



Final Report

Multifamily Process Evaluation

March 7, 2017

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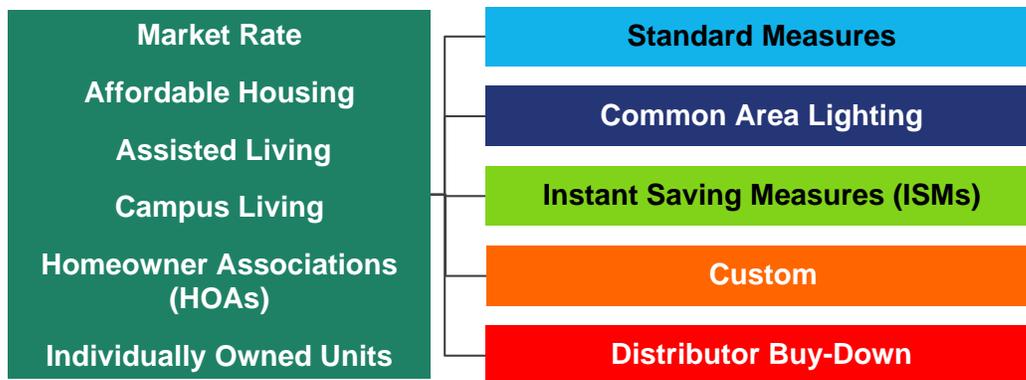
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Executive Summary

Energy Trust of Oregon (Energy Trust) has served the multifamily market since 2003, first through its residential sector programs. In 2006, it defined these services as the Existing Multifamily (Multifamily) program, and, in 2010, moved the program into the commercial sector. Working with its Program Management Contractor (PMC) Lockheed Martin since 2011, Energy Trust has expanded program offerings and target audiences. The program’s current six market segments and five tracks are shown in Figure ES-1.

Figure ES-1: Multifamily Market Segments and Tracks



Evaluation Objectives, Research Questions, and Methods

This research addresses the evaluation objectives and research questions shown in Table ES-1.

Table ES-1: Evaluation Objectives and Research Questions

Evaluation Objectives	Research Questions
1. Document Program Evolution	How has the program changed over time?
2. Examine Program Effectiveness	How effective is the mix of services and measures currently offered?
	How effective is program marketing and outreach?
	How effective is coordination and communication?
	How effective are program technical services?
	What are the key indicators of program success?
3. Explore Customer Decision-Making	How has the program driven deeper energy savings?
	What motivates customers to participate in the program?
	What other factors affect energy related decisions?
	What barriers prevent deeper savings?

Continued...

Evaluation Objectives	Research Questions
4. Identify Program Opportunities	What is the state of the multifamily market in Oregon? What market opportunities for energy efficiency exist? How opportunities for program improvements exist?

To meet these objectives and questions, the Research Into Action team reviewed key program documents and participation data and completed interviews with 80 respondents: Energy Trust staff (5), PMC staff (3), contractors (13), allied technical assistance contractors (ATACs) (5), distributors (3), program participants (42), and market experts (9). This in-depth qualitative research provides robust insights about the program.

Conclusions

These conclusions are drawn from the detailed findings in the report chapters.

Conclusions: Program Evolution

The Existing Multifamily program has historically focused on larger properties and their business and institutional decision makers who have influence over the bulk of savings opportunities. Smaller “mom and pop” properties and residential homeowners, also served through the program, collectively offer savings opportunities, but these targets are more dispersed and have been more challenging for the program to reach cost-effectively.

The interviews with Energy Trust and PMC staff show the program has successfully used a continuous improvement, research-based, and proactive approach to evolve the program, by:

- › Expanding beyond traditional multifamily segments to more specialized segments, while, at the same time, maintaining one point of entry for all segments.
- › Adding mid-stream buy-down incentives through distributors.
- › Tailoring custom track forms and processes and developing the Energy Savings Action Plan to meet market and customer needs.
- › Shifting away from marketing ISMs as a “gateway” to deeper savings, and shifting focus toward driving standard and custom projects.
- › Development of tailored marketing to reach specific segments.
- › The PMC taking over measure development responsibilities to relieve an over-burdened Energy Trust planning group.

Conclusions: Program Effectiveness

Most respondents (PMC and Energy Trust program staff, contractors, distributors, ATACs, participants) agreed the program is highly effective, and pointed to these success indicators:

- › Effective coordination between the PMC and Energy Trust, and with other program actors.
- › Successful development of new ISM measures, including light-emitting diodes (LEDs) and advanced power strips, and continued research to foster new measures.
- › A notable shift to more savings from standard and custom projects rather than from ISMs.
- › Program staff being seen as long-term trusted advisors for most market segments.
- › Developing a proactive approach to sell energy efficiency to higher-level decision-makers.
- › Successful expansion of the distributor buy-down track.
- › Participants saying walkthrough surveys (WTSs) influence their decisions; incentives influence pursuit of non-ISM projects; and technical analysis studies (TASs) prompt more comprehensive projects.
- › Strong contractor, distributor, ATAC, and customer satisfaction across all program dimensions: 83% of customers gave the program a “10” overall, and had high praise for customer service, program processes, trade ally quality, and project results.

