9,966
6	Total *Ex Ante* Therm Savings from Capital Projects	439	428	867	549 – 1,184
7	Total Incentives Paid for Therm Savings from Capital Projects	$1,075	$389	$1,464	$1,022 – $1,906

Note: All marginal effects are statistically significant at the 0.01 level.

The interpretation of these estimates of marginal effects is as follows:

Model 1: A commercial site currently enrolled in SEM is 16.6 percent more likely to complete a capital project this year, holding all else constant. If the site was also enrolled in SEM in the prior year, the likelihood of completing a capital project this year increases to nearly 26 percent, holding all else constant.[16]

Model 2: A commercial site currently enrolled in SEM is 14.8 percent more likely to complete a capital project this year that saves electricity, holding all else constant. If the site was also enrolled in SEM in the prior year, the likelihood of completing a capital project this year that saves electricity increases to 21.6 percent, holding all else constant.[17]

[16] While the results show that SEM engagement increases the probability of completing a capital project, it would be speculative to assert the number of capital projects attributable to SEM in a given year.
[17] ibid

Model 3: A commercial site currently enrolled in SEM is 12.3 percent more likely to complete a capital project this year that saves natural gas, holding all else constant. If the site was also enrolled in SEM in the prior year, the likelihood of completing a capital project this year that saves natural gas increases to nearly 18.3 percent, holding all else constant.[18]

Model 4: For commercial sites that complete one or more energy efficiency capital projects during the year to reduce electricity consumption, we estimate that those customers currently participating in SEM will achieve 49,092 kWh more in *ex ante* electricity savings from those projects, holding all else constant. If the site was also enrolled in SEM in the prior year, we expect the *ex ante* electricity savings to increase to 78,796 kWh, holding all else constant.

Model 5: For commercial sites that complete one or more energy efficiency capital projects during the year that save electricity, we estimate that those commercial customers currently participating in SEM will receive $5,694 more in incentives from Energy Trust for those electricity savings, holding all else constant. If the site was also enrolled in SEM in the prior year, we expect the incentive paid by Energy Trust for electricity savings to increase to $7,465, holding all else constant.

Model 6: For commercial sites that complete one or more energy efficiency capital projects during the year that save natural gas, we estimate that those sites currently participating in SEM will achieve 439 therms more in *ex ante* gas savings from those projects, holding all else constant. If the site was also enrolled in SEM in the prior year, we expect the *ex ante* natural gas savings to increase to 867 therms, holding all else constant.

Model 7: For commercial sites that complete one or more energy efficiency capital projects during the year that save natural gas, we estimate that those sites currently participating in SEM will receive $1,075 more in incentives from Energy Trust for those gas savings, holding all else constant. If the site was also enrolled in SEM in the prior year, we expect the incentive paid by Energy Trust for natural gas savings to increase to $1,464, holding all else constant.

4.5 Implications for the Existing Buildings SEM Track

Based on the findings of the SEM follow-through analysis, it appears that Energy Trust is already capitalizing on the key period when SEM participants are most engaged with the program in the first two years. To increase the likelihood of SEM participants undertaking capital projects beyond this period, Existing Buildings program staff and SEM coaches

[18] ibid

should reengage SEM participants with additional recommendations for relevant capital upgrades once they are beyond the first two years of SEM participation.

5 Interview Findings

5.1 Program Staff Interviews

The Evergreen team conducted interviews with Existing Buildings program staff, which included staff at Energy Trust, ICF, Evergreen Consulting Group (no affiliation with Evergreen Economics), SmartWatt, and the Strategic Energy Management (SEM) coaches. In total, we conducted 14 interviews with staff in various roles relating to the Existing Buildings program. Our findings from these interviews are summarized below by program area, starting with a general overview and then by program track.

5.1.1 Overarching Interview Findings

In general, the Existing Buildings program appears to be operating well with good coordination from all parties. There are communication protocols in place that include recurring meetings with management staff between ICF and Energy Trust, and additional meetings, calls, and emails as often as needed—often on a daily basis for some operations staff. ICF also maintains close communication with its subcontractors: Evergreen Consulting Group, SmartWatt, RHT, and SEM coaches.

The updated measure development process for adding new measures to the program using measure approval documents (MADs) has created a well-defined process for the program management contractor (PMC) staff to follow. The responsibility for new measure development has shifted from Energy Trust to PMC staff, and we heard this was a bit of an adjustment in terms of workload and expectations but appears to be working well after the initial adjustment period. The measure development process can be lengthy, but is thorough and appears to result in quality documentation for new measures. The PMC noted that a number of measures are set to expire soon, and that this will need to be met with development of new measures or updates to old ones.

Marketing specific to the Existing Buildings program is generally handled by ICF with oversight from Energy Trust staff; Energy Trust also conducts more general cross-program marketing. Marketing for the program has been relatively unchanged since the last process evaluation in 2016, at which time the "Bring Us In" campaign had recently launched. Currently, the primary approach to marketing for the Existing Buildings program is direct email using an algorithm to identify customers for targeting. Email campaigns are run three to five times a year with the goal of directing traffic to the program website. Staff reported that these campaigns have been very effective at increasing web traffic.

Ongoing challenges for marketing include reaching smaller, rural, and non-English speaking businesses. A relatively new challenge is marketing the SEM component, which is now ICF's responsibility. An effective approach to marketing SEM so far appears to be sharing success stories with customers about how SEM has worked for other businesses.

Trade ally management and coordination is handled by both Energy Trust and ICF staff. This coordination appears to be working well. Staff perception is that Energy Trust requirements to become a trade ally are generally clear to contractors, but some contractors view the paperwork and requirement for past customer references to be too complicated. There is still some confusion among contractors regarding which Energy Trust programs they are enrolled in as a trade ally, and whether they need to enroll with the Existing Buildings program even if they are already a trade ally for residential programs. On the other end of the spectrum, there are some trade allies that never have questions or need assistance because they know the program so well. Staff noted that Existing Buildings contractor attendance at trade ally forums has been relatively low (compared to attendance by contractors for other programs), and they suspect that more outreach is needed to boost attendance. Energy Trust's Diversity, Equity, and Inclusion initiative has been a bigger focus recently, with staff at ICF specifically focused on how best to engage minority- and women-owned businesses as trade allies and where new contractors may need to be enrolled to increase diversity. We also heard from staff that business is booming for contractors, and as a result, business development funds available to trade allies for co-branded marketing are not utilized much; some contractors do not feel the need to enroll as a trade ally because they have enough work as it is.

In terms of internal information systems, we heard that data tracking processes for the program are generally working well for all parties and that the overall quality of data entered into the system has improved over time. Quality of the data is important for program tracking purposes but also for correct and timely payment of incentives to customers. It was noted that in the last year, data quality has notably improved, and errors or mistakes that may affect or delay payments to customers have been reduced considerably as a result.

5.1.2 Standard Track Staff Interview Findings

There have not been any recent major changes to the Standard program track, and program staff reported that it is generally operating well. One difficulty mentioned by program staff is the quality of program applications that are submitted. Often, information is missing or incorrect on the applications submitted by participants. Staff noted that trade allies do not seem to help much with the incentive applications, which sometimes results in information being incomplete. The complex nature of this track—with hundreds of available measures and the requirement for a W-9 form—means that the majority of applications are still mailed in, with a smaller portion sent by email. Program staff noted that trade allies in some sectors, such as the grocery sector, have been more helpful to customers in completing the application paperwork.

5.1.3 Lighting Track Staff Interview Findings

The Lighting program track has ongoing challenges related to cost-effectiveness, and this is likely to continue with anticipated code changes and the market naturally moving toward increased adoption of LEDs. The biggest change to the Lighting track for 2018 has been that incentives for linear fluorescents are no longer offered. Program staff anticipate that changes to the Lighting track may be needed in the next couple of years to remain cost effective and that new or alternative technologies and controls may need to be considered as offerings. Lighting measures are now updated every year because the market is changing so quickly. Program staff see a challenge in trying to convince customers to view lighting as a system and to implement controls in addition to lighting equipment, which can be more cost effective than lighting equipment alone. Coordination between ICF and Evergreen Consulting Group appears to be going smoothly, and Evergreen Consulting Group essentially operates as an extension of ICF for implementation of the Lighting track.

5.1.4 Direct Install Staff Interview Findings

Program staff reported that the Direct Install track has been running very smoothly and that coordination between SmartWatt, ICF, Energy Trust, and the utilities has been successful. In a recent participant satisfaction survey completed by SmartWatt in April 2018, nearly 90 percent of Direct Install participants rated their satisfaction with the program as a 9 or 10 on a 10-point scale. Staff reported that there have been some ongoing complaints from contractors that feel they are getting excluded from lighting jobs because of SmartWatt's role. There appears to be a good handoff procedure for transferring projects from the Direct Install track to the Lighting track when SmartWatt finds that a particular project is too complex to go through the Direct Install track. Similarly, SmartWatt will inform Energy Trust if there are other non-lighting upgrade opportunities they identify while on site. One point of difficulty in this track is the inability to serve any business that may be classified as manufacturing, even if they are very small. One challenge that staff identified for the future will be continuing to find new regions to serve cost effectively.

5.1.5 Custom Track Staff Interview Findings

A relatively recent trend identified by staff for the Custom track is the shift away from whole building studies toward studies that focus on a specific area or end use that is often identified by the customer. These types of targeted studies tend to result in an increased number of completed projects. The Custom track is relatively complex, and there are many more steps in the approval process and paperwork to be filled out and reviewed. We heard some reports of contractors having difficulty with the complicated nature of Custom track projects, and staff noted they would like to hear about this from the trade ally and customer perspectives.

There has also been a shift to increase outreach to smaller customers; starting in mid-2017, a new "Short Study" was offered as an option to Allied Technical Assistance Contractors (ATACs) serving small or medium businesses. Staff noted that the Custom track can be difficult for smaller customers, as they may find they do not have cost-effective measures to install. This can be frustrating both for the customer and the contractor.

We heard that the quality of studies submitted by ATACs continues to be high, and most are very familiar with the requirements for studies and the study approval process. Many ATACs are also trade allies for the Existing Buildings program, and so are familiar with general measure eligibility and requirements across the program. Program staff noted that they would like to hear the ATACs' perspectives on how well the program has been working for them.

5.1.6 SEM Staff Interview Findings

We heard from SEM staff that there have been recent changes to this track, the most notable being the transition of SEM implementation from Energy Trust to ICF at the beginning of 2017. Other changes mentioned include how internal coordination is handled, the energy savings calculator, and who manages what aspect of the SEM track.

Multiple SEM staff commented that SEM competes for customer attention and capital with other components of the Existing Buildings program, such as the Custom track and retro-commissioning projects. The actual coordination between program tracks is going well, but the competition and varying incentives are a challenge.

Four different companies provide SEM coaching services, with roles and responsibilities directed by Energy Trust and ICF. There is recognition by the coaches that the companies all bring something to the table, but we heard that there are two challenges with having so many companies involved: 1) the companies feel constrained in putting some of their ideas forward because they are coordinating with competitors; and 2) there are a lot of active parties, with Energy Trust, ICF, and the four SEM coaches all involved in program discussions. This can be inefficient and sometimes delays their ability to get answers for participants.

We heard several references to the energy savings tracker and energy modeling that SEM participants must complete to identify savings and qualify for incentives. The energy tracking aspect is key to the program, but it is also complicated and time consuming for participants. One SEM coach commented that it does not allow participants with multiple sites to aggregate them easily, and that the tracking could be simpler. There has also been frustration among participants when the tracker does not identify the savings they expect. From the program side, there is a challenge in crediting savings to the appropriate source when SEM participation may spur capital projects, but SEM does not get the credit for creating these savings opportunities.

Looking to the future, there is a sense among SEM program staff and SEM coaches that there are more participants available for recruitment—both larger customers that typically participate and smaller customers that could benefit as well.

5.1.7 Implications for Existing Buildings Program Operations

Based on what we heard from Existing Buildings program staff, we found that:

- Promoting the SEM track has been more challenging than promoting other tracks, but staff noted that the use of success stories has been successful, and seems to have a bigger impact on potential SEM participants than other approaches to marketing. Energy Trust should continue utilizing participant success stories for SEM marketing.
- Program staff reported that most trade allies do not help customers with application forms, and as a result, they still get a fair number of applications with incorrect or missing information. In sectors where the trade allies tend to help more with application forms, such as grocery projects, application forms tend to be completed more accurately and completely. Staff could encourage trade allies to assist customers with rebate application forms and find out why they are typically not doing so already.
- We heard from implementation staff as well as from SEM coaches themselves that the number of different firms providing SEM coaching results in inefficient processes and that the coaches do not always share ideas freely because they are coordinating with their competitors. Limiting the number of SEM coaches to fewer than four may streamline some program processes and coordination.
- We heard from an SEM coach and SEM participants themselves that participants often expect to see more savings than are realized through the SEM program track. Participant satisfaction could be increased by setting expectations about potential savings ahead of time.

5.2 Allied Technical Assistance Contractor Interviews

Allied Technical Assistance Contractors (ATACs) provide three different types of studies to help customers identify energy savings opportunities for Custom track projects:

- Technical Analysis Studies (TASs) provide an in-depth review of a specific measure or measures, including estimated equipment costs and energy savings. About 80 to 90 percent of Custom track projects are the result of a TAS.
- Whole building or whole site evaluations are similar to a walk-through or audit. They provide a comprehensive but less detailed look at all building energy-using systems, and are commonly used to identify prescriptive measures.

- A recent addition to the type of studies offered is the Short Study, a less detailed version of the TAS that was introduced in 2017 to enable the program to serve more mid-sized and smaller customers who do not have large complex systems in place. These Short Studies are generally 50 to 60 percent cheaper than a full TAS, according to program staff.

Our team conducted interviews with 13 ATACs actively involved in providing energy studies to participants of the Existing Buildings program. In total, we contacted 17 ATACs for interviews; 13 of these ATACs completed an interview, and four did not respond to our request for an interview. None declined to be interviewed. The distribution of completes by ATAC activity level is shown in Table 38.

Table 38: ATAC Interview Allocation

Activity Level	Number of ATACs	Number of Interviews
High (More than 10 studies in 2017-18)	5	5
Medium (4 to 10 studies in 2017-18)	6	3
Low (1 to 3 studies in 2017-18)	12	5
Total	**23**	**13**

Eleven of the 13 ATACs interviewed are located in the Portland Metro area (Portland, Beaverton, and Vancouver, Washington) and one each in Bend, Oregon and Boise, Idaho. As suggested by their locations, the majority of ATACs we spoke with serve the Portland Metro area and the Willamette Valley, and all said they serve the entire state of Oregon, with all but one also serving adjoining states. Not surprisingly, since several ATACs are local offices of multinational firms, many (8 of 13) said they work across the country. All but one respondent said they also serve Energy Trust customers in Washington.

5.2.1 Summary of Program Involvement

As shown in Table 38 above, the 13 ATACs we spoke with varied widely in the level of their involvement in the Existing Buildings program from 2016 to the present (August 2018 at the time of the interviews). In that time, each of the ATACs we spoke with had conducted from 2 to 66 studies.

Most ATACs have been involved with the Existing Buildings program for years, including several who said they had worked with the program since its inception. At the other extreme, one firm had enrolled as an ATAC nine months ago, and another said they had been involved for about a year.

Of the ATACs interviewed, six had completed more studies in 2017 than in 2016, four had completed the same number, and three had completed fewer. Six of the 13 expect or hope to see the volume of studies they complete increase, either due to market demand alone or because of demand combined with internal decisions to focus on this aspect of their business. Five respondents expect the volume of studies to stay about the same, and two expressed the belief that the number of studies will go down, either because "the low hanging fruit has been taken," or because "we will do fewer if there are more prescriptive projects, as most of our work is custom."

In terms of specialties in types of equipment or customers served by the ATACs, most stated that they work with any type of energy-using equipment and all commercial or industrial customers, including customers not served by the Existing Buildings program, such as industrial firms served by Energy Trust's Production Efficiency program. For example, one respondent noted that they try to focus on Energy Trust's Path to Net Zero, which is an offering within the New Buildings program. Customer types that were frequently mentioned include healthcare facilities, schools (both K-12 and universities), office buildings, local government buildings, and data centers.

To get a sense of the impact that these energy studies have on the ATACs' business, we asked them to estimate the percentage of their total revenue that comes from conducting energy studies for this program. As shown in Table 39, all but three ATACs estimated that the studies bring in less than 5 percent of their total revenue, and only one said the studies account for more than 15 percent of their revenue, which was an outlier that reported the studies make up 50 percent of their income.

Table 39: Percent of Revenue from Energy Trust Studies

Percentage of Revenue	Number of ATACs
1% or less	5
1% to <5%	5
5% to 10%	1
11% to 15%	1
More than 15% (50%)	1
Total	**13**

Four of the ATACs interviewed also work as installation contractors, saying they perform this function on 20 percent to 100 percent of the projects for which they do studies, with

two local branches of multinational companies citing the highest installation rates on such projects. Two ATACS also said they occasionally serve as an installation contractor or trade ally for other customers participating in the Existing Buildings program.

When asked what changes to the Existing Buildings program had affected their ability to participate in the program in the last two years, seven respondents said there had been no such changes, and two said they (either their firm or they personally) had not been involved with the program long enough to notice changes. The other four commented on changes they had observed:

- *"The approval process has improved. Incentives have gone down a little bit, and we have gotten more pushback on study costs from Energy Trust, while our study costs internally have increased due to changes in internal accounting procedures."*
- *"As more prescriptive incentives have come out, there's less opportunity for us in the Custom track; that's our biggest challenge."*
- *"It's getting more streamlined. The short version TAS (Technical Analysis Study) is a great addition, and the Existing Buildings commissioning program is making a difference too."*
- *"The site evaluation process seems to be in flux and it impacts what we propose to a customer; we would prefer to do site evaluations to uncover all potential savings. It's a small cost to get into the project and really dig into it. I wish we did more site evaluations, but Energy Trust seems to want to go right to a TAS."*

5.2.2 Energy Study and Customer Trends

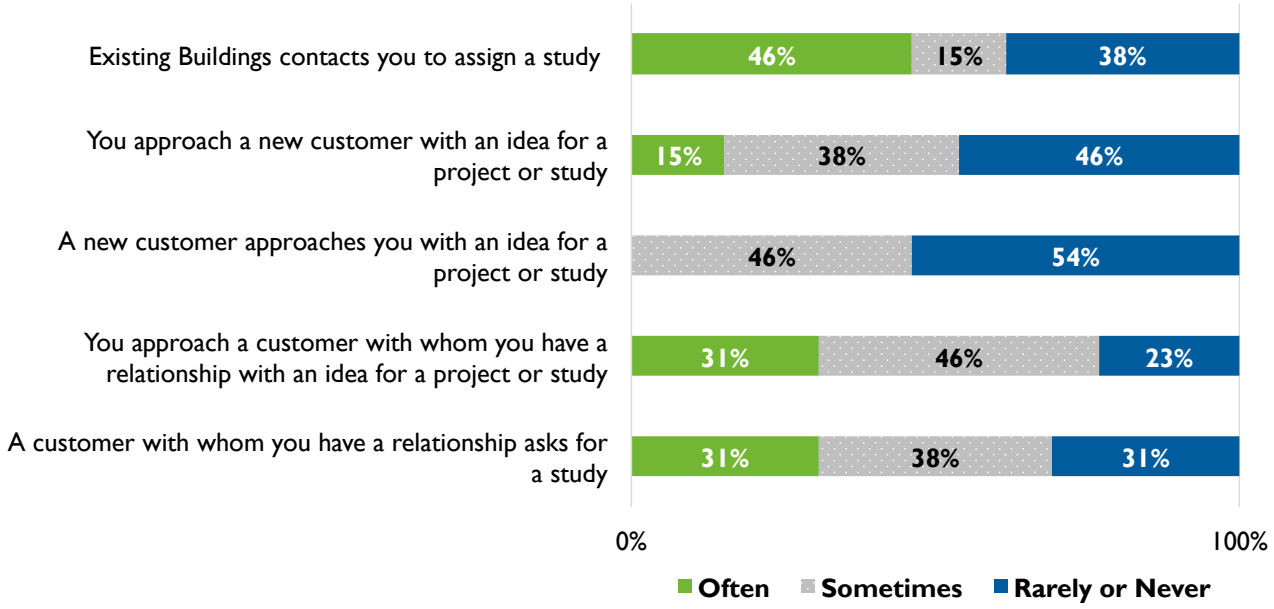
We asked ATACs several questions about the types of energy studies they most frequently conduct. Among the five high-volume ATACs, the majority of their studies (75-100%) were the more in-depth TASs of a few specific measures to determine potential energy savings. Mid- or low-volume ATACs were more likely to say their work was evenly split between in-depth studies and whole site assessments. Overall, five respondents said they had prepared one or more of the Short Studies offered as an option by the Existing Buildings program starting in 2017, while another five were unaware of the Short Studies or were unsure what they were. Three respondents were familiar with the Short Studies but had not done any yet.