While the Multifamily program is successful, respondents reported these challenges:

- › Finding new cost-effective ISMs, gas measures, and replacements for electric baseboard heating.
- › Providing personalized marketing to all market segments.
- › Ensuring all participants are aware of the WTS offering and all available measures.
- › Improving project hand-off between other Energy Trust programs and the Multifamily program.
- › Finding a ‘one point of contact’ solution for campus living participants.
- › Coordinating and communicating the results of measure research it performs that has implications for other Energy Trust programs.
- › Handling resistance from program stakeholders when desired measures are removed from the program, such as window measures.

Conclusions: Customer Decision-Making

For most market segments, owners are the final decision-makers on efficiency projects. However, multiple layers of decision-making may exist, especially for large properties and affordable housing facilities, where on-site managers may identify projects, or even execute small projects, but need to get a higher level of approval for larger projects. For HOAs, the board of directors decides on upgrades that affect common areas of the building.

When asked about what drives them to make *building improvement in general*, participants said:

- › **Immediate need.** Equipment failure, wear and tear, poor condition or performance, or age is, by far, the most universal driver for action.
- › **Long-term improvement plans.** HOA, affordable housing, and market rate segments often follow long-term improvement plans.
- › **Competitive advantage and aesthetics.** This driver is most relevant to market rate, campus living, and individually owned market segments. Owners want to make older units more attractive or “stylish” to renters or buyers by replacing outdated features.

However, when participants, contractors, and Energy Trust and PMC staff were asked to name what drives *energy efficiency upgrades*, the list of drivers changed. Except for contractors, most respondents did not mention immediate need and long-term improvement plans as drivers. Rather, drivers for efficiency improvements focused on:

- › **A good return on investment.**
- › **Operations and maintenance savings.**
- › **Non-energy benefits, including aesthetics.**

These findings suggest a greater emphasis on how the program can meet immediate needs and fit into long-term plans would help move energy upgrades from a “specialty” status to a mainstream improvement status.

Articulating barriers to efficiency projects appeared to be a challenging question for many respondents. Respondents cited the same barriers for any efficiency project, from ‘simple’ to comprehensive, except that certain barriers – such as financial constraints, lack of understanding of the complete business case, complex decision-making, and concerns about taking on complex projects – are exacerbated for large projects.

Conclusions: Program Opportunities

Market Insights

For many multifamily market segments, demand is high, especially in western Oregon Metro areas. Where markets are tight, energy efficiency, especially as a means to attract renters and buyers, loses some of its cachet.

- › Distributors noted, however, that they see a growing demand for higher efficiency products, and credited Energy Trust with generating some of this demand.

Program Process Opportunities

- › Enhance coordination and communication across Energy Trust programs, especially between Existing Buildings and Multifamily program teams, and the handing off of New Buildings completed projects to the Multifamily team.
- › Streamline and automate the incentive application forms and processes where possible (some work is already underway).
- › Increase outreach to owners of individually owned units.
- › Provide more or improved communication to keep various program actors up to date.

Recommendations

- › Continue to devote program resources to proactive continuous program improvement based upon strong communications between the PMC and Energy Trust, building long-term relationships with market actors, conducting ongoing research to establish cost-effective measures, and collecting input and insights from market actors.
- › Take time to focus on key program suggestions and challenges emerging from this research. While work may already have begun on some of these issues, it would be valuable to document how each one will be addressed, including a timeline. The key program challenges are to:
 - Develop marketing tailored to each market segment. Consider how the program can help decision-makers meet their immediate and long term planning needs, in addition to the typical benefits emphasized for efficiency upgrades.
 - Increase effective outreach to the individually owned unit segment.
 - Ensure target audiences across all segments are aware of the WTS offering and its value.
 - Ensure target audiences are up to date on available measure and incentives.

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- Enhance coordination with other Energy Trust commercial and residential programs in two key areas: (1) hand-off of projects, such as from New Buildings to Existing Multifamily; and (2) communicating about the results of measure research that the Multifamily program conducts but which has implications for other programs.
- Find a ‘one point of contact’ solution for campus living participants.
- Proactively develop an approach to deal with resistance from program stakeholders when popular measures are dropped from the program.
- Continue research to find new cost-effective ISMs, gas measures, and replacements for electric baseboard heating.
- Improve tools to sell more comprehensive projects, including presenting the business case to customers, solving financial barriers, simplifying the process, and fitting the projects into long-term improvement plans.

MEMO



Date: July 13, 2017
To: Board of Directors
From: Kate Scott, Program Manager – Commercial
Sarah Castor, Evaluation Sr. Project Manager
Subject: Staff response to the Existing Multifamily Process Evaluation

The Existing Multifamily Process Evaluation was undertaken as a regular, periodic review of program operations, and customer and ally experience. It also provided an opportunity to review program changes and progress since the last evaluation was completed in 2013. Since that time, the multifamily program has evolved and expanded its scope to additional building types and market segments. The housing market has seen dramatic changes in occupancy rates, and the program has worked to adapt to this overall trend while addressing the specific needs of each building type and customer segment.

The evaluation highlighted the program's use of marketing and outreach strategies tailored to market segments as well as its accomplishments in promoting standard and custom measures to balance the portion of program savings that come from instant savings measures (ISMs). Other noted improvements were the redesign of the process for incentivizing custom measures and development of the Energy Savings Action Plan to help customers identify and follow through with projects. Interviews with participants, trade allies and ATACs showed high satisfaction with the program, and the majority indicated that program offerings – including incentives and technical services – influenced their decisions to make energy efficiency improvements at their properties.

Participant interviews also revealed that customers tend to think of energy efficiency projects differently than they do other upgrades to their properties. While energy efficiency projects are often pursued because of their good return on investment, operations and maintenance savings, and non-energy benefits, they do not seem to fit into customers' general building improvement plans, decisions about immediate needs for equipment replacement, or investments to increase competitive advantage. There are opportunities to reframe energy efficiency improvements and their value, to drive demand, as well as simplify the process of incorporating energy efficiency into general building improvements. A complicating factor is the tight housing market, which makes it both less convenient and less necessary for property managers to take on discretionary improvements. An additional finding was that some participants and allies suggested adding measures that are already available from the program, indicating an opportunity to inform both groups about the full suite of incentivized measures.

Going forward, the Existing Multifamily program is planning the following actions to address evaluation recommendations and continue to build a robust and resilient program:

- Re-engage property management firms that have already identified opportunities to save energy, to encourage them to integrate program offerings into their medium- and long-term capital planning process.
- Work to strengthen the distributor buy-down and standard tracks by mapping distributor and trade ally locations, to inform a gap analysis and outreach to grow and diversify these relationships. Distributors and allies can play an important role in presenting efficient options and instant discounts to customers and allies when emergency replacements are being made. The program will coordinate with the Existing Homes program on distributor engagements to align outreach and avoid duplication of effort and confusion for distributors.
- Develop segment-specific marketing and outreach strategies, such as customer testimonial videos for specific market sectors that will speak to both immediate and planned capital improvements.
- Streamline the application process and develop webforms. The program recently created fillable PDF application forms to make them more efficient for customers, and webforms would build on this improvement.
- Collaborate with other Energy Trust programs to enhance customer transfer processes and cross-program awareness, to ensure a seamless customer experience.
- Conduct focus groups to learn more about specific market segments and opportunities to engage and serve them effectively.
- Expand the awareness of walkthrough surveys to assist customers in identifying potential projects and increase awareness of program incentive offerings.
- Continue to explore new program offerings and incentives that resonate with and motivate our customers to plan for and implement projects.

1. Program Description and Evaluation Approach

1.1. Program Description

Energy Trust of Oregon (Energy Trust) is an independent, nonprofit organization committed to providing low-cost, clean energy solutions to Oregon customers of Portland General Electric (PGE), Pacific Power, Cascade Natural Gas and Avista, and Oregon and Washington customers of NW Natural.¹ Energy Trust has served the existing multifamily market since 2003, initially through its residential sector programs, and in 2006, as a distinct Existing Multifamily program within the residential sector.

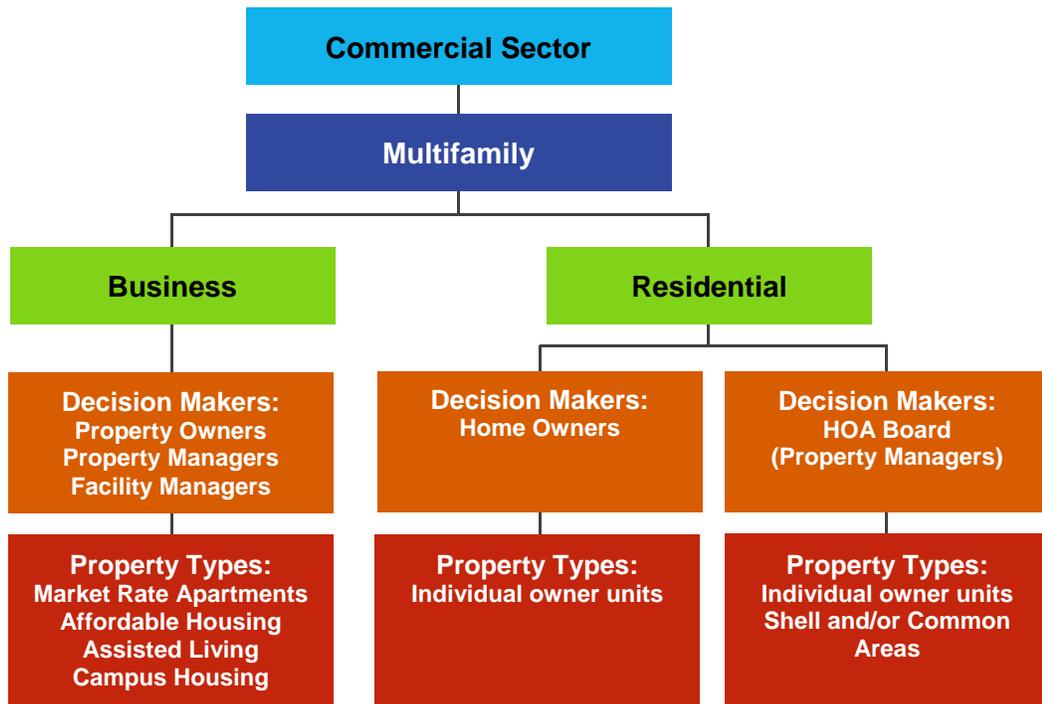
In 2010, Energy Trust moved the program into the commercial sector to better acknowledge that property owners and managers, particularly at larger properties with the greatest savings potential, make energy related decisions based on business criteria. In 2010, Energy Trust also competitively bid program implementation and a Program Management Contractor (PMC), Lockheed Martin, was selected to deliver the program with oversight from Energy Trust, beginning in 2011. In 2015, the program management contract was re-bid and Lockheed Martin was selected to continue to deliver the program.