Energy studies can be initiated by the ATAC and/or customer, or they can be assigned to an ATAC by the PMC. Of the 13 ATACs interviewed, three low-volume respondents said all the studies they had done (a total of seven for the three firms) had been assigned by the PMC. Conversely, four respondents responsible for a total of 25 studies from 2016 through mid-2018 said that all the studies had been initiated by them and their customers. The other six respondents, including all five of the high volume ATACs, reported a combination of program-assigned and customer-initiated studies, with the share of assigned studies ranging from 5 percent to 80 percent. One respondent said that many of

their PMC-assigned studies were given to them at the customer's request, noting *"I think it's mostly customer-driven based on our reputation."*

ATAC perceptions of the relative importance of various scenarios that can lead to projects are shown in Figure 13. Both program-assigned studies and studies or projects that arise out of a relationship with a customer were cited as common scenarios, while ATAC outreach to new customers and new customer outreach to ATACs were much less common. Although not shown in the figure, four ATACs mentioned that they are sometimes brought into a project or have a study suggested by a contractor who is working with a customer.

Figure 13: How Studies and Projects are Initiated



For studies initiated by an ATAC, there is a certain level of effort involved in preparing a proposal for a study to be submitted to the Existing Buildings program, and the Evergreen team wanted to know how, before proposing a study to a customer or Energy Trust, ATACs determine how likely they are to find sufficient energy savings and how likely the customer is to go ahead with the project. Most ATACs said they rely on their knowledge of and experience with the individual customer; if they do not have that, they do a quick assessment of energy use intensity or review of utility bills relative to comparable buildings they have worked with. One respondent said that *"I start with the assumption that every building has cost saving opportunities; we always find measures."*

Determining whether a customer is likely to act on recommendations generally requires more interaction, but again, most ATACs said they rely on their relationship with the customer or their contractor. Lacking that, they said they usually can determine ability and

willingness to follow up with a few questions regarding the availability of capital, payback requirements, and "budget constraints and motivators."

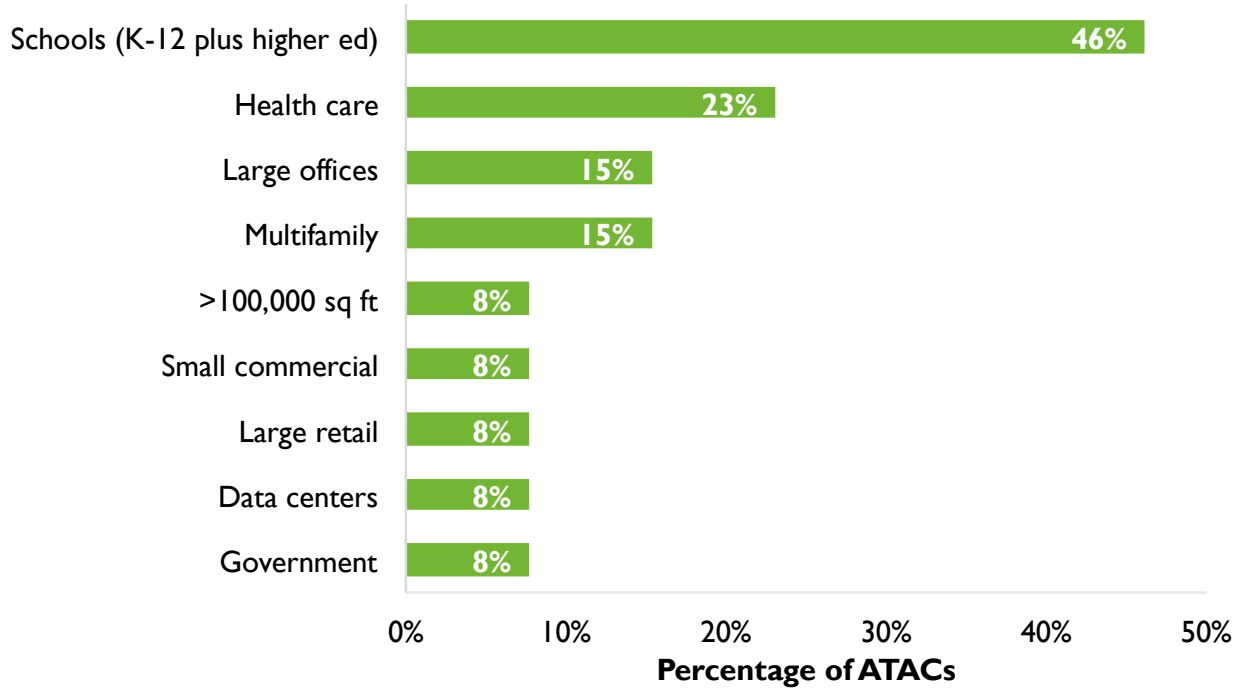
We were also interested in how and why some studies fail to lead to projects, so we asked ATACs "to the best of your knowledge, how many of the studies that you have done in the past two years have NOT led to projects that received an incentive from the Existing Buildings program?" Four respondents said that all their studies had led to projects, while another three said there had been just one or "very few." Most of the remaining ATACs responded that 70 percent or more of studies resulted in projects. Reasons offered for projects not coming to fruition included the following:

- "*Customers did not get capital approval internally.*"
- "*Sometimes it's because a project gets delayed by the customer; some of it is that payback is not good enough so there's no incentive [from Energy Trust].*"
- "*Could be that the owner has funding problems. Sometimes payback is not as attractive as the owner wanted.*"
- "*In the past, sometimes the (program) process took too long, but this has improved over the last two years.*"
- "*Senior management decided to go with a cheaper option than the high efficiency option because payback was too long.*"

One respondent said both the studies they had been assigned by the program failed to lead to completed projects. He explained that in one case, the customer redirected funding that had been planned for energy efficiency; in the other, study approval was delayed until after the customer had already selected equipment for their projects.

When asked how they segment the market to find opportunities for studies, virtually all the ATACs said that they primarily focus on customers with whom they have a relationship rather than segmenting by business type. They did, however, identify certain segments or building types as having the most potential for Existing Buildings program projects. As shown in Figure 14, schools and healthcare facilities were cited most often as having significant potential for Existing Buildings program projects. Respondents explained that many school buildings are old and have a lot of deferred maintenance, while school districts often lack funding or experience to maintain the equipment, leading to ample efficiency opportunities. Healthcare facilities were identified as being large energy users with accompanying opportunities to identify efficiency projects. Both these sectors also have access to bond financing, which can often support longer paybacks on efficiency projects. One respondent noted that he was seeing significant interest in energy efficiency projects at major university campuses and in the healthcare sector.

Figure 14: Sectors with Significant Project Potential



Several other market trends were called out by individual respondents:

- A trend noted by one high-activity ATAC is the increased turnover of large commercial properties, which tends to limit efficiency investment, since *"there's less investment by those who don't hold a property long term."* He suggested that some form of Property Assessed Clean Energy (PACE) financing might help to address this issue.
- Another ATAC described opportunities for improved controls, stating, *"I've seen a definite trend in HVAC controls for VFD [variable frequency drive] retrofits in commercial projects for existing buildings. There's no prescriptive measure for those, but they're a good measure as a custom project if the current HVAC system is still within its existing life."*
- Public sector buildings were singled out as a promising sector by an ATAC that specializes in this market segment: *"Government buildings that may be federal, city, or state organizations; many of them have a mandate to have an Energy Star score of at least 75, and if they do not meet that, they have to add energy efficiency measures to their project to get above 75; that's a big driver for our GSA [General Services Administration] projects. Many of these customers don't know about energy efficiency programs; we have to make them aware, so more customer education is required."*
- Another trend is the availability of analytics that help to automate the engineering assessment of building performance by allowing data to be collected remotely using the building's energy management systems and analyzed, which can streamline the

entire study-to-project process: *"This (automated engineering) will make a big difference in years to come and will lead us to do more studies."*

When we asked if there were certain segments of customers not well served by the current program design, the only category mentioned (by five respondents) was small buildings. ATACs explained that this is in part because small buildings do not meet the minimum size guidelines for a study (which vary by building type), but also because the cost of a study is generally prohibitive relative to the potential energy savings that can be identified. Only three respondents said that they had explored opportunities with smaller businesses than they traditionally serve. One said his firm had worked with a few non-profits and libraries, and that he expected their role in outreach to small business to increase in the future. The other two said that they believe small buildings offer significant untapped potential, as reflected in the following comments:

- *"We just finished a research project…for system conversion for small commercial buildings where rooftop units are replaced by a heat pump type system; it's a huge opportunity, because small commercial buildings are such a large part of the market."*
- *"We have started to focus on small businesses, specifically restaurants with high gas usage, because Energy Trust is interested in that and our projects have been well received."*

5.2.3 Customer Perspectives

The customer participation process and barriers to participation were topics we also discussed with the ATACs. In contrast to our findings in the previous process evaluation of the Existing Buildings program, six of the 13 ATACs responded with a response lower than 4 on a scale of 1 to 5 when asked "How easy is it for customers to participate in the Custom track of the Existing Buildings program where 1 is not at all easy and 5 is very easy?" Two of the five high-activity ATACs gave a rating lower than 4, as did one of the three mid-activity and three of the five low-activity respondents. Explanations offered by these ATACs for the challenges faced by customers included:

- *"The hardest thing for customers is understanding the process. Energy Trust does not do a good job of explaining the process to customers—what their responsibilities are—and leaves it to ATACs to do so. Also, there's poor communication and coordination between the program and ATACs in the initial phases of the project."*
- *"A lot of times it's a timing or scheduling issue and a study takes time."*
- *"Program timeline, costs, budget may all impact building or customer processes, such as finding the right controls contractor who can implement the measure we recommend."*
- *"I would say the amount of time it takes to get through the process."*
- *"It's due to paperwork; it's cumbersome."*
- *"The initial hurdle is to get a site assessment; maybe there's a way to improve that process."*

Those who thought participation was relatively easy were also asked about challenges customers face. Some of those focused on the economics of the proposed project as well as the difficulty of getting to a decision. For example:

- "*Just getting the people who make the money decisions in the organization to pull the trigger; we work with facilities people who take the projects to the finance people.*"
- "*Small business owners can make decisions on their own, but municipal or state customers have to go through an approval process.*"
- "*Biggest challenge is to validate the payback periods, to make sure it makes economic sense, especially for public institutions.*"
- "*Payback on any project can be a challenge and design assistance is an added cost that owners may not understand they need on a more sophisticated project.*"

Respondents were also asked if there were different challenges for gas and electric customers. Interestingly, one said it is easier to find savings opportunities for gas customers, but another said it is more difficult. A third explained that *"customers really need to be dual fuel to have a study go through and be incentivized across the board,"* while another ATAC pointed out that *"There is a challenge with gas customers in that some of the bigger ones are transport customers [they buy gas on the market and use the utility to deliver it to them] so they are ineligible for incentives."*

5.2.4 ATAC Experience with the Program

We asked ATACs specifically about various aspects of their participation in the Custom track of the Existing Buildings program. Responses to these questions are summarized in Table 40, which shows the mean response on a scale of 1 to 5 (where 1 is not at all satisfied and 5 is very satisfied), the number of respondents answering that question, and the percentage of respondents offering a rating of 4 or 5. Note that the results should not be interpreted in terms of statistical significance because of the limited number of respondents.

Table 40: ATAC Satisfaction with Program Processes

Interview Question	Mean Response	Number of Responses	Percentage Giving Rating of 4 or 5
How satisfied are you with the process of completing a technical study through the Existing Buildings program?	4.2	13	77%
How are your communications with program staff at ICF or Energy Trust?	4.7	13	100%
How satisfied have you been with the customer assignment process?	3.9	10	60%
How satisfied have you been with the turnaround time for ICF's review of energy study results?	4.3	12	83%
How satisfied have you been with the reimbursement process?	4.0	13	77%

First, we asked ATACs how satisfied they are with the process of completing a technical study through the Existing Buildings program. Most were satisfied with the process, but three of 13 respondents gave ratings lower than a 4. Their comments included:

- "*We would like to have the ability to understand why a decision is being made by Energy Trust other than, hey we're saving all this energy and we're not getting any incentive, other than that it goes into a magic black box that says a project is not cost effective.*"
- "*[The program] does not do enough front-end due diligence before starting a project.*"
- "*The main difference is when I worked with the industrial program I worked directly with Energy Trust and got a sense of what they needed; working with the Existing Buildings program, I work with many people with different standards and there's a lot of back and forth revision work, which did not happen in the industrial sector, so there's a lack of consistency.*"

Satisfaction with communications between program staff and ATACs was universally high, with respondents offering praise for the timely responses and information sharing by program staff, summed up by the statement *"they're very responsive."* One respondent who gave a 5 rating for communications nevertheless offered a comment that *"sometimes there is a disconnect between the engineering group and the program managers that are out there working with the customers. It's been more over some of the project non-energy benefits, it's a grey area as to what qualifies as a non-energy benefit. Over the last year the engineering group has gotten stricter in that regard."* Another ATAC noted *"we've not had regular meetings on the program like we're supposed to; there have been meetings on issues, but not on the program in general."*

Although not all ATACs had experience with the customer assignment process, four of the 10 who did have experience rated it lower than a 4 and raised issues regarding what they perceived as arbitrary aspects of the process.

- *"It's a real crap shoot on ones that get assigned; 75% are really good and 25% need to be vetted more."*
- *"One of my frustrations is that we have found studies and we're not guaranteed that they will come back to us. We don't have much incentive to bring studies in if we will not get them assigned to us but given away to other ATACs."*
- *"I presented some projects to the program and never heard anything back, they went into a black hole."*
- *"We only had two: one was requested, the other was turned down by all other ATACs and if we knew more about it beforehand, we would have turned it down too."*

Satisfaction with the turnaround time to review studies was generally high, with respondents offering comments such as *"they've bent over backwards on many occasions to push stuff through to get it to us when we need it."* Only two respondents provided ratings of less than a 4. Explanations offered included:

- *"I've gotten a sense that turnaround times have slowed down in the last three months."*
- *"Sometimes the approval process is a little onerous, especially with the engineering group. We don't have a lot of insight into the approval process of the engineering team and we'd like to know what that structure is and what the criteria are. It's like the information goes into a black box."*

Before asking ATACs about their satisfaction with the reimbursement process, we asked how the actual costs of conducting an energy study compare to the amount the Existing Buildings program reimburses them. Most said the amount they receive is generally fair and covers their costs, but they noted that costs tend to exceed reimbursements for both site assessments and more complex TAS projects. With regard to site assessments, one respondent said that *"it usually costs us double to do one than what we actually make,"* while another said *"for site assessments it's not worth it unless you're hoping to get a lead for a study; it's not cost effective for us."*

On reimbursement for more complex projects, illustrative comments included:

- *"On average, our costs are 30% more than the reimbursement, just because of the cap on study costs. Even if it's a 160,000 square foot lab building, you still have a $20,000 cap on study costs."*
- *"Usually it's about $500 over, but it can be more if I want to find a lot of potential energy-saving measures and I go into detail to lay them out in the report."*

- *"If it's a sophisticated project our cost can be 20% more than the reimbursement."*
- *"It's all over the map and varies by project. On average it's fine, but some projects are more complicated than first thought."*

Regarding their satisfaction with the reimbursement process, even most of the ATACs who lose money on some projects were highly satisfied, and only three of 13 provided satisfaction ratings below a 4. Several comments from those offering lower ratings focused on the length of time it takes them to be paid:

- *"We should be paid net 30 or 45, not net 60. We have had to chase down 30% of our invoices."*
- *"There can be delay in payments; it may go over 60 days unless I follow up with them."*
- *"Better project management and better understanding of the project up front [would avoid reimbursements out of line with costs]."*

5.2.5 Suggestions for Improvement

When asked about additional program assistance they would like or recommendations to improve the Existing Buildings program, most respondents said they were satisfied with the support they receive and that Energy Trust and ICF *"do a very good job already."* The few recommendations tended to focus on the study assignment and approval process:

- *"We would like to have the right of first refusal on projects that we find."*
- *"We use a project tracking software and we would like Energy Trust to use a similar software so ATACs could see project progress."*
- *"The main thing I would like is consistency in the evaluation criteria for non-energy benefits. Another is what costs qualify, that's a grey area. We submit a study and get a budget estimate from a contractor, and we're told there's a whole bunch of non-allowable costs, which can include engineering and commissioning."*

Finally, one ATAC said he would like more feedback about what is expected in a study and how well his firm is doing on meeting those expectations: *"We would like more feedback on how we're performing versus our peers. It would be good if ICF or Energy Trust could provide examples of really good reports; they could redact some information to keep them confidential."*

5.2.6 Implications for Existing Buildings ATACs

The following findings result from our interviews with ATACs:

- Several ATAC representatives were not clear about the specifics of the lower cost, less detailed, short TASs introduced by the program in 2017. Actively informing ATACs, contractors, and customers and promoting the use of these lower-cost

studies could help with the enhanced outreach to smaller customers described below.

- Five of the ATACs interviewed said they believe small businesses are not well served by the current program design, both because small buildings do not meet the minimum size guidelines for a study and because the cost of a study is generally prohibitive relative to the potential energy savings that can be identified. A combination of lower square footage thresholds and use of the short TASs could support some of the ATACs who have been reaching out to smaller businesses.
- Several ATACs expressed confusion about the process by which studies are assigned, and one did not understand why her firm was not assigned a study when they were the one to refer the customer to the program. Energy Trust and the Existing Buildings program team should explain in greater detail how the assignment process works generally and what happens when an ATAC brings a project to the program.
- There have been challenges with approved or assigned studies being completed and evaluated in a timeframe consistent with the customer's project timeline. While several ATACs commented that the review team strives to accommodate tight timelines for projects they submit, others cited instances where delays led to lost opportunities. Customer deadlines and decision points should be agreed upon at the time a study is approved, and the consequences if those deadlines are not met should be clearly communicated.
- There is a lack of clarity on the project review and approval process for some ATACs. One respondent said that *"we don't have a lot of insight into the approval process of the engineering team; it's like the information goes into a black box"*—a term repeated by two other ATACs. While ATACs understand that some evaluation criteria may change, a more explicit description of the variables and criteria that determine whether a project meets the Energy Trust cost-effectiveness requirements for incentives would make them more comfortable with the process.
- ATACs would appreciate more feedback on how they are performing. In addition to more insight into the review process, ATACs are interested in knowing how their own studies stack up, both in absolute terms and relative to their peers. One suggestion from a respondent was for Energy Trust to provide examples of benchmark or best-in-class studies, with customer-identifying information removed to ensure confidentiality.
- Several ATACs mentioned waiting multiple months to be paid for studies. Opportunities to streamline the payment process should be investigated, and ATACs should be able to determine the status of their payment while they wait.
- Some ATACs may be interested in utilizing automated engineering for project studies. As noted by one respondent, the availability of analytics can help to

automate the engineering assessment of building performance, and the Evergreen evaluation team encourages Energy Trust to work with the ATACs to educate them and the end user community about automated engineering and how it can be used to streamline the study process.

5.3 Contractor Interviews

The Evergreen team completed 40 interviews with contractors: 31 with trade allies and 9 with non-trade allies. Most interviews lasted between 25 and 35 minutes, although a few exceeded 45 minutes. Trade allies were classified as having high, medium, or low activity levels by Energy Trust in the data we received based on the number of projects they had completed through the Existing Buildings program in 2017 and 2018: high, more than 10; medium, 3-10; and low, 1-2. Non-trade allies were assigned to the same categories based on the number of projects they had completed through the program in that time.

The number and type of contractors completing interviews is summarized in Table 41.

Table 41: Contractor Interviews by Activity Level

Activity level	Trade Allies	Non-Trade Allies
High (>10 projects in 2017-18)	8	5
Medium (3-10 projects in 2017-18)	7	2
Low (1-2 projects in 2017-18)	16	1
Total	**31**	**9**

The following sections detail the findings of these interviews.