The program offers financial incentives and services to owners, managers, and Home Owners Associations (HOAs) of existing multifamily properties with two or more units, and to owners of individual units. Eligible market segments include market rate and affordable housing apartment buildings, condominiums and individually owned units, assisted living facilities, and campus housing. Properties must receive electric or natural gas service from PGE, Pacific Power, NW Natural, Cascade Natural Gas or Avista.² Figure 1-1 shows the current program structure.

¹ Energy Trust and the Existing Multifamily program began serving Oregon Avista customers on January 1, 2017.

² The Multifamily program does not provide incentives to NW Natural customers in Washington. New multifamily construction is part of the New Buildings program. Energy Trust and the Existing Multifamily program began serving Oregon Avista customers on January 1, 2017.

Figure 1-1: Existing Multifamily Program Structure



Energy Trust program staff monitor the program and provide strategic direction to the PMC. The PMC subcontracts with Evergreen Consulting Group to manage the common area lighting track of the program, and with CLEAResult to install Instant Savings Measures (ISMs). The PMC conducts outreach to and communicates with potential participants; conducts walkthrough surveys; plans, administers and processes all aspects of the program; and coordinates with Allied Technical Assistance Contractors (ATACs), who conduct studies to identify customized energy-saving approaches, and trade allies. Program staff members conduct a pre-site verification for some installed equipment as well as a post-installation verification on projects with large incentives and a randomly selected portion of all other non-ISM projects.³

Since 2011, the program has expanded its offerings to include five participation tracks:

1. **Standard Measures.** Incentives for standard energy efficiency upgrades, including for water heaters, HVAC, weatherization, appliances, and foodservice equipment.
2. **Common Area Lighting.** Incentives for lighting and controls in non-tenant spaces, plus on-site scoping studies.
3. **Instant Saving Measures (ISMs).** Free direct install measures for tenant units, including: light-emitting diode (LED) light bulbs, low-flow faucet aerators, low-flow showerheads and shower wands, and advanced power strips.

³ Criteria for pre- and post-installation verification varies by project type.

4. **Custom.** Incentives for measures identified as cost-effective for a specific application, through an engineering analysis study, which are not offered under the standard track.
5. **Distributor Buy-Down.** Midstream incentives for distributors for efficient refrigerators, clothes washers, water heaters, and HVAC equipment.

In addition to the participation tracks listed above, the program offers the following services:

- › **Participant Education.** The PMC provides information to property owners and managers to help elevate the value of energy efficiency and mitigate the split incentive issue, which plagues many multifamily properties.⁴
- › **Walkthrough Surveys (WTSs).** The PMC conducts free WTSs and produces a report with the top energy efficiency improvements and information about Energy Trust incentives.
- › **Technical Analysis Studies (TASs).** ATACs conduct TASs to assess the property's energy use and identify energy savings opportunities for custom measures. Program technical staff review TASs, along with the equipment and installation contractor proposals, to ensure participants receive accurate energy information and the recommended equipment is cost-effective.
- › **Contractor Connections.** The program maintains a trade ally network of licensed and insured installers and equipment suppliers who are up to date on the latest program standards, quality control requirements and incentives.

Historically, the program has achieved the largest share of its savings from the ISM track; however, Energy Trust has increased program focus on developing longer-term relationships with property owners and managers to foster repeat participation and encourage more comprehensive upgrades over the life of the property.

1.2. Evaluation Objectives and Approach

In 2016, Energy Trust engaged Research Into Action to conduct a qualitative process evaluation of the Existing Multifamily program to meet the following evaluation objectives and research questions as shown in Table 1-1.

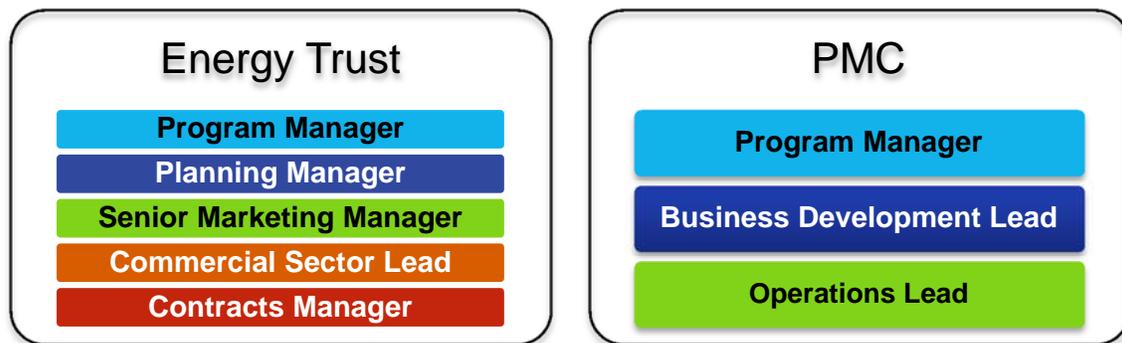
⁴ The split incentive issue describes situations where tenants pay the utility bill and therefore the owner would not benefit from the utility bill savings resulting from energy efficiency upgrades.

Table 1-1: Research Objectives and Questions

Evaluation Objectives	Research Questions
1. Document Program Evolution	How has the program changed over time?
2. Examine Program Effectiveness	How effective is the mix of services and measures currently offered?
	How effective is program marketing and outreach?
	How effective is coordination and communication?
	How effective are program technical services?
	What are they key indicators of program success?
3. Explore Customer Decision-Making	How has the program driven deeper energy savings?
	What motivates customers to participate in the program?
	What other factors affect energy related decisions?
4. Identify Program Opportunities	What barriers prevent deeper savings?
	What is the state of the multifamily market in Oregon?
	What market opportunities for energy efficiency exist?
	How opportunities for program improvements exist?

The research team first reviewed key program documents and data, including 2015 participation data, program manuals, and past evaluations. Next, we worked with Energy Trust and the PMC to develop program staff, contractor,⁵ ATAC, participant, and market expert interview guides and to identify interview contacts for each group. Primary research started in March 2016 with interviews of eight program staff: two group interviews, one with five Energy Trust staff, and one with two PMC staff, and an individual interview with the PMC program manager as shown in Figure 1-2.

Figure 1-2: Program Staff Interviews (n = 8)



⁵ "Contractor" refers to both trade ally and non-trade ally contractors.

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As shown in Table 1-2, we interviewed an additional 72 individuals between early June and mid-July 2016, with each interview lasting up to 30 minutes.

Table 1-2: Interview Tally (n = 72)

Group	Target Completes	Actual Completes
Existing Multifamily Program Trade Allies	Up to 12	9*
Other Contractors	Up to 10	4
ATACs	Up to 5	5
Distributors	Up to 4	3
Participants: Market Rate	15 to 17	16
Participants: Affordable Housing	4 to 7	5
Participants: Campus Living	3 to 4	4
Participants: Assisted Living	4 to 7	4
Participants: HOA	4 to 7	4
Participants: Individually Owned Units	8 to 10	9
Market Experts	Up to 10	9
Total		72

* Includes two partially completed interviews

Using the contact list Energy Trust provided, we interviewed 13 contractors, nine listed as program trade allies and four not identified as program trade allies, shown as “other contractors” in Table 1-2. However, all respondents we interviewed stated they were approved Energy Trust trade allies, either for the Existing Multifamily program or other Energy Trust programs. We compared responses from the four “other” contractors to the program trade allies and found no meaningful differences. Therefore, the report presents the results of all contractor interviews together. These contractors generally reflect the distribution of contractors completing projects for the Multifamily program in 2015 (Table 1-3). The team completed interviews with over one-third (13 of 33) of the contractors on the contact list.

Table 1-3: Contractor Interviews by Service Type

Service Type	Contact List Count			Interviews Completed*
	Program Trade Allies	Non-Program Trade Ally	Total	
HVAC/Plumbing	7	4	11	5
Weatherization	6	3	9	3
Mechanical	3	4	7	3
General	4	2	6	2
Total	20	13	33	13

* Includes two partially completed program trade ally interviews.

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The business locations of the interviewed contractors also reflected the distribution of those who completed projects in 2015 (Table 1-4), with more than two-thirds (9 of 13) working primarily in the Portland Metro area.

Table 1-4: Contractor Interviews by Location

Business Location	Contact list Count			Interviews Completed*
	Program Trade Allies	Non-Program Trade Ally	Total	
Portland Metro Area	16	7	23	9
Central and Eastern Oregon	2	3	5	1
I-5 Corridor (Salem, Eugene, Medford Area)	1	3	4	2
Oregon Coast	1	0	1	1
Total	20	13	33	13

* Includes two partially completed program trade ally interviews.

The Research Into Action team also spoke with nine market experts across five market segments (Table 1-5). The expertise of the campus housing experts and the HOA expert was limited to the Portland Metro area. The affordable housing expert's knowledge included the Portland Metro area, along with Hood River, and down the I-5 corridor to Eugene. One assisted living expert said he was knowledgeable about the whole state, while the other assisted living expert knew only about Albany, Oregon. One market rate expert was familiar with the northern Oregon coast and the other was familiar with northeast Oregon including Union County.⁶

Table 1-5: Market Expert Interview Tally

Market Segment	Market Experts
Market Rate	2
Affordable Housing	1
Campus Living	3
Assisted Living	2
HOA	1
Individually Owned Units	--
Total	9

⁶ When conducting the interview, we discovered that one market rate expert resided in a location outside of Energy Trust's service territory. We included this respondent's interview data where appropriate, e.g., their perspective on market characteristics or how market rate owners decide on upgrades. We did not include their answers in analysis when it asked about the extent to which owners in the expert's area are aware of Energy Trust or Energy Trust's efforts to reach property owners, for example.