5.3.1 Sample Issues

When we received Energy Trust data on contractors and their associated projects, we initially found a substantial number of contractors who were designated as non-trade allies and who had completed multiple projects through the Existing Buildings program. As we started to do background research on these companies, we found that some—including those with the most projects through the Existing Buildings program—are, in fact, Existing Buildings trade allies who promote their program affiliation on their websites. We therefore looked up each firm on the Energy Trust "Find a Contractor" page and found that many or even most of the "non-trade ally" contractors were registered as allies with the program. As a result, the number of non-allies in our sample dropped substantially. Moreover, several contractor names in the non-trade ally group were third-party firms whose primary function is to process rebate forms for their clients. In addition,

the data included multiple records with what were clearly customer names rather than contractor names in the contractor data field.

For some of the completed interviews, we did not learn that the respondents were trade allies until after we had scheduled their interview believing them to be a non-trade ally. Rather than cancel the interviews, we opted to complete each of them and incorporate the results into the trade ally totals. Since these respondents had all done mostly lighting projects, this resulted in a larger proportion of Lighting track respondents than we had planned for the original, smaller trade ally sample.

5.3.2 Trade Ally Findings

The Evergreen team conducted interviews with 31 trade allies identified as contractors in the Energy Trust data and on the "Find a Contractor" page of the Energy Trust website.

Respondent Characteristics

While many do describe themselves as contractors, some respondents described their firms in different terms, including distributors, manufacturers, a full-service engineering and project management firm, energy service companies, and a design and supply company. Three of the respondents said their company was woman-owned, and a fourth said it was 45 percent woman-owned. None said they were minority-owned.

Overall, the trade allies were generally receptive and available for interviews, although one explained that she had responded to the notification email sent by the ICF Trade Ally Manager to say she was too busy to conduct an interview, and three failed to show up for scheduled interviews.

The interviewed trade allies represented each of the program tracks, with the breakdown by track shown in Table 42. Program track information was determined based on the most frequent track that a contractor participated in during the 2017-2018 time period.

Table 42: Contractor Interviews by Most Common Program Track

Track	Trade Allies	Non-Trade Allies
Lighting	23	5
Standard	2	4
Custom	6	0
Total	**31**	**9**

Most interviewed trade allies had been registered trade allies for a long time, with several saying they had been active in the Existing Buildings program since its inception and had become trade allies as soon as that became an option. At the other extreme, one respondent said that he became a trade ally just a year ago. Nineteen of the 31 allies in the sample were also designated as trade allies for other programs in the Energy Trust database, including the New Buildings, Production Efficiency, and Multifamily programs.

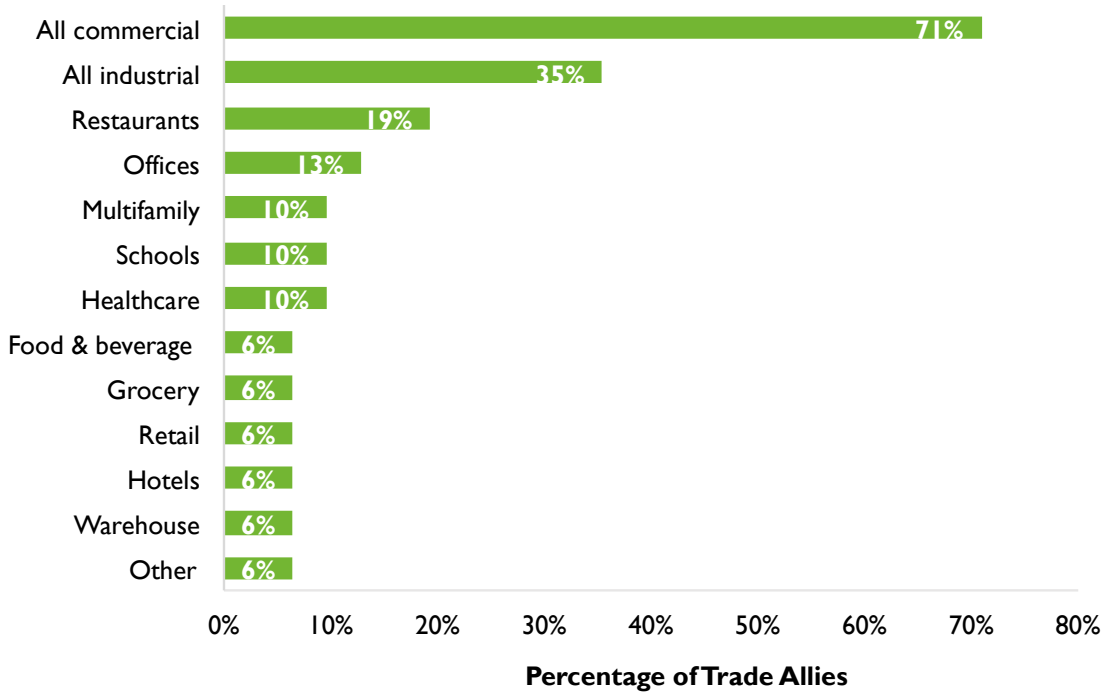
The Existing Buildings program is an important contributor to sales for many of the interviewed trade allies. On average, they reported that projects completed through the program account for 30 percent of their revenue (unweighted by sales volume), with the percentage ranging from less than 1 percent to 100 percent. As shown in Table 43 below, the distribution of percentage of revenue accounted for by the program is somewhat bi-modal, with 60 percent of respondents reporting that either less than 5 percent or more than 50 percent of their revenue was accounted for by the program.

Table 43: Percentage of Revenue from Existing Buildings Projects

Percentage of Revenue	Percentage of Trade Allies
<5%	33%
5 – 10%	13%
11 – 25%	20%
26 – 50%	7%
>50%	27%
Total	**100%**

All trade allies but one said that they work almost exclusively with commercial, industrial, and multifamily customers. Some specifically said that they work with the full range of commercial or industrial customers, while others cited specific market segments that they consider a specialty or niche. The number of times specific sectors were cited is summarized in Figure 15 below, which shows that the restaurant and office sectors were most often mentioned, followed by the multifamily, school, and healthcare sectors. Only a few allies said that they specialize in specific sectors, mentioning convenience stores, hotels and restaurants, food service, small commercial, buildings of 50,000 square feet or more, warehouses, roads, and airports.

Figure 15: Sectors Served by Trade Allies



Geographic areas served also vary widely, from very local (the Astoria/Clatsop County area) to multinational (United States plus Canada), with most trade allies saying they have customers all over the areas served by Energy Trust.

Summary of Program Involvement

As noted previously, we divided our sample into varying levels of program engagement based on the designation of high, medium, or low activity by Energy Trust. In addition, we had tracking system data on the number of projects for 2016, 2017, and the first part of 2018 for each trade ally/contractor. The average number of projects over that timeframe was 245 for high-activity, 24 for medium-activity and 5.5 for low-activity trade allies, illustrating the wide variation in the level of program involvement.

When trade allies were asked if there had been any changes to the Existing Buildings program in the last couple of years that affected their business, either positively or negatively, 13 respondents said they had not noticed any major changes. Among those that did note changes, 12 said that reduced incentives had made it more difficult for them to sell energy efficiency projects, particularly lighting. Comments included:

- *"The LED tube program has had incentives cut so low that customers do not want to do projects."*

- "*High bay and industrial flood lights* [incentives] *both got cut, which has had a big effect on us. The biggest issue was that we had essentially no notice that this was going to happen; no input and no notification. That cost us half a million dollars.*"
- "*The continual realignment of incentives has affected us; we're not using Energy Trust for newer projects, as it is too much effort for us.*"

Other negative changes mentioned by respondents included slower project turnaround and reimbursement; the program has tried to assign people who specialize too much so that contractors must talk to too many people on a single project,[19] and Evergreen Consulting Group no longer fills out the program paperwork as they used to.

Three trade allies noted positive changes. A restaurant supply company said that increased incentives on some items have encouraged customers to buy more high-end and energy efficient equipment, a lighting contractor said that the lighting tool has changed for the better, and a compressed air equipment distributor said that the leak detection program has been a good add-on for them, although he may have been thinking of the Production Efficiency program, for which they are also a trade ally.

The primary benefit of being a trade ally for most respondents was the ability to use Existing Buildings program incentives to sell projects. Other positive aspects of trade ally enrollment included technical assistance from program staff, referrals from the "Find a Contractor" page on the website, education on program and technical issues, and the credibility provided by being associated with Energy Trust.

All but three respondents said they could not see any disadvantages to being a trade ally, but one said that *"the process burns up a lot of time for a small contractor,"* and another noted that *"we have never received a referral as a trade ally."* A more detailed explanation of disadvantages was provided by a lighting manufacturer/distributor who said that neither the benefits nor the requirements were relevant for his firm:

- "*First there was the cost of required insurance, which doesn't apply because we don't do the installation. In addition to that cost, they send me information about seminars regarding the program and we have to go. I have told them about this, but they have other trade allies for whom this works, so it is how they have to operate. For us it has been useless. Nobody would say, we should not work with you because you aren't a trade ally.*"

Overall, respondents were very satisfied with the support they receive from the Existing Buildings program as trade allies, with a mean rating of 4.6 and 94 percent of respondents offering ratings of 4 or 5 on a scale of 1 to 5, where 1 is not at all satisfied and 5 is very

[19] This respondent specializes in integrating efficient HVAC equipment with renewables, so he may have been dealing with both the Existing Buildings and Solar programs.

satisfied. The average ratings were not statistically significantly different for high, medium, and low activity levels or primary participation tracks.

Project Trends

Most trade ally contractors specialize in a single end use (e.g., lighting, HVAC, cooking) and some specialize in a single measure type (e.g., LEDs or TLEDs), while 90 percent of respondents said that most projects are single measure (i.e., lighting or HVAC only) rather than multiple measures (e.g., lighting plus HVAC) or whole building retrofits. One contractor commented that *"comprehensive projects are talked about a lot, but we have not had many,"* while another said that *"we don't involve ourselves in those. A customer may also have other projects they are working on, but as far as the lighting, we drive that bandwagon."*

Among the relatively few who promote a more integrated approach, one said, *"it depends on the customer, but we always try to promote multiple measures."* Several trade allies reported hurdles to completing multi-measure projects:

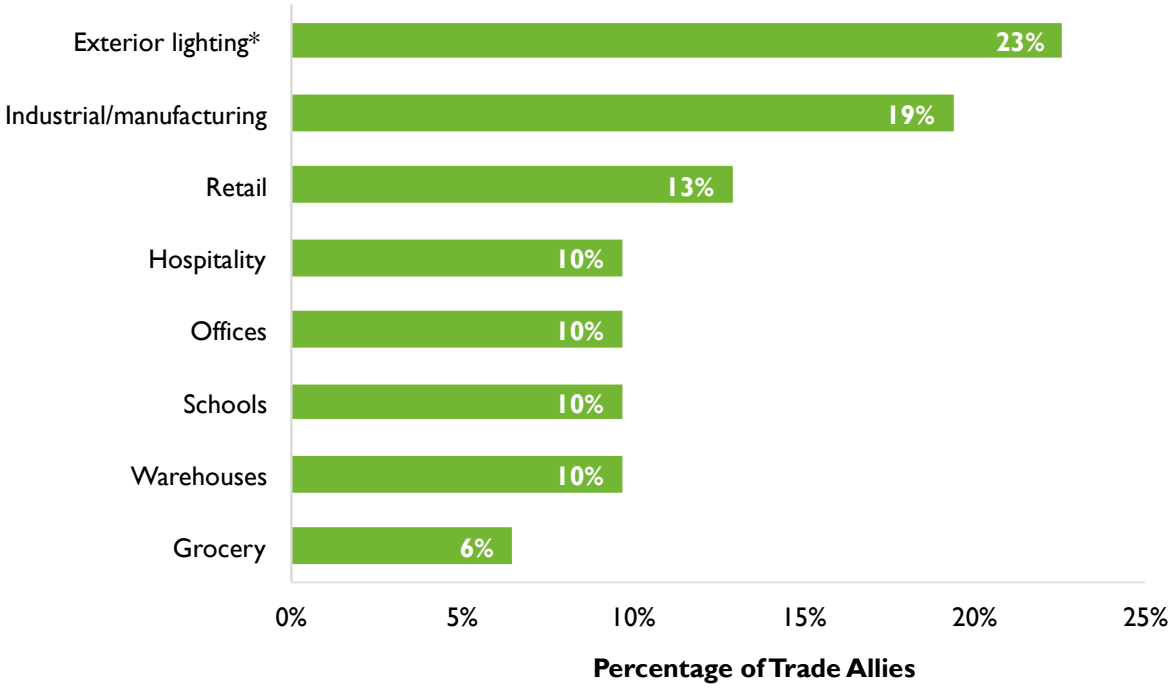
- One mechanical contractor said *"more and more customers are doing HVAC hybrid integration so they can get near net zero, depending on what their property looks like."* However, this same respondent was the one who felt that specialization within the Existing Buildings program had made it more difficult to do multi-measure projects, since he has to talk to multiple program staff on a single project.
- Similarly, another contractor said *"customers are doing more comprehensive projects, but Energy Trust is not well suited to it, because the program is too disjointed. On one current project, we're not using the program because it has no connection between the mechanical and lighting sides; it's too disconnected, with different sets of rules."*

Marketing and Market Trends

Most of the trade allies we spoke with said that business is good—so good that they are currently having to do few cold calls, since referrals and additional work from current or past customers are keeping them busy, with 18 mentioning sales to existing customers and 14 citing referrals or word of mouth.

Sectors most often cited as offering project potential for responding trade allies include outdoor lighting and industrial buildings (although industrial facilities are served by the Production Efficiency program), followed by retail and several others, as shown in Figure 16.

Figure 16: Sectors with Project Potential



* Includes car dealers, parking lots, roads, and airports, as well as marijuana growers, which would be served through the Production Efficiency program. This is also true for industrial/manufacturing facilities.

When asked if there are specific types of customers that may not be well served by the Existing Buildings program, most trade allies said that they could not think of any, or said that the program's coverage is comprehensive. Twelve offered examples of sectors that may not be reached by the program currently, including the following:

- Two mentioned rented and leased spaces, although one said these had great potential if landlords could be persuaded to participate.
- Five cited small customers as an underserved market. Three of those five mentioned smaller customers generally, noting that the small scale of savings often made projects uneconomical; another said that *"there's a lot of small mini marts without LED case lighting and that still have T12s for interior lighting;"* and another specified *"small educational and child care facilities."* One vendor of refrigeration equipment (primarily case doors and strip curtains) proposed a direct install program *"like California has; they have a $10,000 allocation per customer."*
- One mentioned senior living facilities owned by corporations, which are difficult to reach because *"the decision maker is on the other side of the country."* He suggested that the program help trade allies reach out to such customers (although these facilities

are currently served by the Existing Multifamily program rather than the Existing Buildings program).

- Another respondent felt that *"larger restaurants whose construction or renovations are controlled by a general contractor may not be getting the program involved."*
- A lighting contractor stated that *"we could do more locally in the retail environment; they have lots of fluorescents: T8s and some T12s."*
- Finally, one trade ally noted that *"with the focus on commercial, that market is getting good incentives at the expense of industrial,"* while another said that *"the industrial sector is not well served; in my view, the program does not offer a lot of options for industrial customers."* Neither of these respondents made reference to the Production Efficiency program and its specific targeting of industrial customers.

Almost all trade allies said they incorporate the program incentives into their bids and marketing pitches to customers. Several lighting contractors said they explicitly play up the decline in incentives over the past year, telling customers that they need to act now, before the incentives for LEDs go away completely. The 24 trade allies who were familiar with Energy Trust marketing rated its effectiveness an average of 4.2, with 92 percent providing ratings of 4 or 5 on a scale of 1 to 5, where 1 is not at all effective and 5 is very effective. Some respondents commented that the Energy Trust materials look good and awareness of the Existing Buildings program is high, while one that gave a lower rating commented that *"where we are with lots of rented space, the marketing material is not going to reach the owners who don't want to pay for projects."*

Only four respondents said they have taken advantage of program marketing funds for newspaper and radio ads, brochures, a yellow pages ad, and promotional materials such as shirts, hats, and logos on vans. Most of those who did not use the funds said they were unaware of their availability, but a few said it was not worth the trouble, noting *"I don't see that it would be worth it for us"* and *"it's too difficult to use them, I have tried numerous times, I never hear back from them when I've followed up."* Several said they did not need to access the marketing funds because *"we're plenty busy."*

Customer Perspectives

Trade allies were asked to rate how easy it is for customers to participate in the Existing Buildings program, using a 1-to-5 scale, where 1 is very difficult and 5 is very easy. Results for the 30 who offered a response averaged 3.8, with 83 percent providing ratings of 4 or 5. The three respondents with ratings of 1 or 2 offered the following reasons:

- *"Customers are reluctant to consider filling out paperwork and don't like waiting for rebates."*

- *"The paperwork is very difficult. The most common notion is that it's a grant, not a rebate/incentive program and that you have to return the money if you don't meet the energy savings targets."*
- *"I guess sometimes it's just the timeline of the process; if they want to go forward right away it can be a challenge to pump the brakes for a few weeks to allow for program participation."*

We also looked at the perceived ease of participation by trade ally activity level and by their most common program track. As shown below in Table 44, high- and low-activity trade allies perceived participation as more difficult than did those who completed a medium volume of projects through the program. By program track, Lighting contractors consider participation easier than do trade allies who primarily did Custom and Standard track projects, although it must be noted that there were only two Standard track respondents, one of whom provided a rating of 1 and offered the comment above that customers do not like waiting for rebates.

Table 44: Perceived Ease of Participation, by Trade Ally Activity Level and Program Track

Trade Ally Category		Mean Response	Number of Responses	Number Giving Rating of 4 or 5
Activity Level	High	4.4	n=8	7
	Medium	4.7	n=6	6
	Low	4.1	n=16	12
Program Track	Lighting	4.4	n=22	20
	Custom	3.8	n=6	4
	Standard	2.5	n=2	1

When asked whether difficulty in reaching decision makers posed a challenge for program participation, only three of the 27 trade allies who offered responses said this often occurs, while 11 said it happens sometimes and 13 said it rarely or never occurs. Those who encounter this problem commented that it most often happens with larger corporations, and others with out-of-state headquarters, as well as with hospitals, franchise restaurants, and road and airport projects.

Some trade allies had suggestions on how to address this issue; three said that increased incentives would help get the attention of decision makers, while another three proposed that an Energy Trust program representative could contact the customer on the trade ally's

behalf. One respondent pointed out that Existing Buildings program staff will already attend meetings with the contractor and client to move a project along, and *"sometimes it helps and sometimes it doesn't."* Another was concerned that if Energy Trust intervened with a national customer, the job *"might go out for a bid or spec nationally and we might not be considered for the project at all."*

Program Communication and Training

All but five of the trade allies interviewed have participated in an Existing Buildings training session at least once; of those five, one stated that some of his colleagues had attended. Most of those who attended said that the training had adequately prepared them to handle program requirements, processes, and paperwork. Comments included:

- *"They supplied a video of the training as well as additional materials, which was great because I have a new person I have to train on it."*
- *"At this point, there is not much I don't know about the program. Yearly changes are the only time I have to update, so I try to go to those."*

A few contractors who had attended offered less positive observations:

- A refrigeration equipment vendor commented that *"it's good, but mostly geared to lighting."*
- A lighting contractor said that *"What I really wanted was a better explanation of the new tool and how to work with that. Other than that, it is the same stuff over and over. There's nothing really new, which is usually fine, but when there was this change I would have liked help with that."*
- A lighting manufacturer/distributor also felt that the training was not appropriate for his company, explaining that *"it's more geared to contractors and asking about code, etc. so we don't know or care. The thing is, it was so elementary that if I could pass the test without knowing anything it can't be much use. It's not really required, but they really pushed this NXT Level Certification.[20] They said, when customers see our website they can see we are NXT Level certified, but what does that do for me?"*

Most of the trade allies interviewed (27) were aware that they receive the *Insider Newsletter* distributed by Energy Trust. About half said they usually read the entire newsletter or share it with their colleagues. Others say they skim it and only focus on certain articles of interest. For example:

[20] NXT Level Training and certification is offered by the Northwest Lighting Network, which is managed and administered by the Northwest Energy Efficiency Alliance (NEEA) in collaboration with NEEA's partner utilities throughout Oregon, Washington, Idaho, and Montana. https://nwlightingnetwork.com/nxtlevel/

- "*I glance at it but don't have a lot of time to focus as we've been so busy.*"
- "*I only scan it, don't have much time to read it.*"
- "*I look at certain articles if they interest me.*"
- "*I read it, but it has no particular focus for us, we're kind of niche in signage.*"
- "*I look at it for program changes and changes to the vendor list.*"
- "*I scan it and read articles that are relevant to our business or projects.*"
- "*It depends on time and content. I wear a lot of hats so don't often have the time.*"

Asked about their satisfaction with communications from Energy Trust regarding the Existing Buildings program, trade allies gave a mean rating of 4.5 on a scale of 1 to 5, where 1 is not at all satisfied and 5 is very satisfied, with 90 percent providing a rating of 4 or 5. The average rating was higher for high-activity trade allies (4.8) and lower for low-activity allies (4.3). Comments and the associated ratings included:

- "*Too many points of contact and no follow up.*" *(2)*
- "*I'd like video updates rather than paper on program changes.*" *(4)*
- "*It would have been a '1' in the past, but they have listened to feedback on that and have changed. I told them, we're supposed to be allies, but you make these decisions and don't tell us. You do what you choose to do and force my business to change because of your focus. But it seems that they have listened and given us a heads up.*" *(3)*

Similarly, respondents were highly satisfied with their interactions with Existing Buildings program staff, providing an average rating of 4.8, with 94 percent offering ratings of a 4 or 5. Satisfaction was high across the different levels of trade ally activity and primary program tracks.