1.3. Report Structure

The beginning of each report section summarizes the key findings, which are then followed by detailed findings these four research topics:

- › Section 2: Program Evolution
- › Section 3: Program Effectiveness
- › Section 4: Customer Decision-Making
- › Section 5: Program Opportunities

Please see the Appendices for interview guides and for the list of program documents we reviewed as part of this research.

2. Program Evolution

2.1. Chapter Summary

The Existing Multifamily program has historically focused on larger properties and their business and institutional decision makers who have influence over the bulk of savings opportunities. Smaller “mom and pop” properties and residential homeowners, also served through the program, collectively offer savings opportunities, but these targets are more dispersed and have been more challenging for the program to reach cost-effectively.

The interviews with Energy Trust and PMC staff show the program has successfully used a continuous improvement, research-based, and proactive approach to evolve the program, by:

- › Expanding beyond traditional multifamily segments to more specialized segments, while, at the same time, maintaining one point of entry for all segments.
- › Adding mid-stream buy-down incentives through distributors.
- › Tailoring custom track forms and processes and developing the Energy Savings Action Plan to meet market and customer needs.
- › Shifting away from marketing ISMs as a “gateway” to deeper savings, and shifting focus toward driving standard and custom projects.
- › Development of tailored marketing to reach specific segments.
- › The PMC taking over measure development responsibilities to relieve an over-burdened Energy Trust planning group.

2.2. Program Evolution

2.2.1. Energy Trust Views – Program Evolution

Energy Trust program staff reported that the Multifamily program has steadily evolved since its beginnings under the residential portfolio in 2003. Staff noted that Energy Trust’s decision to move it to the commercial portfolio in 2010 focused more attention on the business aspects of the multifamily sector. As one staff member stated, “It [the multifamily sector] didn’t get a lot of attention under residential, it was complicated, and the type of customer was typically not just residential homeowners. The relationship was more as if you were working with a business customer, a property management firm – a more commercial-style customer base.”

Staff reported the program continued to evolve once it was a stand-alone program within the commercial portfolio, noting that the PMC suggested many of the changes. For example, one staff member said the program started by serving larger properties and then expanded to include

smaller properties, and also went beyond market rate and affordable housing to include individually owned units, campus housing, and assisted living.

In addition to broadening the program to serve more customers and market segments, the program, in 2012, also added a midstream incentive for participating distributors to buy down the price of efficient appliances and equipment. While staff said the initiative had some difficulties with one larger distributor about how to track certain data points required to receive incentives, these issues have been resolved.

Another change in the program was the redesign of the custom track process in 2013 and 2014. Staff reported that the original process was based on the Existing Buildings custom track process. When the custom track process was redesigned, the existing forms and process were adapted to better meet the needs of multifamily projects and customers.

Around that same time, in 2013, staff recalled Energy Trust conducted qualitative market research⁷ that suggested ISMs were unlikely, on their own, to lead to larger, more comprehensive projects. This research also stressed that many decisions for multifamily properties were complex and that the program needed to appeal to “portfolio managers and others who actually make those decisions, not the on-site guys who have no authority to make those decisions.”

Staff also mentioned that over the last few years the program has shifted its focus to more standard and custom projects, rather than ISMs, due to declining savings from ISMs, anticipated future cost-effectiveness challenges for some ISM measures, and the need to find deeper savings. This shift will ensure a more diverse source of savings

Finally, staff noted that more recent shift in the program occurred in 2015 when the PMC took over new measure development from the Energy Trust Planning staff.⁸

Looking to the future, several staff reported planned activities to inform and improve the program including:

- › Testing new initiatives and pilots, including more community outreach
- › Continued measure development to identify, develop, and test new measures
- › Expanding regional focus beyond the more heavily populated metropolitan areas

⁷ Brenda Forest, “Existing Multifamily Program Market Research Results”. http://www.energytrust.org/wp-content/uploads/2016/12/Multifamily_Results_130606.pdf

⁸ Each of these shifts has presented some challenges, as discussed in a later section of this report.

2.2.2. PMC Views – Program Evolution

PMC staff discussed how the program has changed since they began implementing it in 2010; in addition, they emphasized their commitment to continual program improvement. Staff reported the first significant change to the program occurred in 2012 when assisted living and campus housing market segments were added.⁹ Staff also noted the addition of the distributor buy-down track as an expansion of the program in 2012.

In 2013, the program began to serve smaller multifamily properties (2-4 plexes). Initially, the multifamily program served properties with five or more units,¹⁰ but PMC staff advocated to adjust the definition based on input from the market. For instance, property managers with large multifamily properties often had 2-4 unit buildings in their portfolio and wanted a single point of contact. In other instances, some large campuses had dozens of 2-4 unit buildings that weren't able to get direct install services. A third factor was that customers were repeatedly falling through the cracks and being passed back and forth between PMC's or not served consistently. Having all multifamily rolled into one program provided a single point of contact, a single suite of offers, clarity for trade allies selling projects and extended direct install to all varieties of properties and building configurations. Now the program considers any property with two or more attached units to be a qualifying property.

PMC staff, similar to Energy Trust staff, discussed a movement away from ISMs and toward standard and custom measures. Staff noted that over time, the “low-hanging fruit” savings have largely been achieved and the program is now striving for deeper savings by taking a more personalized approach using tailored recommendations for cost-effective measures.