Asked if there was additional program support they needed, most said there was not. The few suggestions offered included:

- "*Don't mess with Evergreen [Consulting Group]; they are doing an awesome job.*"
- "*Follow up more promptly on phone calls and address the message I leave them; sometimes I never hear back from staff or it can take 4 to 5 days to hear back from them.*"
- "*It would be interesting to have a compressed air summit and event focused on compressed air users to learn more about efficiency and have an industry focus.*"

Feedback on Program Processes and Overall Satisfaction

On average, the ease of using the program application forms as part of the overall participation process was rated a 4.4 on a scale of 1 to 5, with 78 percent providing ratings of 4 or 5, where 1 is very difficult and 5 is very easy. Average ratings varied across program tracks, as shown in Table 45 below.

Table 45: Perceived Ease of Using Program Application Forms

Type of Project Application Form	Mean Response	Number of Responses	Number Giving Rating of 4 or 5
Standard Track incentive application	5.0	n=2	2
Custom Track incentive application	4.3	n=6	4
Lighting Workbook	4.3	n=22	19

Several lighting contractors offered comments on the Lighting Tool, shown along with their rating.

- *"When I first started I would have said it was very easy. New changes are more difficult. I liked having the drop-down menu for old and new fixtures on the first page. It became confusing with the change they made within the last year. I find it very confusing. Now a 2." (2)*
- *"Maybe they could have a wider range of existing measures in the database; what you take out you select from a drop-down menu, which is nice, but there is a lot of stuff out there that does not fit into what you find. So you just try to pick the closest one you can." (4)*
- *"We have problems figuring out where a product fits on the drop-downs."(3)*
- *"It's not entirely intuitive to users." (3)*

One aspect of the overall application process that received negative comments from two lighting trade allies was the Docusign process by which forms are electronically signed and transmitted between participants and program staff. One respondent said, *"I would rather deal with the PDF, especially with customers. If customers are doing it themselves, Docusign may be easier, but the way it works is it comes to me seeking the customer's signature, so for me it's a couple of extra steps that make it inconvenient."* Another commented that *"in the past we would send an email to Evergreen [Consulting Group], they would assign an advisor, and all communication would be through them. With Docusign, instead of the advisor sending it to the customer, it goes through the Docusign program. We have to review and approve, and then it goes to the customer, who puts their signature on it with Docusign and then sends it back to Evergreen. We're still getting used to how it works, and one customer – a military site – was unable to do Docusign so we had to go around that."*

Comments provided by Custom track trade allies to explain the lower rating for satisfaction with the application process were that *"it does not accommodate my special hybrid projects"* (3) and *"the challenge is the documentation and the insistence that ICF has to be in the middle of the project"*(3). On the overall process, the latter respondent added that, *"from when final paperwork is submitted, it can take several weeks to get an appointment and do the pre-*

verification and maybe be 10 more days before an incentive is offered; it adds a month to a project to get an incentive offer."

The two contractors doing Custom track projects who said they worked with ATACs reported no issues with the overall application process. They said there was no project handoff; both work closely with the ATAC throughout the process, *"with a very open dialogue."*

Trade allies also rated their satisfaction with the turnaround time for incentive processing, which averaged 3.7 on a scale of 1 to 5 for all 31 respondents, where 1 is not at all satisfied and 5 is very satisfied. As shown below in Table 46, trade allies with Lighting track projects were less satisfied than those with Standard or Custom track projects.

Table 46: Mean Satisfaction with Incentive Turnaround Time, by Track

Project Track	Mean Response	Number of Responses	Number Giving Rating of 4 or 5
Lighting	3.4	n=23	14
Custom	4.3	n=6	4
Standard	4.5	n=2	2

Several Lighting track respondents offered detailed explanations for their rating on turnaround time:

- One contractor who gave a rating of 1 said he had tried to break a larger project into smaller ones, with the goal of using the incentive from each phase to help fund the next one. He said that *"sometimes clients don't have the money to do it all at once. I had a client with a 200-light facility who wanted to do 50 lights at a time; they didn't have the capital budget but could do 50 at a time and wait for the incentive for the first 50 to help finance the second one and so on. But the checks took forever, and it took almost a year, because the checks did not process fast enough."*
- Another noted that *"you already know what's going to be installed and what the amount of the rebate is going to be. I don't know why it takes 60 days after the approval to process a payment when you have known all along. That's a really long time. We can't order the equipment until you have all the i's dotted and t's crossed. Then after you've done all that, having 60 days on the backside is ridiculous."* Despite these concerns, this trade ally gave a rating of 4.

While a half dozen contractors said they had not heard any complaints from customers, several respondents contrasted the actual turnaround time with what it should be:

- "*The last one took three months; the process should be two months max.*"(Rating of "2 or 3")
- "*Turnaround time is four months and it should be under two months.*"(Rating of 2)
- "*Customers are seeing reimbursement in 60 to 90 days; it should be 30.*" (Rating of 2)
- "*On the back end, it's been taking longer to process payments; used to be 1.5 months and now it's 3 months.*" (Rating of 4)
- "*It should be paid in net 30 after the 140L, not net 90+.*"(Rating of 2)

Suggestions for Improvement and Overall Satisfaction

Toward the end of our interviews, we asked the trade allies about their general satisfaction with the program and if they had any general recommendations for improvement. Most respondents said they had no suggestions. The few proposed areas for improvement were:

- "*I think the program is letting in vendors from out of state who misrepresent the equipment they sell in terms of quality and not really being able to provide local support and service for the products.*"
- "*There are too many points of contact at Energy Trust for a firm my size to work with, I'd like a single broad technical person, who knows how to work inside the program, to help move my projects through the process.*"
- "*It would be nice if alternative financing were available, especially for large projects, like on-bill financing or low interest loans; California has those options.*"
- "*Get rid of Docusign and go back to how it was done before.*"
- "*I'd like to see the requirement dropped that Energy Trust has to approve a project before it moves forward; customers should just have to submit an invoice and paperwork through me for qualifying equipment.*"

Overall satisfaction with the trade allies' program involvement was high, averaging 4.6 on a scale of 1 to 5, with 94 percent of respondents providing a rating of 4 or 5, where 1 is not at all satisfied and 5 is very satisfied. High-activity trade allies had the highest mean satisfaction rating, as shown in Table 47 below.

Table 47: Mean Satisfaction with Overall Program Involvement, by Activity Level

Activity Level	Mean Response	Number of Responses	Number Giving Rating of 4 or 5
High	4.9	n=8	8
Medium	4.4	n=7	6
Low	4.6	n=16	15

The two trade allies who gave ratings of 3 offered the following explanations:

- *"My communication as I mentioned with staff are not as good as they could be, and the program is too bureaucratic. I tell my customers they're going to have to put up with the process to get their incentives."*
- *"The program is not tailored to my business; it does not fit me."*

Finally, one trade ally who had offered criticism of several aspects of the program ultimately rated his satisfaction with the program a 5, explaining that *"despite the challenges, we could not do what we do without it. It's the catalyst for our business."*

Implications for Existing Buildings Trade Allies

Based on what we heard from Existing Buildings trade allies, we found that:

- Trade allies may benefit from a single point of contact for multi-measure projects. Projects that include both lighting and non-lighting end uses require a trade ally to deal with two separate program tracks and sets of program staff; designating a single individual to coordinate interaction between the project team and the program would be helpful.
- Trade ally satisfaction could be improved by faster turnaround on incentive check processing. Perceived slow turnaround in rebate check processing appears to have reduced satisfaction with this aspect of the participation process. Any changes that could shorten the time required to issue checks, together with periodic updates of payment status (e.g., an email at 30, 45, and 60 days after final application submittal) should help improve vendor satisfaction.
- There are some challenges associated with using Docusign. Several allies specifically mentioned trouble adapting to the use of Docusign to submit project applications. To enhance trade ally familiarity and understanding of the Docusign process, provide additional explanation and education, as well as alternatives when Docusign cannot be used.
- Some trade allies could use more training resources on the Lighting Workbook/Tool. While multiple respondents said they had become quite proficient at using the Lighting Tool over time, several said that it was initially challenging. For occasional and beginning users, the program could provide more education on the Lighting Tool, including a detailed online tutorial that would be available 24-7 and a point of contact for questions during business hours.
- Awareness of marketing resources could be increased. Only four of the trade ally respondents had used program marketing funds, and most others did not know they were available. Energy Trust should use outreach to trade allies to increase awareness of co-op marketing funds and promote their use to support online and social media marketing.

- The *Insider Newsletter* could be used to increase awareness of available resources. While all trade allies use the availability of incentives in their marketing, awareness of other program resources is limited. This could be addressed by including a summary of and link to available online training and support resources in the *Insider Newsletter* and on trade ally web pages to reinforce awareness.
- To the extent possible, Energy Trust should work to address financing barriers. While on-bill or direct financing may not be feasible, consider offering more information on potential sources of project financing. Also, when possible, support contractors who try to structure multi-phase projects using incentives from one phase to help finance the next.

5.3.3 Non-Trade Ally Findings

The Evergreen team interviewed nine companies listed as contractors and other vendors in the Energy Trust database that are not among the firms identified as trade allies in that data. Only one of these firms is actually a contractor; the others include an owner of multiple fast food restaurants that acts as their own general contractor, two national refrigerated case manufacturers that each have a service division, a lighting manufacturer and two lighting distributors that use local contractors for their installations, a manufacturer of anti-sweat heater controls for refrigerated cases, and a rebate processor. However, all of the respondents said they were familiar with Existing Buildings program processes and forms and were therefore asked about their experience with the program.

It is worth noting that non-trade ally respondents proved difficult to reach and to persuade to respond. To the extent that these companies have interacted with Energy Trust and ICF as part of their program participation, contact information should be tracked along with other project data. Lack of good contact information makes it very difficult for program staff to maintain active communications or outreach to non-trade allies who could eventually be recruited as trade allies or otherwise engaged with the Existing Buildings program.

Respondent Characteristics

Three of the nine firms interviewed were based in Oregon; the others were in California (n=2), New York, Missouri, Kentucky, and North Dakota. One of the firms (the restaurant chain) is minority-owned; none are woman-owned. With the exception of the restaurant chain, which has 700 employees in Oregon, all other respondents had fewer than 10 Oregon-based staff. Five had one or no staff members in Oregon, including the two refrigerated case manufacturers, both of which have thousands of employees nationwide, but none based locally. Because they do not sell equipment through the Existing Buildings program, responses for the restaurant chain are excluded from the results.

None of the respondents said their firm does any residential business. The three firms offering refrigeration measures focus on grocery and convenience stores, while the rebate processor works primarily with big box stores and national accounts. Among the lighting vendors, one sells mostly to minimarts and gas stations, one does primarily high bay lighting for industrial customers, and the others describe their business as all commercial or industrial customers.

Summary of Program Involvement

For 2016, 2017, and through August 2018, the interviewed firms each had submitted from 7 to 83 rebate applications, with the highest number submitted by a company that does rebate processing for national accounts such as big box stores, followed by 60 for a Southern Oregon-based lighting distributor that subcontracts installation. The rebate processor also handles New Buildings program applications; all others said their involvement was limited to the Existing Buildings program.

Most firms had been involved with Energy Trust and the Existing Buildings program for three or more years, with one citing involvement for more than a decade. Regarding their non-trade ally status, several of the out-of-state respondents said they did not see significant disadvantages to not being a trade ally, although one case manufacturer said they had been a trade ally in the past but dropped that status when they changed their sales focus (they are still a trade ally for several energy efficiency programs in other states). Three of the more local firms (one in Northern California, two in Oregon) believe that they receive the same updates and information as trade allies and therefore face no real disadvantage:

- One of those explained that *"I'm knocking on doors, been in the business for 30 years. I do a lot of cold calls and that's not something I need to be a trade ally for. Anything I need, I look up on the website and download."*
- A lighting contractor said that *"I never did the paperwork so I'm not official, but I get everything from them."* As a side note, this respondent has a website that states his firm is an Energy Trust of Oregon trade ally.

Two respondents had investigated becoming trade allies in the past but decided against it. One said, *"It would have been just another pile of paperwork for us. We had our projects and customers and were not interested in marketing a lot more."* Another recalled, *"I did not have the insurance they wanted. Since I don't do the installations, that did not apply to my business."*

Finally, one out-of-state lighting manufacturer based in the Eastern United States that sells in Oregon and uses installation contractors said they had not investigated becoming a trade ally but that *"we would love to become a trade ally."*

Despite their lack of trade ally status, respondents were very satisfied with the support they receive from the Existing Buildings program, offering an average rating of 4.6 on a scale of 1 to 5, where 1 is not at all satisfied and 5 is very satisfied (the same as the average rating for the 31 trade allies), with all but one of the eight respondents providing ratings of 4 or 5. The one respondent who gave a rating of 3 or 4 (3.5) explained that *"the staff has been great, but sometimes the time it takes to process and get approval can take longer than I would prefer."*

Project Trends

The rebate processor said they sometimes handle different types of measures for a single project, but the other respondents said they primarily focus on their specific end use. Only the lighting contractor and distributors noted program changes that had affected the kinds of projects they submit, with the following comments:

- *"Rebates have dropped off considerably and some of the tools have changed somewhat, so payback is harder, which makes it harder to make the sale. Like the T8 to LED conversions are practically nothing, so for the customer the incentive is the kWh savings, not the rebate. I still talk about getting the rebate but that is not the incentive when you only get $2 per tube, not like it used to be. Before, they were covering the whole cost of the lamp. Now if you're paying $10, you get $2 back, so it's not driving the sale; kWh savings is."*
- *"The incentive structure sometimes doesn't make a lot of sense from the contractor point of view; for example, the [parking lot lighting] market is still flooded with T8s, and for a long time there was a decent incentive to change to LED, but those have basically gone away, and a lot of the HID conversion market has already been grabbed up. So now it's mainly interior, where the rebates have gone down the most."*

Marketing and Market Trends

Most of the non-trade ally respondents we spoke with believe that their best opportunities lie with their traditional customers, but one lighting vendor who serves small groceries, gas stations, and convenience stores said that the LED retrofit market for these customers has become saturated—which is one reason he has *"plans to retire next month."* Similarly, the contractor cited above noted that there are fewer opportunities for exterior lighting retrofits and that interior lighting has more potential despite the lower rebates.

All the refrigeration vendors said that grocery chains continue to offer the best opportunities because *"they are more aware of rebates and offerings, and more informed customers are more likely to participate."* One case manufacturer said that energy use is increasingly part of their sales pitch and that *"we now have to show energy consumption of our products versus standard efficiency."* However, the other case manufacturer said that increasingly stringent national standards have made it difficult to offer cost-effective efficiency options. In addition, he noted that some municipalities are imposing standards

for natural refrigerants, which severely limits the available options that can be offered now, but may create opportunities as new products are developed in the future.

Familiarity with Existing Buildings program marketing was low, and only five respondents felt they were able to assess the effectiveness of Energy Trust marketing, giving an average rating of 3.6 on a scale of 1 to 5, where 1 is not at all effective and 5 is very effective, with two of the five respondents providing ratings of 4 or 5. One lighting vendor explained that they *"usually don't get the feedback that they [customers] know about the program. They are familiar with their utility but not sure how that relates to efficiency programs and Energy Trust."*

While none of the respondents recalled using specific Energy Trust marketing materials, all said that they use the incentives to develop project payback calculations when marketing. The manufacturer of anti-sweat heater (ASH) controls said that rebates and incentives continue to be a driving force in the market, explaining that *"when you deal with large chains, they'll prioritize retrofitting ASH controls based on the rebate. So if they have 800-1,000 stores on the West Coast and Oregon has a $50 rebate and California offers $100, all the California stores will get done first."*

Customer Perspectives

When asked how difficult it is for customers to participate in the Existing Buildings program, all eight respondents offered ratings of 4 or 5 on a scale of 1 to 5, where 1 is very difficult and 5 is very easy, for an average rating of 4.8. This perceived ease of participation may be in part because all the respondents said that they or their staff, not customers, routinely complete the application forms.

Barriers to customer participation in the program mentioned by the non-trade allies include availability of capital, first cost, confusion about the application process, not knowing whether equipment is covered, uncertainty about the baseline (for refrigerated cases), and the reluctance of grocery retailers to invest in energy efficiency *"because it does not add to their sales."* Access to decision makers is not an issue; most respondents said they deal directly with decision makers, either at the local level for small customers or at a regional or national level for national accounts. One barrier noted by another vendor was that customers *"want the rebate, but they go with the low bid and don't want to pay for the effort involved in going through the program."*

Program Communication and Training

Non-trade allies were generally very satisfied with the communication and information provided by Energy Trust and the program. They offered a mean satisfaction rating of 4.8 for their interaction with program staff and 4.6 for Energy Trust's communication regarding the program, using a scale of 1 to 5, where 1 is not at all satisfied and 5 is very satisfied. For both questions, all respondents provided a 4 or 5 rating. One distributor who

gave a rating of "4 or 5" for his interaction with program staff explained that *"any hang up with communications is not the staff, it's just that there is not enough staff to cover the demand."* Another said that *"they're always responsive, and I've always learned something when working with program staff."*

Only three respondents recalled attending a program training session, while a fourth said someone else from her firm might have attended. The three who did attend said the training had adequately prepared them to handle program forms and procedures.

Feedback on Program Processes

As noted above, all the non-trade ally firms interviewed said that they always or almost always complete the program application. Moreover, they generally found the application easy, with a mean rating of 4.4 using a scale of 1 to 5, where 1 is very difficult and 5 is very easy. This was true for non-trade allies participating in both the Lighting track (mean rating of 4.4) and the Standard track (4.5). One respondent commenting on the Standard track explained that *"it's never as easy as the program says, but I don't roll my eyes because of their app."* These responses are summarized in Table 48.