Also like Energy Trust program staff, PMC staff noted the custom track redesign and that a key benefit of the re-design was the development of the Energy Savings Action Plan (ESAP). They described the ESAP as a comprehensive roadmap designed to give participants a plan for short- and long-term upgrades appropriate for their property. As one PMC staff person described, “We wanted the ESAP to be an all-encompassing view of all the opportunities in the building. That’s what it was designed for – standard, custom, lighting, all wrapped up in one nice, neat package.” PMC staff noted that they have continued to modify the ESAP to meet the needs of the market, and they believe it is an “impactful document” that they want to have “readily available for more properties.”

⁹ Assisted Living and Campus Housing had previously been included under the Existing Buildings program.

¹⁰ Prior to being added to the multifamily program, duplexes, triplexes and fourplexes were served through the residential Existing Homes program.

3. Program Effectiveness

3.1. Chapter Summary

Most respondents (PMC and Energy Trust program staff, contractors, distributors, ATACs, participants) agreed the program is highly effective, and pointed to these success indicators:

- › Effective coordination between the PMC and Energy Trust, and with other program actors.
- › Successful development of new ISM measures, including LEDs and advanced power strips, and continued research to foster new measures.
- › A notable shift to more savings from standard and custom projects rather than from ISMs.
- › Program staff being seen as long-term trusted advisors for most market segments.
- › Developing a proactive approach to sell energy efficiency to higher-level decision-makers.
- › Successful expansion of the distributor buy-down track.
- › Participants saying WTSs influence their decisions; incentives influence pursuit of non-ISM projects; and TASs prompt more comprehensive projects.
- › Strong contractor, distributor, ATAC, and customer satisfaction across all program dimensions: 83% of customers gave the program a “10” overall, and had high praise for customer service, program processes, trade ally quality, and project results.

While the Multifamily program is successful, respondents reported these challenges:

- › Finding new cost-effective ISMs, gas measures, and replacements for electric baseboard heating.
- › Providing personalized marketing to all market segments.
- › Ensuring all participants are aware of the WTS offering and all available measures.
- › Improving project hand-off between other Energy Trust programs and the Multifamily program.
- › Finding a ‘one point of contact’ solution for campus living participants.
- › Coordinating and communicating the results of measure research it performs that has implications for other Energy Trust programs.
- › Handling resistance from program stakeholders and when desired measures are removed from the program, such as window measures.

3.2. Chapter Topics and Respondents

This section provides respondent perspectives on these aspects of program effectiveness:

- › Service and measure mix
- › Outreach and marketing strategies
- › Coordination and communication
- › Technical services
- › Success indicators

As part of developing the interview guides, Energy Trust and Research Into Action agreed on the topics that would be asked of each respondent group, as reflected in Table 3-1.

Table 3-1: Effectiveness Topics for Each Respondent Group

	Service & Measure Mix	Outreach & Marketing	Coordination/ Communication	Technical Services	Success Indicators
Energy Trust	✓	✓	✓	✓	✓
PMC	✓	✓	✓	✓	✓
Contactors	✓		✓		✓
ATACs		✓	✓	✓	✓
Distributors		✓			✓
Participants	✓	✓		✓	✓
Market Experts		✓			

3.3. Effectiveness of Program Services and Measure Mix

3.3.1. Energy Trust Views – Services and Measures Mix

Energy Trust staff members agreed the program’s services and measures were effective, given “what’s possible and available.” In addition, they noted this has been a time of considerable change for the program, with evolving incentive structures and many new initiatives and pilots. Overall, while describing challenges, staff members also see considerable progress in key areas.

Program staff members say the shift from the ISM track, which has been a heavily relied-on source of program savings but has experienced declining cost-effectiveness, to more emphasis on standard and custom projects, is going well. The program has met its goals to reduce its savings from ISMs. This shift has presented some challenges, since the PMC has needed to push harder to promote those tracks to a different set of decision-makers – those who can make greater financial investments – than the on-site managers.

Energy Trust staff members also mentioned that low natural gas prices are a challenge. They report measures are becoming much less cost effective, while at the same time there is pressure “to pay more. . . to make the business case [to customers] to invest in gas retrofits.”

A third challenge is cost-effective replacements for electric baseboard heat. As one staff member explained, “Most of [Oregon’s] multifamily is electric baseboard [heat], and it’s super inefficient but we don’t have measures that are comparable in price to just getting a new Cadet.¹¹” This person noted that it’s cost-prohibitive to sell ductless heat pumps to multifamily owners unless they are changing their ducting. The program has been testing out a higher efficiency wall heater product to see if the product has viable savings. So far, however, the results have been variable and the program is currently running a second phase test.

A fourth challenge, still in the process of being addressed at the time of this study, is the transfer of responsibility of measure prioritization and development from Energy Trust’s planning group to the PMC due to “lack of bandwidth” at Energy Trust. This transfer has involved re-defining roles and expectations for everyone, with the goal of shifting more control to the PMC, while at the same time retaining the right level of Energy Trust involvement and oversight.

Staff members raised a fifth issue related to the program completing research on measures that affect other Energy Trust program; for instance, research on showerhead flow rates and advanced power strips. This has raised some coordination and communication challenges to balance “who does what” and how best to ensure all the programs are informed with just one program doing the research. Staff report they are succeeding in closing these gaps.