Table 48: Non-Trade Ally Feedback on Program Processes

Interview Question	Mean Response	Number of Responses	Number Giving Rating of 4 or 5
How easy have you and your customers found it to use the [Program Track] incentive application?	4.4	n=8	8
How satisfied have you been with the turnaround time for incentive processing?	3.4	n=8	5

As shown in the table, respondents were much less satisfied with the turnaround time for incentive processing, with a mean satisfaction rating of 3.4 on a scale of 1 to 5, where 1 is not at all satisfied and 5 is very satisfied. One contractor who offered a low rating said that *"initially it was a 5, but now it's a 2. I experienced no problems with it early on, but in the last year or so it has gotten slower."* Another respondent with a rating of 1 explained, *"getting the incentive takes too long. Customers are aware it's going to be a while and I realize the people getting all the information have to process it and go through a litany of screening and evaluation, but once that's all done, it would be nice to get it out in a week."*

Overall Satisfaction and Suggestions for Improvement

Overall satisfaction with their program involvement averaged 4.3 for non-trade allies, only slightly lower than the 4.6 average for trade allies, with all but one of the eight

respondents rating their satisfaction as a 4 or 5. The interviewed respondents offered the following suggestions as potential program improvements:

- "*For the application process, PDFs that are editable would help. The standard drop downs are good but limiting; having an online portal and the ability to upload multiple files and specify what each is would help.*"
- "*Provide a commissioning offering focused on refrigeration systems.*"
- "*Faster incentive check turnaround.*" (n=2)
- "*Get more staff to handle the volume of projects.*"
- "*I would like to have access to business reps to help us understand additional opportunities.*"

Implications for Existing Buildings Non-Trade Ally Contractors

Based on our interviews with non-trade allies, we found that:

- Information on non-trade allies was very limited in the program tracking data provided by Energy Trust. When data were available, most of the names of "installation contractors" in the data did not contain any contact data or information on the role or type of business for the company named. A number of "installation contractors" listed were actually the participant that had done a self-install. To improve the quality of information available for program marketing as well as market research, any time a vendor's name is associated with an Existing Buildings project, it would be useful to collect data on the firm's location, type of business, a point of contact, and contact information.
- Identifying a program "champion" at non-trade ally firms would be an effective method for tracking and potentially enrolling these contractors as trade allies. For any supplier firm that completes a project through the program, Energy Trust should follow up with outreach to ask about the potential for future participation; if this is confirmed, identify an individual who can serve as the point of contact and encourage them to become an internal champion for the firm's involvement with Energy Trust.
- The non-trade ally vendors include several out-of-state manufacturers that supply equipment to the Oregon market and are active in the Existing Buildings program; these manufacturers would benefit from increased outreach by ICF staff to keep them informed of program changes and other information relevant to the market. This could be relatively low-resource activities such as periodic emailed reminders about the availability of the program and how to participate.
- Several of the firms interviewed have an interest in promoting their affiliation with the program but are not directly involved in equipment installation. Since standard requirements like liability insurance might not be relevant for these companies, the

modified trade ally status that Energy Trust allows should be promoted to firms that work closely with the program but do not provide installation services. Based on our research, these firms were not aware that they can be affiliated with the program even if they are not contractors.

- As with trade allies, actual or perceived slow turnaround in rebate check processing clearly caused reduced satisfaction with this aspect of the participation process. Any process changes that could shorten the time required to issue checks, together with periodic updates of payment status (e.g., an email at 30, 45, and 60 days after final application submittal) should help improve vendor satisfaction.
- All vendors could benefit from more promotion of available marketing materials. With low awareness of Energy Trust marketing among non-trade allies, program staff should make an effort to reach out to first-time participating vendors in the Existing Buildings program to make them aware of the full range of informational and promotional materials available on the website and in hard copy, including case studies and a description of non-energy benefits.

5.4 Participant Interviews/Surveys

The Evergreen team engaged a sample of 175 participants in the Existing Buildings program tracks through online surveys and telephone interviews to better understand participant experience and perspectives, program fit to market realities and needs, and opportunities for program improvements and future measures. Data collection methods and some research questions varied by track, so we report results separately for the SEM track, the Custom track, and the combination of the Standard, Lighting, and Direct Install tracks.

5.4.1 Strategic Energy Management Track

The Evergreen team completed 12 in-depth interviews and five online surveys with commercial customers who have recently or previously completed projects in the Existing Buildings Strategic Energy Management (SEM) program track. Respondents represented seven different commercial subsectors, but tended to be concentrated in the Portland Metro area and in Central Oregon, as described in the Evaluation Methods section of this report. Each interview was between 25 and 45 minutes in length and addressed:

- How participants first became aware of SEM and the program's outreach;
- Experiences with program processes;
- Program design and components;
- Satisfaction with program outcomes; and
- Remaining opportunities.

Online surveys supplement the interviews for several of these topics.[21]

Marketing, Program Information, and Barriers to Participation

Participants learned about the SEM track through program staff outreach (n=7), internal referral by a colleague who had learned of the track (n=6), or peers outside their organization (n=3). The information provided by program staff directly to potential participants was seen as valuable in deciding whether to participate in the program, while second-hand information appears to be a door opener but less effective at communicating SEM track details. For instance, one participant commented that:

- "*I would think that we could have taken advantage of the program sooner if the program would have reached out to us directly. Word-of-mouth is perhaps the most effective but least desirable.*"

Other sources that participants said are useful to inform potential participants about program offerings included emails and/or phone calls from program staff (n=4), having program staff attend trade organizations and conferences (n=1), and newsletters and marketing materials sent to organizations describing program offerings (n=1).

Official program information was rated highly by participants in communicating what to expect from SEM. Interviewees rated the program information a 4.2 on a scale of 1 to 5 where 1 was poor and 5 was excellent, with 88 percent giving a rating of 4 or 5. Suggestions for Energy Trust consideration included providing technical information in a brochure format that presents information on potential energy and cost savings that participants could show to senior-level management.

When asked about barriers to initial participation, the majority of interviewees who responded to the question (7 of 11) reported that lack of time and resources held them back and also continues to serve as an impediment. Other barriers to initial participation included difficulty in getting colleague and senior management buy-in (n=3). One interviewee elaborated that *"if we can't get senior-level management to tell us we need to do this, then it will be nearly impossible to get the lower-level staff to actively manage their energy consumption while at work."*

Most interviewees' organizations (10 of 12) have multiple buildings that could participate in SEM, but they often do not enroll the full portfolio of buildings. The most common barriers cited to enrolling additional buildings also included lack of time and resources

[21] In this section, we report on either interview responses (n=12) or total responses from interviews and online surveys (n=17). The size of the respondent pool indicates whether responses are drawn solely from interviews or also from participants who completed an online survey.

(n=7), followed by various isolated circumstances that suggest lesser benefits from SEM participation (buildings are rental, small, etc.).

Participant Experience and Satisfaction – Program Processes

In recognition of the level of participant effort needed to participate in SEM, the evaluation team asked participants about their experiences with the program processes and requirements. Responses suggested that:

- Most participants receive value that exceeds the effort required;
- Paperwork requirements are seen as reasonable by most participants, but of concern to a few; and
- Audits or facility assessments are useful.

The vast majority of the participants interviewed (11 of 12) felt that the benefits that their organizations received were worth the level of effort needed to participate. However, one dissenter did not think the benefits received were worth the effort, noting that the buildings being monitored are too old to see any benefit from the SEM initiative and adding *"if the right buildings were being monitored, I may participate in the program a bit more but it's not worth my time to go back and change it all now."* One other participant commented that program participation may require more effort on the part of participants than Energy Trust realizes.

Most participants (11 of 17) indicated that the SEM participation and program paperwork requirements were "mostly reasonable" or "very reasonable." The availability of program staff to assist with any questions made the requirements less burdensome than they might have been otherwise. Four participants reported that the participation and paperwork requirements were "very burdensome," albeit two of the four were referring to ancillary participation in the Lighting track and the tedious process of entering all lighting equipment upgrades.

An audit or assessment was part of the SEM experience for nearly all interviewed participants, although in most cases, participants appeared to be referring to walk-through assessments rather than full audits.[22] The assessments of participant facilities included a number of energy saving recommendations such as adjusting thermostats, boiler adjustments, and return fan programming. The key benefit from the assessments was the ability to pinpoint exactly what needs to be done in order for their organization to realize

[22] Only one participant had not received an audit or assessment of some kind, but this person indicated that such a review of facility savings opportunities would be useful.

cost and energy savings. Participants felt the assessments did this very well and could not have been more useful than they already are.

Participant Experience and Satisfaction – Program Design

Participants appear to be satisfied with the SEM program design and offered limited suggestions for improvements concerning cohort design and program informational material.

Program elements for first-year participants appear to be useful across the board. Interviewees assessed several of these elements as the most useful, including:

- Education and training provided by the program team (n=4);
- The assessment of their facilities' energy savings opportunities (n=2); and
- The performance tracking tools used as part of the program (n=2).

When asked which program elements could be dropped for a reduced-scale offer for continuing participants, participants did not have any clear suggestions. One interviewee commented that *"I think all meetings are a good mixture of reminders and continuing education."*

Three respondents did comment that the cohort assignments could be improved, commenting that the organizations in the cohorts they are in encounter vastly different SEM-related issues, which limits their ability to effectively learn from each others' experiences. Furthermore, one suggested more in-depth marketing materials, such as a one- or two-page technical memorandum that breaks down how organizations can realize energy and cost savings. As noted earlier, such a document could help SEM leads obtain internal support.

Energy Management and Spillover Efforts

The Evergreen team explored participant energy management practices and spillover of SEM actions to non-participating facilities or to capital projects in other Existing Buildings program tracks.

Generally, SEM prompts participants to advance their energy management practice from relatively low levels prior to their engagement with the program. As shown in Table 49, approximately half of the respondents said their organization was managing their energy "a little" prior to participating in the SEM program, while the remainder were managing energy use either not at all or actively. Those who did actively manage energy usage "a little" tended to concentrate on HVAC energy consumption based at the site-level, actively scheduling tune-ups, but did not indicate that changes are analyzed over time or across functions or that they measure the effects of the process changes. All participants indicated

that their energy management practices had changed at least a little, while most said they had changed significantly.

Table 49: Baseline Energy Management Practices and Change During SEM Participation

Baseline Energy Management	Number of Responses	Change During SEM Participation
Very little or none	4	Small increase: 1
		Significant expansion: 3
A little[23]	9	Small increase: 3
		Significant expansion: 6
A lot	4	Small increase: 3
		Significant expansion: 1

Slightly more than half of respondents (10 of 17) said that their organization's participation in the SEM program track has prompted them to take advantage of other Energy Trust efficiency programs or offerings. Most of these appear to be other Existing Buildings tracks, including the Lighting, Standard, and Custom tracks, while one mentioned the New Buildings program.

Similarly, most respondents (11 of 17) indicated that they had repeated some SEM-related changes at non-participating buildings or were planning to do so.

Remaining and Future Opportunities

Future efficiency opportunities for SEM participants fall into two groups: those that participants are currently monitoring or considering for their facilities and those that they foresee becoming relevant down the road due to changes in their industries. Near-term opportunities that participants are monitoring include the following end-uses and building systems:

- Lighting (n=5)
- Building envelope testing (and improvements) (n=3)
- Boilers (n=2)
- HVAC system (n=1)
- Control upgrades (n=1)

[23] The evaluation team classified comments such as *"doing a good job collecting data but not doing much with it"* and *"getting regular HVAC tune-ups"* as doing "a little" energy management.

Participants believe the greatest support Energy Trust can provide for these opportunities is funding for the incremental costs to move to higher efficiency (n=8). However, three respondents indicated that lack of staff availability is their greatest internal barrier to efficiency improvements and had no specific suggestions for Energy Trust.

Seven respondents cited specific emerging technologies that may yield future energy efficiency measures. These include:

- Light emitting plasma (LEP) lighting technology
- Solar power
- Advanced HVAC controls
- Improved insulation technology
- Electric car charging stations
- Advanced wireless sensors for whole buildings to understand trends
- Laser and fiber optic lighting

Implications for the SEM Program Track

Given the responses and input from SEM participants, it appears that:

- The SEM track is serving participants well with its current program structure and elements.
- Participants perceive their efforts to be worthwhile, but do feel constrained by the level of effort required to participate. These constraints may keep others from participating and may limit the breadth of existing participants' enrollment of additional buildings.
- Achieving internal buy-in from management is a major constraint to fuller participation. We suggest that the SEM program track look into increased support for interested parties to engage senior management and show the potential value of SEM participation.
- Participants come to the program with energy management practices that they would (now) classify as modest levels, but they expand their practices during program participation and appear to maintain the new levels.
- Facility assessments are highly useful components of the SEM program track.
- Cohort groupings limit the participants' ability to learn from peers if similar organizations do not exist within their cohort. We recommend that the SEM program track expand participants' exposure to similar participants over time through increased interactions among participants from different cohorts or through rearrangement of cohorts for continuing participants.

- Near-term efficiency opportunities for SEM participants tend to already be addressed by Existing Building program offers, while suggested future measure opportunities yielded individual responses without any clear patterns. Key barriers for which participants need solutions include the higher cost of efficient technologies (which Energy Trust is already addressing through financial incentives) and lack of staff time (which could warrant some additional exploration to develop new program services).

5.4.2 Custom Track

Overall, the Evergreen team surveyed 60 participants in the Existing Buildings Custom program track. The following sections detail the findings and program implications from these survey responses. These results include:

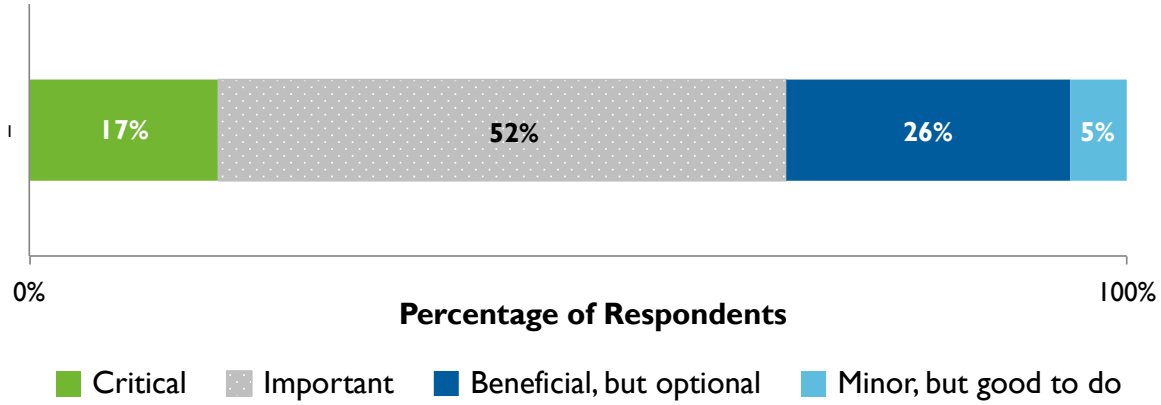
- Participant characteristics and how they classify their participating projects;
- How participants first became aware of the Existing Buildings program and the program's outreach;
- Experiences with program processes;
- Satisfaction with program outcomes; and
- Remaining opportunities.

Participant Characteristics and Project Classification

Inquiries into respondent and project characteristics offer some insight into participants and the context of Custom projects. Respondents represented 12 different commercial subsectors and all six regions that Energy Trust tracks, but tended to be concentrated in the Portland Metro area and in Northwest Oregon, as described in the Evaluation Methods section of this report. Respondents generally owned their space (75% of respondents), while the location served by the program most often was medium-sized, encompassing between 20,000 and 100,000 square feet of floor area (49% of respondents). Most other respondents (43%) completed their custom upgrade in small locations of less than 20,000 square feet.

Respondents indicated that their projects that were completed with Energy Trust support were beneficial to their organization. As shown in Figure 17, 52 percent of respondents said their project was important to their organization, with an additional 17 percent indicating that it was critical. Roughly a quarter of the respondents (26%) said the project was beneficial but optional, with only a few (5%) rating the project importance as minor but good to do.

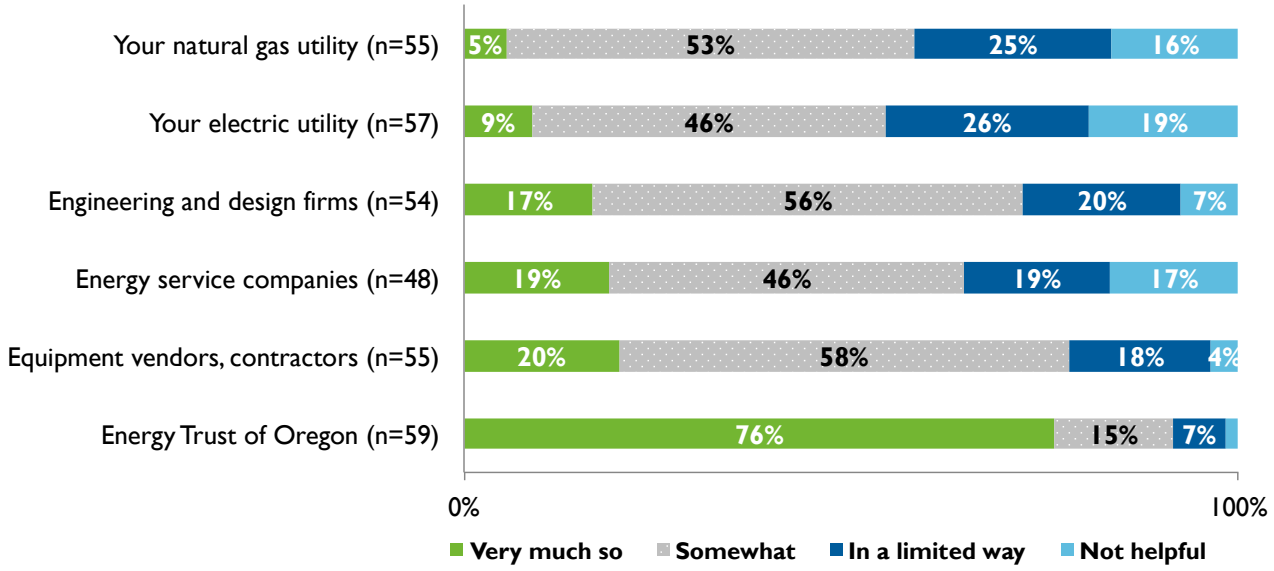
Figure 17: Project Importance - Custom Track Respondents



Participants recognize that multiple organizations and vendors are available to assist them with energy efficiency, but they rated Energy Trust of Oregon as the most helpful among them.[24] As noted in Figure 18, 76 percent of respondents recognized Energy Trust as the most helpful among their options. Other organizations with relatively positive ratings included equipment vendors and contractors, energy services companies, and engineering and design firms. Utilities rated somewhat lower, possibly due to the individualized and specialized nature of Custom projects. Other organizations that participants noted as key resources for energy efficiency support include both the Oregon and U.S. Departments of Energy, the Northwest Energy Efficiency Alliance (NEEA), the National Renewable Energy Laboratory (NREL), and regional sustainability coalitions. We did note some regional differences, but sample sizes were too small to analyze results geographically in a quantitative manner.

[24] We note that our survey was of participants and cannot necessarily be extrapolated to the population of potential participants.

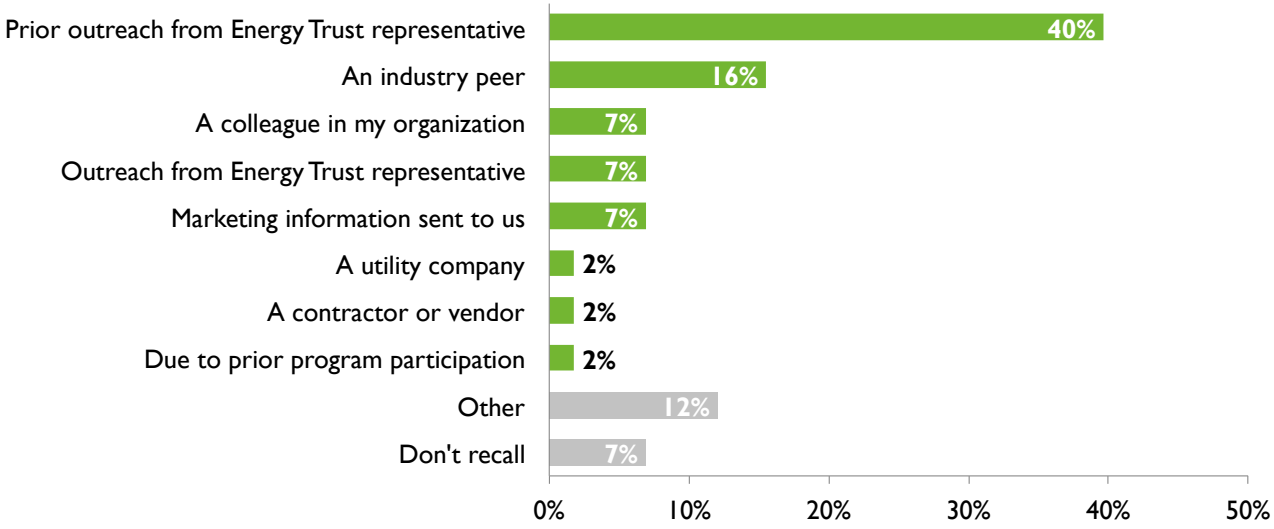
Figure 18: Perceived Usefulness of Organizations Available to Help with Energy Efficiency - Custom Track Respondents



Marketing and Program Information

Participants in the Custom program track became aware of the program rebates and assistance primarily through Energy Trust outreach—most often through prior conversations with Energy Trust program staff. Industry peers and colleagues serve as the most common third-party sources of program awareness. Figure 19 summarizes the responses to our inquiry about Custom participants' source of awareness of the program.

Figure 19: Source of Awareness - Custom Track Respondents

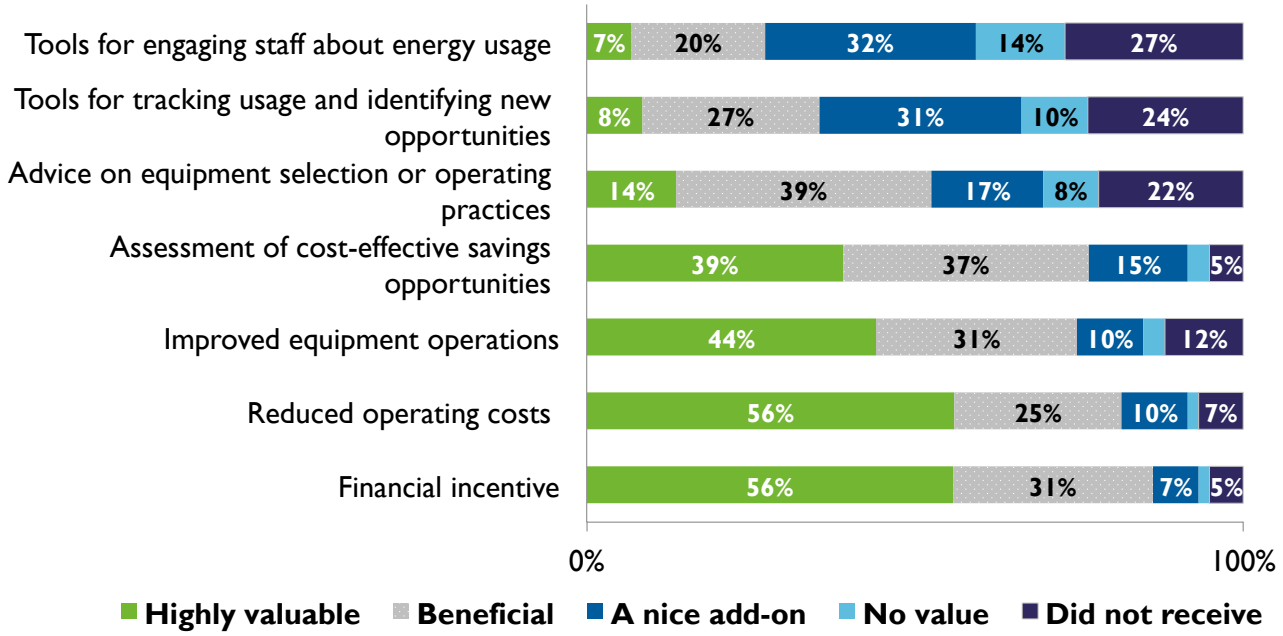


Participant Experience and Satisfaction, Project Outcomes

Respondents rated various program elements highly, suggesting high satisfaction and value of the program and a good fit for participants. Interviewees rated the program information an average of 4.1 on a scale of 1 to 5, where 1 was poor and 5 was excellent; 81 percent gave a rating of a 4 or 5.

We also asked participants about the value of specific program elements and benefits. The highest-rated were the financial incentive, reduced operating costs, improved equipment operations, and the assessment of cost-effective savings opportunities. Figure 20 provides a detailed breakdown of the participant assessments of individual program elements.

Figure 20: Value of Individual Program Elements and Benefits - Custom Track Respondents



Additionally, 18 percent of respondents noted there were other key benefits they received from participating in the Existing Buildings program's Custom track. These additional benefits included increasing overall organizational awareness (n=2), experience for future energy efficiency investments (n=1), and better functioning equipment (n=1).

About four-fifths of Custom track respondents indicated they received some sort of audit or energy assessment as part of their program participation.[25] Overall, more than 80 percent of respondents said their assessment was either somewhat or very useful in identifying upgrades they have made since the study or are likely to make in the future, helping them learn about potential operational or maintenance improvements, and gaining justification for efficiency investments. As a result, 91 percent of those respondents said they either have implemented or plan on implementing the recommendations from the energy assessment.

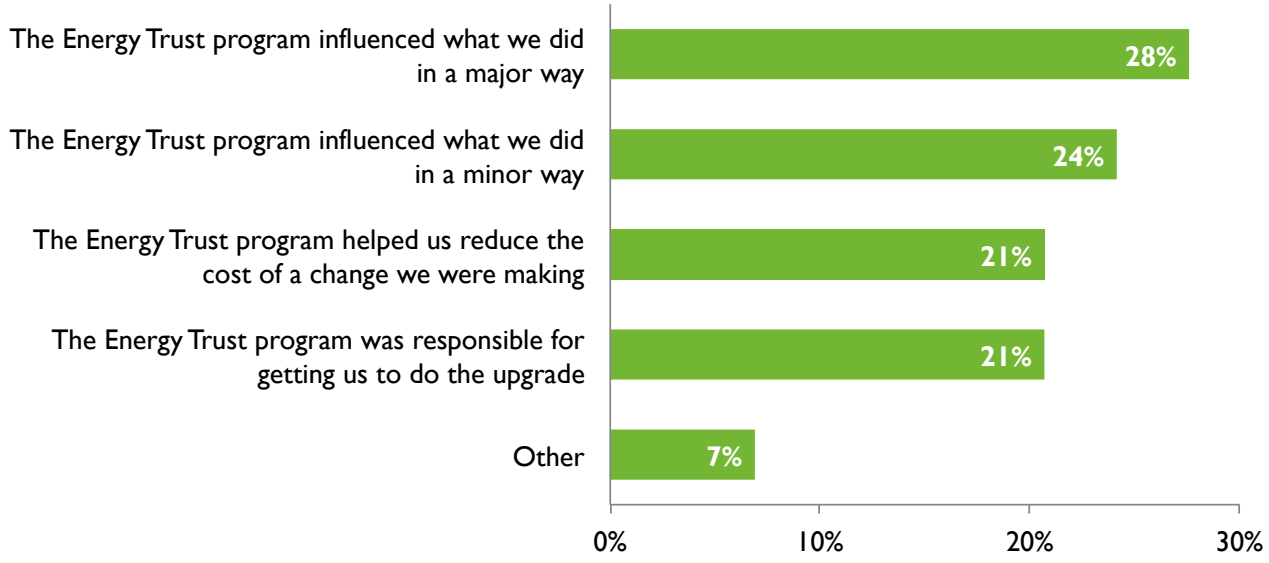
For respondents that indicated the assessment was not fully useful, recommendations for improvement included better communication and coordination between Energy Trust program staff and their organization (n=2) and simplifying instructions (n=2). Comments about communication weaknesses focused on lack of follow-up and follow-through by the program representative and on suggestions that disregarded one participant's concerns and past experiences. Additionally, among those respondents that stated they did not receive an energy assessment, respondents were evenly divided on whether an assessment would have been useful to them.

We also asked respondents to evaluate their program experience with regards to the level of effort required to participate, the overall incentive application process, and the paperwork requirements. Over half of respondents (56%) said that the effort level needed to participate in the program was "quick and easy," while 35 percent said it was a bit time consuming and complicated. Less than 5 percent said it was "burdensome" to participate. Additionally, while most respondents rated the application process as very good (53%) or excellent (27%), meaningful numbers of respondents indicated there was some room for improvement. Similarly, 83 percent of participants thought the overall paperwork requirements were mostly reasonable or very reasonable, and a few suggested there is room for improvement.

As shown in Figure 21, the Existing Buildings program's influence on Custom track participants' decision to pursue their project varied. About half of respondents reported that the Custom program track was responsible for getting the organization to do the upgrade or influenced it in a major way, while most of the remaining respondents would have done something similar even without the program track, suggesting that there is some free ridership.

[25] We relied on self-reports to determine who received an audit or assessment and allowed survey respondents to self-assess what constituted an assessment. As a result, assessments included here could range from walk-through assessments to full-scale energy audits.

Figure 21: Role of Existing Buildings Program on Organizational Efficiency Upgrades



Remaining and Future Opportunities

We asked respondents a series of questions about their perceived level of energy efficiency focus compared to industry peers and their perceptions of future efficiency opportunities and investments at their organization. Identifying future efficiency investments can help Energy Trust anticipate potential project types and evaluate the opportunity to expand program offerings.

Approximately half of the respondents (54%) said they believe their organization is more focused on energy efficiency than their industry peers, while 30 percent said they focus on energy efficiency about the same, and 7 percent said they focus on energy efficiency less than their peers. Among respondents that said they are more focused on energy efficiency than their peers (n=30), the primary motivations for their organization's efficiency efforts included reducing costs (n=15), being environmentally conscious (n=6), saving energy (n=4), and improving the maintenance requirements for their organization (n=4).

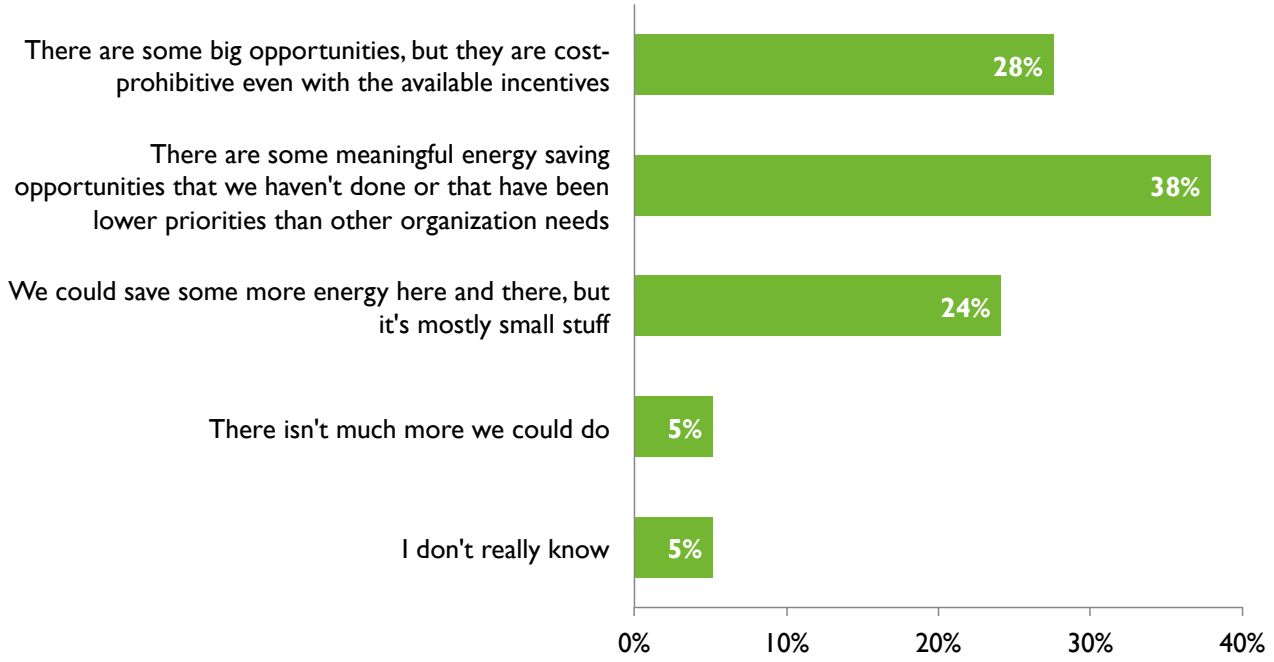
Additionally, almost half of respondents (47%) said they have made an energy-saving improvement since participating in the Existing Buildings program. As shown in Table 50, the types of projects ranged significantly across respondents, with the most common projects including lighting upgrades (n=9).

Table 50: Efficiency Improvements Since Participating

Efficiency Investment	Number of Responses
Lighting upgrades	9
HVAC upgrades	3
Solar installations	2
Insulation upgrades	2
Window upgrades	2
General efficiency upgrades	2
Heat pumps	1
Refrigeration upgrades	1
Behavior change program	1
Chiller	1
Control upgrades	1

Looking ahead, the vast majority of respondents (90%) added that there are additional energy-saving opportunities their organizations could pursue, but the nature of these opportunities and barriers to pursuing them vary. As shown in Figure 22, 64 percent of respondents said these improvements are "meaningful" or "big" but may be either cost restrictive or beyond their organization's main focus. Additionally, 24 percent described the additional opportunities as small improvements that could be made over time.

Figure 22: Participant Assessment of Future Opportunities - Custom Track Respondents



We also asked respondents if they knew what their next best energy saving opportunity would entail. Of the 16 respondents who had identified their next efficiency project, eight mentioned lighting upgrades, three identified HVAC upgrades, and two each said control systems and retro-commissioning projects. Verbatim responses include:

- *"A more sophisticated HVAC system for our production facility"*
- *"Completing transition to LED"*
- *"Comprehensive lighting, retrocommissioning"*
- *"Convert large hangers at the Regional Airport to LED lighting and explore the Airfield LED lighting"*
- *"DDC Controls and Lighting Upgrade."*
- *"Educating the staff about closing shades against sun heat during summer and heat loss during winter, and remembering to turn off heater/AC when leaving. Setting timers on coffeepots, checking weather-stripping on doors"*
- *"Lighting"*
- *"Lighting and HVAC"*
- *"More and better quality insulation in ceiling"*
- *"New exterior lighting"*
- *"Retrcommissioning"*
- *"Update our HVAC system"*

- *"Upgrade of machinery"*
- *"Upgrading the building's HVAC controls"*
- *"We are always replacing appliances"*

There were not many mentions of emerging technologies among participants when asked about future savings opportunities. Rather, participants seemed to acknowledge that efficiency is something they value and that several of them will continue to seek out opportunities to save money and energy and to continue to align with their environmental consciousness.

Implications for the Custom Program Track

Given the responses and input from participants in the Custom program track, it appears that:

- Energy Trust outreach—supported by word-of-mouth—accounts for the bulk of program awareness. Often, it appears, there is a lag between initial awareness and participation, which suggests that custom project development follows a pipeline model rather than lending itself to immediate decisions. We recommend that Energy Trust focus its Existing Buildings program marketing on building long-term relationships with potential and past participants and facilitate re-dissemination of program information via word-of-mouth among peers.
- Energy Trust of Oregon is one of several organizations that participants think of as available to provide assistance with energy efficiency efforts, but it is the one participants think is the most helpful. Testimonials or statistics about the share of participants who see Energy Trust programs as helpful and important to their business could be useful additions to marketing materials.
- Program processes were rated highly and perceived as functioning smoothly. Financial incentives, operational savings, and operational improvements to equipment are particularly helpful to participants.
- Paperwork and application requirements are generally seen as reasonable, but there may be some room for improvement. Respondents did not provide clear suggestions on how the administrative participation requirements could be simplified or improved. We recommend that Energy Trust program staff review processes with the participant perspective in mind when they are next revised or updated to ensure requirements are as streamlined and efficient for participants as possible.
- The program's impacts on the decision by participants to make an upgrade received mixed reviews. While about half of participants indicated the program influenced their efficiency upgrade in a substantial way, a significant minority of participants (45%) suggested that the program's effect was more minor. While not intended to

measure free ridership and while not weighted by savings levels, these results provide additional context to Energy Trust's Fast Feedback survey, which found free ridership rates of 9 percent for electricity and 17 percent for natural gas in 2017.

- Some Custom track participants have made additional improvements in efficiency since the upgrade we asked about in the survey, and most of these involved fairly typical end-uses of lighting and HVAC equipment. There were few indications from participants that point to new measure opportunities. It seems likely that Energy Trust follows efficiency opportunities more closely than participants do and may need to lead potential future program participants to those emerging opportunities.
- Given Energy Trust's highly regarded position among participants as a valuable information source, we recommend that Energy Trust maintain relationships with past Custom track participants and suggest new opportunities from emerging technologies or program offerings as they become available so they can be considered over time and enter the participants' potential project pipelines. Doing so may require a customer relationship management approach that maintains updated records of who would serve as the best recipient of efficiency updates and records any potential opportunities identified during any walk-through (or more advanced) assessments for future follow-ups.

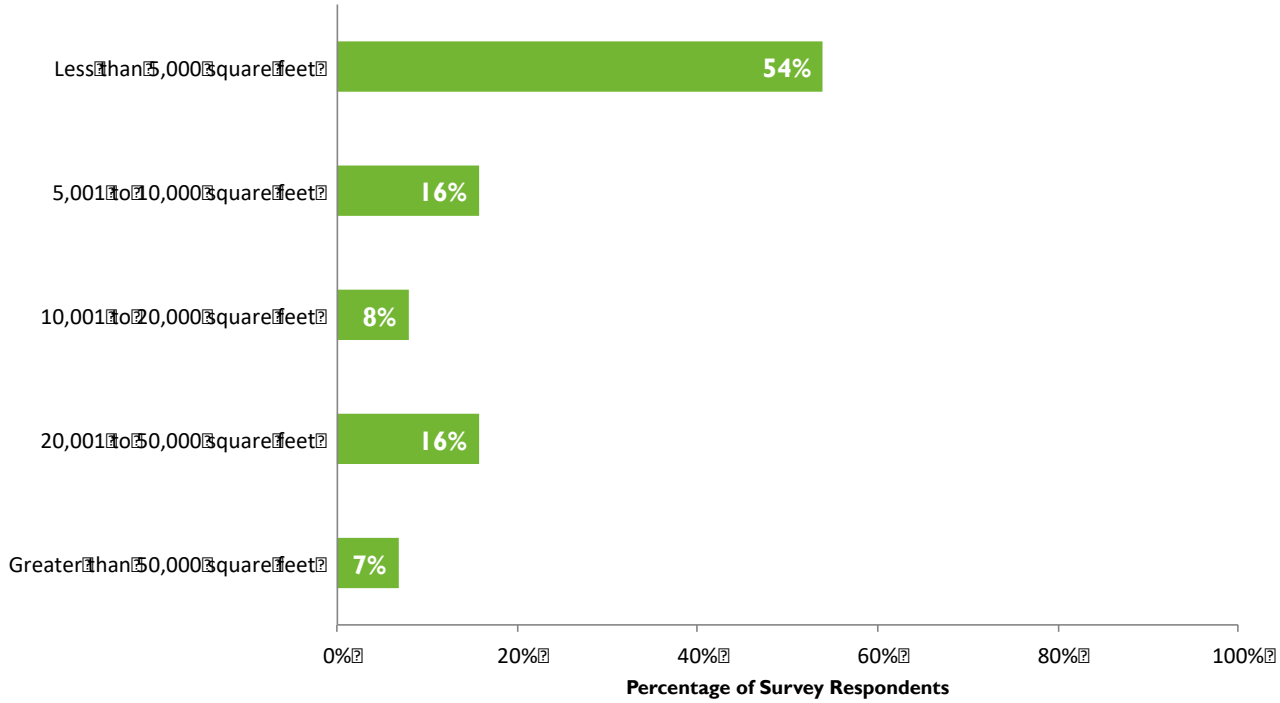
5.4.3 Lighting, Standard, and Direct Install Tracks

Overall, the Evergreen team surveyed 98 participants in the Existing Buildings Lighting (n=43), Standard (n=33), and Direct Install (n=22) program tracks. The following sections detail the findings of these three surveys. Because there were few significant differences across the three program tracks, the following results are reported in aggregate.

Participant Characteristics and Project Classification

Inquiries into respondent and project characteristics offer some insight into participants and the context of Standard, Lighting, and Direct Install projects. Respondents generally owned their buildings (60%) and occupied small spaces of less than 5,000 square feet (54%, as shown in Figure 23), whereas 39 percent rented their building. Property management firms accounted for only 1 percent of respondents. These patterns apply fairly consistently across all three tracks. Respondents represented 12 different commercial subsectors, but tended to be concentrated in the Portland Metro area and in Northwest Oregon, as described in the Evaluation Methods section of this report.

Figure 23: Building Size - Standard, Lighting, and Direct Install Track Respondents

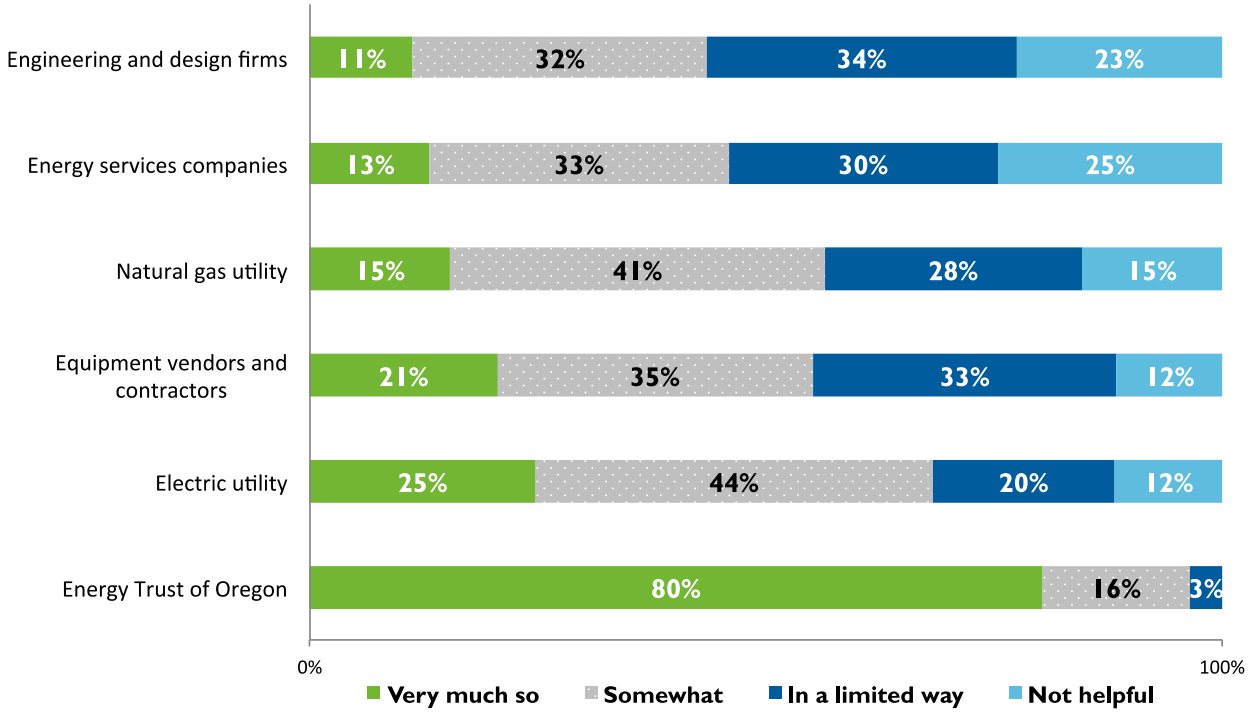


Respondents rated the project completed with Energy Trust support as beneficial; 66 percent classified it as "important" to the organization. Others classified their projects as beneficial but optional (23%), or critical (10%).

Participants recognize that multiple organizations and vendors are available to assist them with energy efficiency, but they rated Energy Trust of Oregon as the most helpful among them.[26] As noted in Figure 24, 80 percent of respondents recognized Energy Trust as the most helpful among their options. Other organizations with relatively positive ratings included the participant's electric and natural gas utility, equipment vendors, and contractors. Energy services companies and engineering and design firms received the highest percentage of "not helpful" responses (25% and 23%, respectively). Other organizations that participants noted as key resources for energy efficiency support include the City of Portland – Sustainability at Work Initiative, the Corvallis Sustainability Coalition, and the Corvallis Environmental Center.

[26] We note that our survey was of participants and cannot necessarily be extrapolated to the population of potential participants.

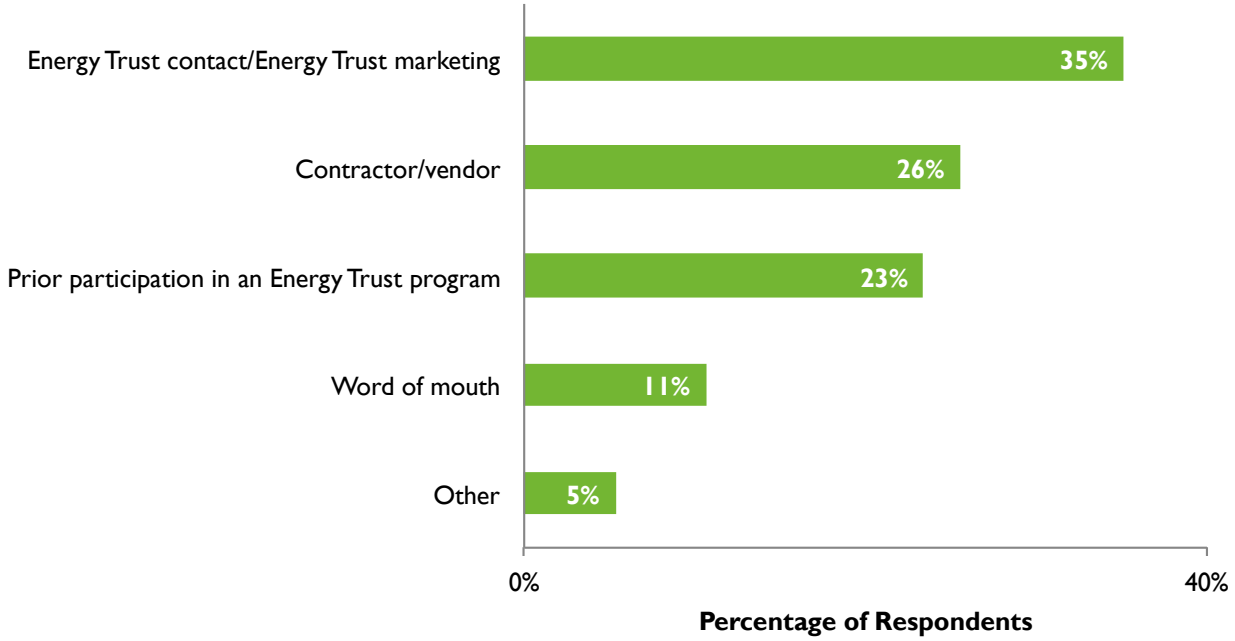
Figure 24: Perceived Usefulness of Organizations Available to Help with Energy Efficiency - Standard, Lighting, and Direct Install Track Respondents



Marketing and Program Information

Participants in the Standard, Lighting, and Direct Install program tracks became aware of the program rebates and assistance through a variety of channels, including Energy Trust of Oregon marketing, contractors and vendors, and previous participation in a rebate program. As shown in Figure 25, 35 percent of participants learned about the program offerings through Energy Trust sources such as an Energy Trust representative, marketing materials, and Energy Trust's website. Additionally, 26 percent of participants also learned about the program offerings through a contractor and/or vendor. This indicates that interactions with Energy Trust (either through direct contact or marketing) and interactions with contractors and vendors are significant drivers of participants to these program tracks.

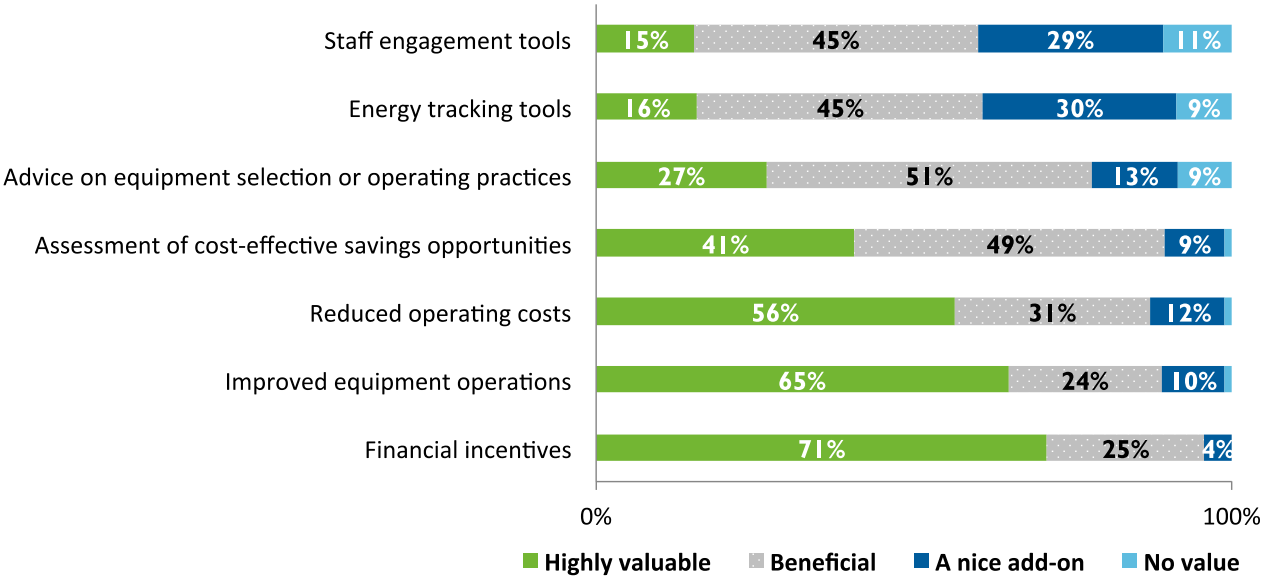
Figure 25: Source of Awareness - Standard, Lighting, and Direct Install Track Respondents



Participant Experience and Satisfaction, Project Outcomes

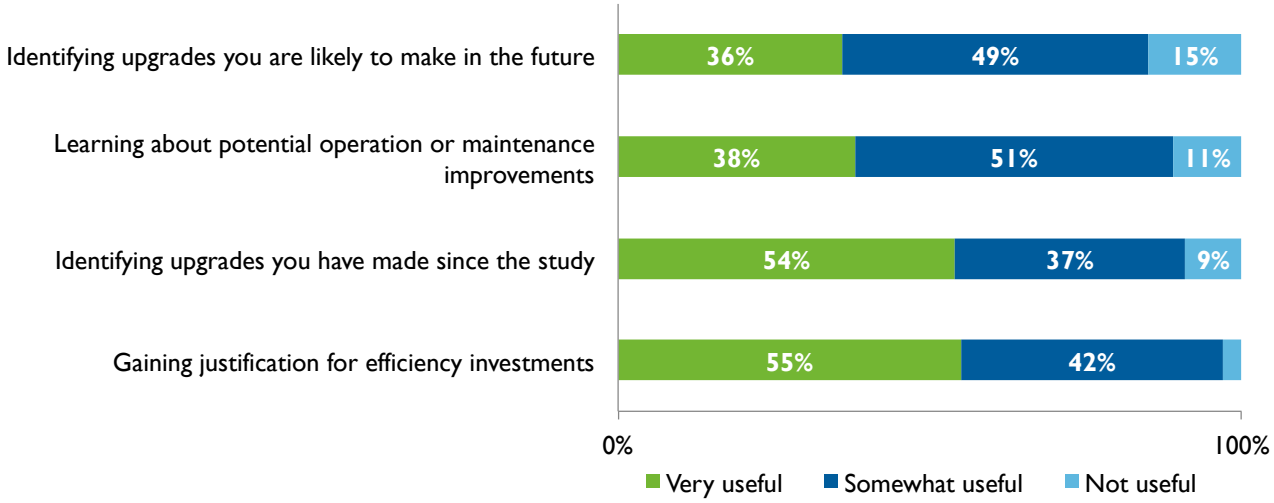
Respondents rated various program elements highly, suggesting satisfaction and value of the program and a good fit for participants. Seventy-five percent of respondents said the quality of information they received about the program was very good or excellent with only 1 percent rating it as poor. We also asked participants about the value of specific program elements and benefits. The highest rated elements were the financial incentives they received, improved equipment operation, and reduced operating costs. Figure 26 provides a detailed breakdown of the participant assessments of program elements and benefits.

Figure 26: Value of Individual Program Elements and Benefits - Standard, Lighting, and Direct Install Track Respondents



For the 37 percent of respondents who reported that they had received an energy assessment as part of the Existing Buildings program, we probed on the usefulness of the individual components of the assessment. As shown in Figure 27, over 80 percent of respondents said each feature of the assessment was either somewhat or very useful. These components included gaining justification for efficiency investments (which 97 percent of respondents rated as useful), identifying upgrades they have made since the study (91%), learning about potential operational or maintenance improvements (89%), and identifying upgrades they are likely to make in the future (85%).

Figure 27: Usefulness of Energy Assessment - Standard, Lighting, and Direct Install Track Respondents

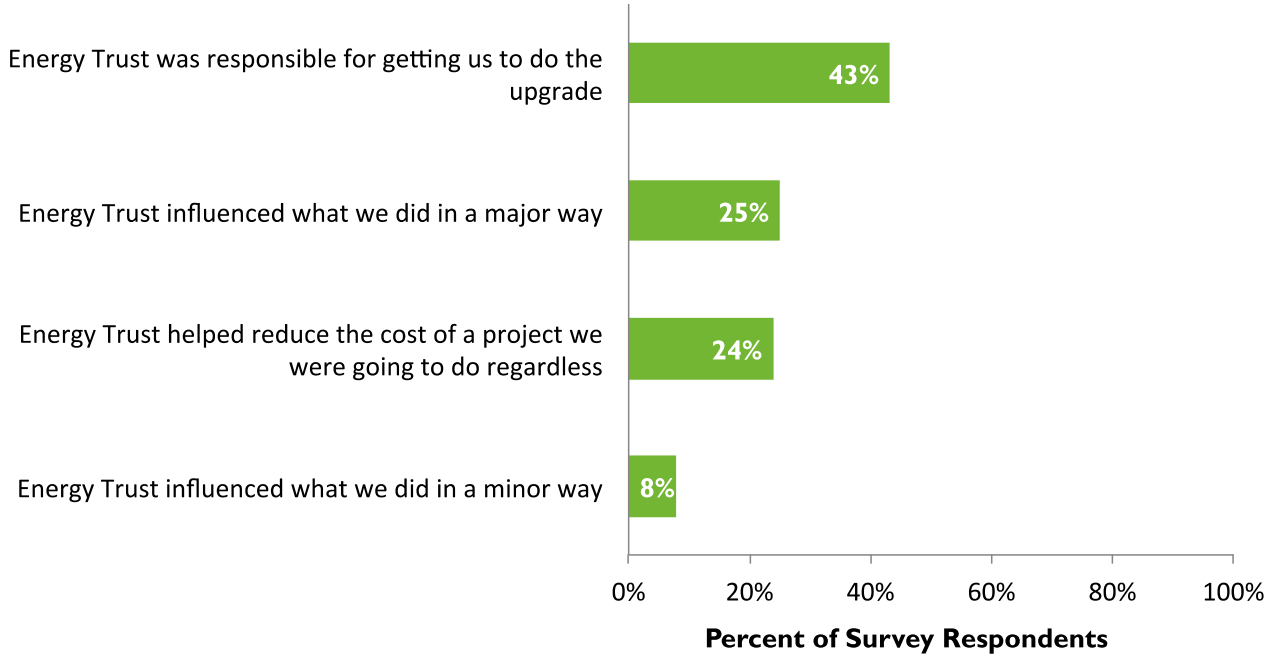


We also asked respondents to rate their program experience with regards to the overall incentive application process and the paperwork requirements. The majority (87%) said their experience with the incentive application process and paperwork was either "very good" or "excellent," with another 13 percent rating the process as "good." Similarly, the majority of respondents (97%) reported that the paperwork requirements were either "mostly reasonable and not burdensome" or "very reasonable," with only 3 percent feeling that the requirements are "somewhat burdensome."

As shown in Figure 28, the Existing Buildings program's influence on Standard, Lighting, and Direct Install track participants' decisions to make upgrades varied. While 61 percent of respondents across the three tracks reported that the program was responsible for getting the organization to do the upgrade or influenced the upgrade in a major way, a substantial minority of participants would have proceeded similarly even without the program, suggesting that there is some free ridership.[27] Participants in the Direct Install track were more likely to credit the program for having spurred the project or having had a major influence (84%) than those who participated in the Lighting (74%) or Standard (49%) tracks.

[27] Energy Trust of Oregon measures free ridership through its Fast Feedback participant surveys; for 2017, measured free ridership for the Existing Buildings program ranged from 9 to 31 percent, which is in the general range suggested by our results here, depending on methodology.

Figure 28: Role of Energy Trust Program Services and Incentives - Standard, Lighting, and Direct Install Track Respondents



Remaining and Future Opportunities

We also asked respondents a series of questions about their perceived level of energy efficiency focus compared to industry peers and their perceptions of future efficiency opportunities and investments. The question also aimed to identify what these future efficiency investments may entail, specifically focusing on emerging technologies that may be applicable to program participants.

The majority of respondents (67%) said they believe their organization focuses on energy efficiency the same amount as their industry peers, while 28 percent said they focus more on energy efficiency and 5 percent said they focus on it less than their peers. Among respondents that said they are more focused on energy efficiency than their peers, the primary motivations for their organization's efficiency efforts included being environmentally conscious (n=9), reducing costs (n=8), and participation in other efficiency programs (n=2).

Additionally, approximately 30 percent of respondents said they have made an energy-saving improvement since participating in the Existing Buildings program. As shown in Table 51, the types of projects ranged significantly across respondents, with the most common projects including lighting upgrades (n=9). However, respondents did not have a clear sense of what other opportunities were available to them now or might be emerging in the future.

Table 51: Efficiency Improvement Since Participating

Efficiency Improvement	Number of Respondents
Lighting upgrades	9
HVAC upgrades	7
Window installations	2
Control upgrades	1
Solar installations	1
Ice machine upgrades	1
Fryer upgrades	1

Implications for the Standard, Lighting, and Direct Install Program Tracks

Given the responses and input from participants in the Standard, Lighting, and Direct Install program tracks, it appears that:

- Participants across all three tracks tend to occupy smaller spaces and rent more often than might have been expected. Property managers are represented among program participants only infrequently, but we do not have population distributions to indicate whether they are underrepresented. Participants self-assess as having an average or slightly elevated focus on energy efficiency.
- Energy Trust of Oregon is one of several organizations that participants think of as available to provide assistance with energy efficiency efforts, but it is the one participants think is the most helpful. Testimonials or statistics about the share of participants who see Energy Trust programs as helpful and important to their business could be useful additions to marketing materials.
- Program processes were rated highly and perceived as functioning smoothly.
- The program's impacts on participant choices received mixed reviews. While 60 percent of participants indicated the program influenced their efficiency upgrade in a substantial way, a significant minority of participants suggested that the program's effect was more minor. We recognize that Energy Trust already monitors free ridership through its Fast Feedback survey and suggest that continued observation is warranted.
- Program participants have made additional improvements in efficiency since the project we asked them about in the survey, and most of these involved fairly typical end-uses of lighting and HVAC equipment.

5.5 Non-Participant Interviews

Non-participant interviews were designed to inform Energy Trust of opportunities and barriers to participation in the Existing Buildings program. We explored program awareness, motivations, and perceptions concerning their opportunities. Presentation of results from the interviews is divided into two parts: summaries of interview responses and process lessons learned from the evaluation team's efforts to reach non-participating decision makers.

5.5.1 Interview Responses

Interview results are based on telephone discussions with decision makers from 28 non-participating sites that are eligible for Energy Trust of Oregon Existing Buildings program services. As shown in Table **52**, these interviews represented nine sectors within the commercial market and included low, medium, and high energy-using sites.[28]

Table 52: Distribution of Non-Participant Interviewees by Sector and Energy Usage[29]

	Site Energy Usage Category			
Sector	**High**	**Medium**	**Low**	**Total**
Government	0	0	2	2
Healthcare	1	2	0	3
Hospitality	2	1	0	3
Office	0	1	2	3
Recreation	0	1	0	1
Religious	1	2	3	6
Repair	1	1	0	2
School	3	2	1	6
Warehouse	0	1	1	2
Total	**8**	**11**	**9**	**28**

[28] Our categorization of organizations into low, medium, and high energy-usage was based on energy consumption by the sampled site, not by the overall business or organization to which that site belongs. Non-participant energy usage was based on 2017 annual kWh and therm consumption using the same definitions as described in previous sections of the report: high (> 500,000 kWh or > 50,000 therms), medium (> 50,000 kWh or > 10,000 therms, but less than high levels), and low (up to 50,000 kWh or 10,000 therms). Non-participants with different consumption levels for electricity and natural gas were assigned to the higher category.

[29] For details on geographic distribution, please see the Evaluation Methods section.

Our non-participant interviews mirrored Oregon's population of non-participating organizations geographically, as described in the Evaluation Methods section earlier in this report. The non-participant decision makers we reached for these interviews were often managers (32%), operations staff (21%), directors (14%), and owners (14%). Those who were willing to indicate whether they own or lease the space tended to own by a 2:1 ratio, although a few interviewees preferred not to answer or indicated that the arrangement was complicated.

Program Awareness and Understanding

The overall majority of non-participant respondents identified that they knew or had heard of Energy Trust of Oregon in some capacity (82%). Further probing revealed that non-participants are generally aware that Energy Trust programs provide energy efficiency-related services and rebates for energy upgrades. Replacing lighting fixtures and upgrading to LED bulbs appeared to be the types of upgrades with which non-participants are most familiar. As shown in Table 53, 11 interviewees mentioned financial incentives, and 16 interviewees mentioned non-financial forms of support for upgrades. Seven respondents mentioned both.

Table 53: Non-Participant Awareness of Services Provided by Energy Trust of Oregon (of the 20 respondents with expanded answers)

		Financial Incentives	
		Not Mentioned	Mentioned (Total = 11)
Non-financial Support	Not Mentioned		4
	Mentioned (Total = 16)	9	7

Non-Participant Energy Efficiency Practices and Perceptions

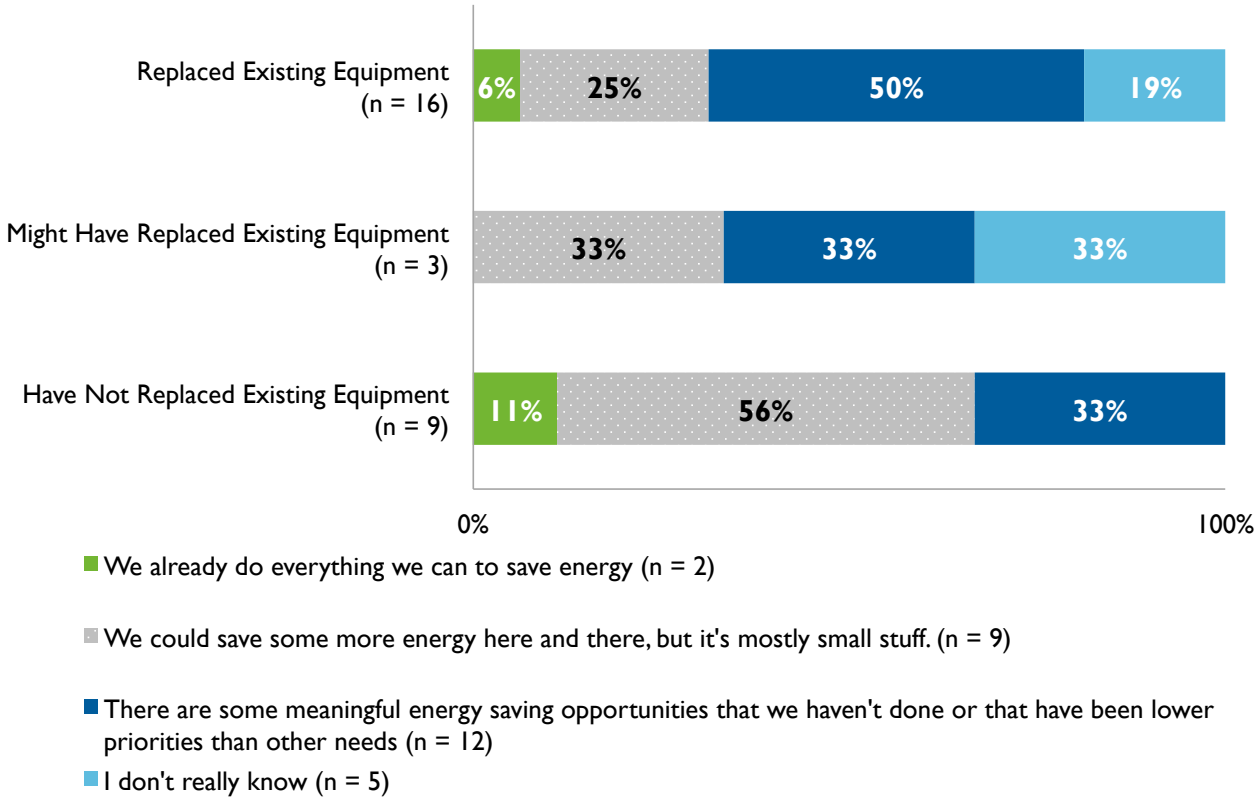
Non-participant interviewees indicated that they are already engaged with energy efficiency and have taken some actions to upgrade their organization's equipment. Nearly half claimed they had taken advantage of at least one energy efficiency program available in the state of Oregon, and most claimed that they look into rebates for reducing energy use through upgrades to efficient equipment. A third who sought incentives for installing efficient equipment actually received some level of compensation for doing so, and half said they replaced existing equipment primarily to reduce energy usage.

Nevertheless, there appears to be an opening to doing more. When asked to categorize the degree to which there are remaining energy-saving opportunities, nearly two-thirds of respondents (61%) expressed uncertainty, while a third said there are meaningful savings opportunities. Only a handful of interviewees thought they had already exhausted their

savings opportunities. Among those who had a clear sense of their remaining opportunities, there was a sense that the opportunities were smaller or not a high priority compared to other needs.

Figure 29 shows that non-participants' sense of remaining opportunities varies based on the degree to which they have already made upgrades. Interviewees who have already made improvements tended to say there are additional and meaningful opportunities to save energy. In contrast, those who have not yet made improvements were more likely to think that they could save small amounts of energy here and there, but that it has not been a worthwhile effort to pursue. Furthermore, one business owner who opted to participate in the long version of the interview voiced that the application process, eligibility criteria, and methods in which these programs are structured were an impediment to his participation and could be reshaped to better fit the needs of businesses like his.

Figure 29: Non-Participants' Efforts to Seek Energy Savings Opportunities to Reduce Energy Use



5.5.2 Process Lessons Learned

Reaching decision makers at randomly selected sites without any established program relationships proved challenging. Some of the lessons we learned in addressing these challenges will apply to future research efforts involving Energy Trust non-participants, as well as program marketing to potential new participants. We share these lessons and outreach-related insights here.

Overall, the interview team observed that recruitment language that referenced research-oriented surveys or interviews were less effective than calls that emphasized a connection to either Energy Trust of Oregon or the organization's utility provider. Shifting from purely provider-neutral recruiting to emphasizing that our research was being performed for energy organizations and providers helped overcome initial "gatekeeper" barriers that future research would face, but which are not a constraint for program marketing. We could not determine whether mentioning Energy Trust or its connection with the organizations' utilities was more effective, however, because we shifted to using both together.

Responsiveness Among the Sectors

Some commercial sectors proved easier to reach for our non-participant interviews and may be easier to reach for program marketing as well. In particular, non-profit and public organizations were most responsive to interview efforts, while for-profit organizations were more resistant. Educational and religious organizations were among the only sectors for which we were able to achieve the targeted number of interviews. Initial contacts in these sectors were more responsive to requests to be transferred higher within the organizations, and there seemed to exist fewer degrees of separation between initial contacts and decision makers. Interviewers experienced similar success with public sector organizations with the exception of fire departments, police departments, and juvenile centers, where initial contacts were less responsive.

For-profit organizations were the most resistant to our outreach, with subsectors such as restaurants, retail, and offices resulting in some of the lowest number of completions. In these sectors, staff who answer the main business number are focused on customer calls and may have been conditioned or instructed to ward off non-customer calls to keep lines open for business. This was especially true in the restaurant sector.

Furthermore, for-profit organizations also tended to have more degrees of separation between initial contacts and decision makers. The interview team observed that many initial contacts either did not know who to direct us toward or refused to let interviewers speak to higher-ranking members of the business altogether.

Reaching Decision Makers

Decision makers for organizations were observed to differ greatly between sectors and site sizes. For larger organizations, such as schools, businesses, and hospitals, decision makers were often found in the organization's facilities, maintenance, or operations departments. These departments were often located elsewhere—geographically and organizationally—than the initial contacts who answered a sampled location's main telephone number. Transfers to these departments took our interview teams one step closer to the decision makers, but resulted in a new round of gatekeeping or unanswered voicemails.

At smaller organizations, decision makers were often the owners or heads of the organizations. In these cases, decision makers were often either only on-site a limited number of hours a week or would often be unwilling to engage in interviews.

At both large and small organizations, lower-level contacts whom we could reach were often unwilling to participate in the interview because they felt unqualified to answer questions on behalf of their respective organizations, while decision makers higher up in the organization were too busy and unwilling to engage in interviews.

Implications for Marketing, Targeting, and Serving Non-Participants

- Awareness and name recognition of Energy Trust appears to be high among non-participants, with a general awareness that its programs help organizations with efficiency projects and provide rebates. Lighting upgrades were the most commonly-known types of efficiency measures provided through Energy Trust. High awareness gives Energy Trust program and marketing staff a basis on which to build.
- Outreach that mentions Energy Trust of Oregon (as marketing materials would always do) and invokes Energy Trust's connection with the targeted site's electric and natural gas utility is likely to be more effective than more generic marketing. References to an individual organization's specific utility providers would be even more effective than acknowledgements of all utilities with whom Energy Trust partners. We suggest that, when possible, Energy Trust invoke its relationship with the local utilities by name when reaching out to non-participants with which the program does not yet have a relationship.
- Non-profit businesses are easier to reach and may prove to be a better target for initial marketing of program services. However, this finding does not take into account participation rates and follow-through once a potential new participant becomes aware of Energy Trust Existing Buildings program services and offers.
- Most non-participants who agreed to interviews had already taken some steps to improve their energy efficiency. Those who had taken steps and those who had not differed somewhat in their sense of remaining opportunities. We recommend that

Energy Trust marketing to non-participants includes differential messaging to speak to both groups. Non-participants who have already been working on energy efficiency may need some nudging toward additional opportunities they already think exist. Non-participants who have not taken action yet may need some assurance that most facilities have meaningful savings potential and a nudge to take the first step toward identifying them with Energy Trust's help.

- Outreach to specific sites rather than identified decision makers for organizations proved challenging. Program marketing and future research would be more effective if it targeted organizations rather than sites. We recommend that future non-participant research should sample at the organization level and identify their decision makers rather than sampling individual sites. Furthermore, we recommend that Energy Trust seek to link related sites in its database of eligible commercial sites to facilitate marketing at an organizational level.

6 Evaluation Recommendations

This section presents the Evergreen team's recommendations for the Existing Buildings program that follow from our research and analysis described in the body of this report. Recommendations are presented below based on which aspect of the program they relate to.

6.1 Program Operations Recommendations

The recommendations below pertain to internal operations and processes of the Existing Buildings program.

Provide faster turnaround on incentive check processing.
Perceived slow turnaround in rebate check processing appears to have reduced satisfaction with this aspect of the participation process among contractors. Any changes that could shorten the time required to issue checks, together with periodic updates of payment status (e.g., an email at 30, 45, and 60 days after final application submittal) should help improve vendor satisfaction.

Collect and maintain better information on non-trade allies.
Information on non-trade allies was very limited in the program tracking data provided by Energy Trust. When data were available, most of the names of "installation contractors" in the data did not contain any contact data or information on the role or type of business for the company named. A number of "installation contractors" listed were actually the participant that had done a self-install. To improve the quality of information available for program marketing as well as market research, any time a vendor's name is associated with an Existing Buildings project, it would be useful to collect data on the firm's location, type of business, a point of contact, and contact information.

6.2 Contractor Experience Recommendations

The following recommendations relate to improvements that can be made to enhance trade ally and/or non-trade ally contractors' experience with the program.

Provide a single point of contact for contractors with multi-measure projects.
Projects that include both lighting and non-lighting end uses require a trade ally to deal with two separate program tracks and sets of program staff; designating a single individual to coordinate interaction between the project team and the program would be helpful.

Expand training for trade allies on Docusign.
Several trade allies specifically mentioned trouble adapting to the use of Docusign to submit project applications. To enhance trade ally familiarity and understanding of the

Docusign process, provide additional explanation and education, as well as alternatives when Docusign cannot be used.

Provide more training resources for new or occasional users of the Lighting Tool.
While multiple trade allies said they had become quite proficient at using the Lighting Tool over time, several said that it was initially challenging. For occasional and beginning users, the program could provide more education on the Lighting Tool, including a detailed online tutorial that would be available 24-7 and a point of contact for questions during business hours.

Increase contractor awareness of marketing resources and materials.
Only four of the trade ally respondents had used program marketing funds, and most others did not know they were available. Energy Trust should use outreach to trade allies to increase awareness of co-op marketing funds and promote their use to support online and social media marketing. Among non-trade allies, there was low awareness of Energy Trust program marketing and the materials available. Program staff should make an effort to reach out to first-time participating vendors in the Existing Buildings program to make them aware of the full range of informational and promotional materials available on the website and in hard copy, including case studies and a description of non-energy benefits.

Use the *Insider Newsletter* to increase awareness of available resources.
While all trade allies use the availability of incentives in their marketing, their awareness of other program resources is limited. This could be addressed by including a summary of and link to available online training and support resources in the *Insider Newsletter* and on trade ally web pages to reinforce awareness.

Identify a program "champion" at non-trade ally firms.
For any supplier firm that completes a project through the program, follow up with outreach to ask about the potential for future participation; if this is confirmed, identify an individual who can serve as the point of contact and encourage them to become an internal champion for the firm's involvement with Energy Trust.

Promote alternative trade ally status to distributors, manufacturers, and retailers that do not provide installation services.
Several of the non-trade ally firms interviewed have an interest in promoting their affiliation with the program but are not directly involved in equipment installation. Since standard requirements like liability insurance might not be relevant for these companies, it may be possible to offer a modified trade ally status for firms that work closely with the program but do not provide installation service.

6.3 Program Track-Specific Recommendations

The recommendations below stem from interviews with program staff, contractors, Allied Technical Assistance Contractors (ATACs), and participants and relate to the Strategic Energy Management (SEM) and Custom tracks of the program specifically.

6.3.1 SEM Track

Promote capital upgrades to SEM program track participants beyond first two years of involvement.

Our analysis revealed that SEM participants are most likely to complete capital upgrades in the first and second years of SEM participation, but the likelihood of making an upgrade quickly decreases beyond that time period. It appears that Energy Trust is already capitalizing on this key period when SEM participants are most engaged with the program in the first two years. To increase the likelihood of capital projects beyond this period, Existing Buildings program staff and SEM coaches should reengage SEM participants with additional recommendations for relevant capital upgrades once they are beyond the first two years of SEM participation.

Continue utilizing participant success stories for SEM marketing.

Program staff noted that promoting the SEM track has been more challenging than promoting other tracks, but said that the use of success stories has been effective, and seems to have a bigger impact on potential SEM participants than other approaches to marketing.

Consider reducing the number of SEM coaches.

We heard from implementation staff as well as from SEM coaches themselves that the number of different firms providing SEM coaching results in inefficient processes and that the coaches do not always share ideas freely because they are coordinating with their competitors. Limiting the number of SEM coaches to fewer than four may streamline some program processes and coordination.

Set expectations with SEM participants about savings they expect to achieve.

We heard from an SEM coach and SEM participants themselves that participants often expect to see more savings than are realized through the SEM program track. Participant satisfaction could be increased by setting expectations about potential savings ahead of time.

Expand SEM program track participants' exposure to similar participants, even across cohorts.

Cohort groupings limit the participants' ability to learn from peers if similar organizations do not exist within their cohort. We recommend that the SEM program track offer the opportunity for participants to be exposed to similar participants over time through

increased interactions among participants from different cohorts or through rearrangement of cohorts for continuing participants.

6.3.2 Custom Track

Promote awareness and use of short Technical Analysis Studies.
Several ATAC representatives were not knowledgeable about the specifics of the lower cost, less detailed, short Technical Analysis Studies (TASs) introduced by the program in 2017. Actively informing ATACs, contractors, and customers and promoting the use of these lower cost studies could help with the enhanced outreach to smaller customers described below.

Expand outreach to smaller customers.
Five of the ATACs interviewed said they believe small businesses are not well served by the current program design, both because small buildings do not meet the minimum size threshold for a study and because the cost of a study is generally prohibitive relative to the potential energy savings that can be identified. A combination of lower square footage thresholds and use of the short TASs could support some of the ATACs who have started reaching out to smaller businesses.

Be transparent about the study assignment process.
Several ATACs expressed confusion about the process by which studies are assigned, and one did not understand why her firm was not assigned a study when they were the one to refer the customer to the program. Energy Trust and the Existing Buildings program team should explain in greater detail how the assignment process works generally and when an ATAC brings a project to the program.

Make sure approved or assigned studies can be completed and evaluated in a timeframe consistent with the customer's project timeline.
While several ATACs commented that the review team strives to accommodate tight timelines for projects they submit, others cited instances where delays led to lost opportunities. Customer deadlines and decision points should be agreed upon at the time a study is approved, and the consequences if those deadlines are not met should be clearly communicated.

Better explain the project review and approval process to ATACs.
One respondent said that *"we don't have a lot of insight into the approval process of the engineering team; it's like the information goes into a black box"*—a term repeated by two other ATACs. While ATACs understand that some evaluation criteria may change, a more explicit description of the variables and cost-effectiveness criteria that determine whether a project qualifies for incentives would make them more comfortable with the process.

Provide more feedback to ATACs on how they are performing.
In addition to more insight into the review process, ATACs are interested in knowing how their own studies stack up, both in absolute terms and relative to their peers. One suggestion from a respondent was for Energy Trust to provide examples of benchmark or best-in-class studies, with customer-identifying information removed to ensure confidentiality.

Improve turnaround on payment for studies.
Several ATACs mentioned waiting multiple months to be paid for studies. Opportunities to streamline the payment process should be investigated, and ATACs should be able to determine the status of their payment while they wait.

Focus marketing for the Custom track on building long-term relationships with customers.
We found there appears to be a lag between initial awareness of the program and participation in the Custom track, which suggests that Custom track project development follows a pipeline model rather than lending itself to immediate decisions. Given this, we believe a marketing focus on long-term relationship building among potential participants and Energy Trust positioning itself for easy re-dissemination of program information via word-of-mouth among peers would be most effective.

Additionally, testimonials or statistics about the share of participants who see Energy Trust programs as helpful and important to their business could be useful additions to marketing materials.

Maintain relationships with past Custom track participants and suggest emerging opportunities as they become available.
Given Energy Trust's highly-regarded position among participants as a valuable information source, we recommend that Energy Trust maintain relationships with past Custom track participants and suggest emerging opportunities as they become available so they can be considered over time and enter the participants' potential project pipelines. Doing so may require a customer relationship management approach that maintains updated records of who would serve as the best customer contact and records any potential opportunities identified during any walk-through (or more advanced) assessments for future follow-ups.

6.4 Non-participating Customer Outreach and Marketing Recommendations

The following recommendations relate to opportunities for outreach and marketing to customers that have not yet been reached by the Existing Buildings program.

Key sectors to focus on for future opportunities include healthcare, office, and retail.
In terms of the number of sites yet to be served and the electric and natural gas load not yet reached by the program, these sectors have the most potential for future participation. On the other end of the spectrum, the laundry/dry cleaner and K-12 schools sectors have been well served by the Existing Buildings program.

Increase outreach to businesses outside of the Portland Metro region if greater geographic equity is desired.
Participation to date has primarily come from the Portland Metro region, which is not surprising given the large number of businesses concentrated in this area. However, even when taking the number of sites in each region into account, the Portland Metro region has a disproportionally higher participation rate than other regions around the state and in Southwest Washington. The lowest participation rates (number of participating sites as a percentage of total sites) were for Eastern Oregon and Southwest Washington.

As savings opportunities dwindle among large businesses, look for opportunities to serve medium and small businesses.
The Existing Buildings program has served a large proportion of customers with high electricity and natural gas usage, but a significant number of sites still remain to be served in most sectors. This indicates that many of the yet-to-be-reached sites are smaller (in terms of energy usage) than many of the sites participating to date. While smaller in terms of energy usage, there are likely still a large number of sites with cost-effective savings opportunities.

Incorporating the customer's utility name into marketing materials to non-participants may be more effective than the Energy Trust name alone.
Outreach that mentions Energy Trust of Oregon (as marketing materials would always do) and invokes Energy Trust's connection with the targeted business' electric and natural gas utility is likely to be more effective than more generic marketing. We suggest that, when possible, Energy Trust invoke its relationship with the local utilities by name when reaching out to non-participants with which the program does not yet have a relationship.

Focus non-participant marketing and research at the organizational level rather than at the site level.
Outreach to contacts identified in the InfoUSA data rather than known decision makers for organizations proved challenging. Program marketing and future research would be more effective if it targeted non-participants at the organizational level rather than specific customer sites. We recommend that future non-participant research should sample at the organization level and work to identify decision-makers rather than staff at individual sites. Furthermore, we recommend that Energy Trust seek to link related sites, perhaps by assigning an organization ID based on company name, in its database of eligible commercial sites to facilitate marketing at an organizational level.