A final issue, mentioned at various points in our interview, related to the inclusion of window measures in the measure mix, which owners want, often more for aesthetic and other reasons than energy efficiency, and contractors want to help sell more expensive projects to owners, but which have diminishing cost-effectiveness. The Oregon Public Utility Commission (OPUC) has granted an exception from cost-effectiveness requirements to allow the program to offer incentives for windows, but program staff expect to see the measure facing review and controversy again in 2018.

3.3.2. PMC Staff Views – Services and Measures Mix

Overall, PMC staff reported the current measures and services are effective. While they noted several of the same issues as Energy Trust staff, they said somewhat less about challenges and tended to focus most on the steps they had taken to meet any challenges and to achieve success. For instance, one staff member noted that updates to compact fluorescent lamp (CFL) measures based on the Energy Information and Security Act (EISA)¹² resulted in substantially reduced savings. However, the program then got approval for LED bulbs in the “ISM track and got the savings back up.” This staff member also described a multi-step process for advanced power strip approval where they initially thought Energy Trust would approve them based on savings

¹¹ Cadet is a manufacturer of baseboard and wall-unit heating equipment.

¹² Energy Information and Security Act of 2007, which effectively made CFLs the lighting baseline.

estimates, but because savings estimates were uncertain, Energy Trust required a pilot to verify savings. The pilot found the measure to be cost-effective and advanced power strips were subsequently added to the ISM track.

PMC staff, like Energy Trust staff, mentioned their role in identifying new measures, saying they are always looking to identify new ones. They said that when they learn of a measure or new technology they think will be valuable to the program, they do background research to determine the potential cost-effectiveness of the measure. If they think it will be cost-effective, they then present it to Energy Trust staff.

And like Energy Trust staff, PMC staff anticipated changes in ISM savings, expecting that they would deliver 50-60% of the savings in 2016, and that they also expect to increase savings from the standard and custom measure tracks. At the same time they noted that it “takes a lot of effort to get them [participants] to move forward” in those tracks.

One staff member noted that the distributor buy-down track is appropriate for the multifamily market because property management firms often buy more than one appliance at once.

3.3.3. Contactor Views – Services and Measures Mix

Seven out of 13 contractors were able to specify how many incentivized projects they completed in 2015 and gave a wide range: from three to 40.¹³ Six of the seven contractors¹⁴ reported they completed about the same number of projects in 2014 as in 2015. Eight of the 13 contractors were able to recall the types of incentivized measures they installed; as shown in Table 3-2, HVAC and window measures predominated.

Table 3-2: Number of Contractors* Installing Various Measures (n = 8)

Measure Type	Count
HVAC equipment	8
Ductless Heat Pumps	7
Gas furnaces	4
Heat pumps	2
Other HVAC equipment	2
Windows	5
Doors	2
Insulation	1

* Multiple responses allowed. The remaining 5 contractors were unable to specify measures.

¹³ When asked about the number of incentivized multifamily projects they had completed in 2015, one contractor said he had not completed any projects, and five contractors reported not knowing how many projects they had completed.

¹⁴ One contractor started his company late in 2014 and thus was not able to compare 2014 and 2015.

While six of thirteen contractors said the current program measure mix is effective, several suggested improvements, including:

- › Expand the measure mix to include forced air heat pumps, variable speed gas furnaces, and solar photovoltaic (3).¹⁵
- › Increase incentive amounts (2).¹⁶
- › Provide incentives to both the customer and equipment installation contractor (1).¹⁷
- › Establish more consistent incentive amounts across Energy Trust programs to reduce contractor and customer confusion (1).¹⁸

3.3.4. Participant Views – Services and Measures Mix

As shown in Table 3-3, lighting and water efficiency ISMs (faucet aerators and showerheads) were the most common measures installed in 2015 projects across all market segments except for HOAs, where prescriptive lighting (77%) was the most common measure. Note that direct-install of ISMs conducted in condominiums is typically classified under the individually owned unit category, even when conducted in buildings managed by HOAs.

Prescriptive lighting was also higher for the assisted living segment (27%) than other segments except HOAs. Other notable differences among the segments include the higher rate of custom projects for HOAs (10%); the higher rate of shell measures for campus housing (32%); the higher rate of HVAC measures for individually owned units; and the higher rate of power strips for affordable housing (20%) and individually owned units (19%).

Table 3-3: Percent of Projects Installing Measures, by Type and Market Segment in 2015

	Market Rate	Affordable Housing	Campus Living	Assisted Living	HOAs	Individually Owned Units	All
	n = 923	n = 199	n = 22	n = 176	n = 71	n = 599	n = 1990
Lighting ISMs	45%	76%	27%	40%	6%	60%	51%
Water ISMs	43%	70%	36%	45%	1%	43%	44%
Shell Measures	20%	7%	32%	1%	7%	24%	18%
HVAC	11%	3%	14%	21%	3%	28%	16%

Continued...

¹⁵ These contractors were apparently not aware the program offers solar, heat pump and gas furnace incentives.

¹⁶ Window contractors only provided this comment.

¹⁷ HVAC contractor.

¹⁸ Ibid.

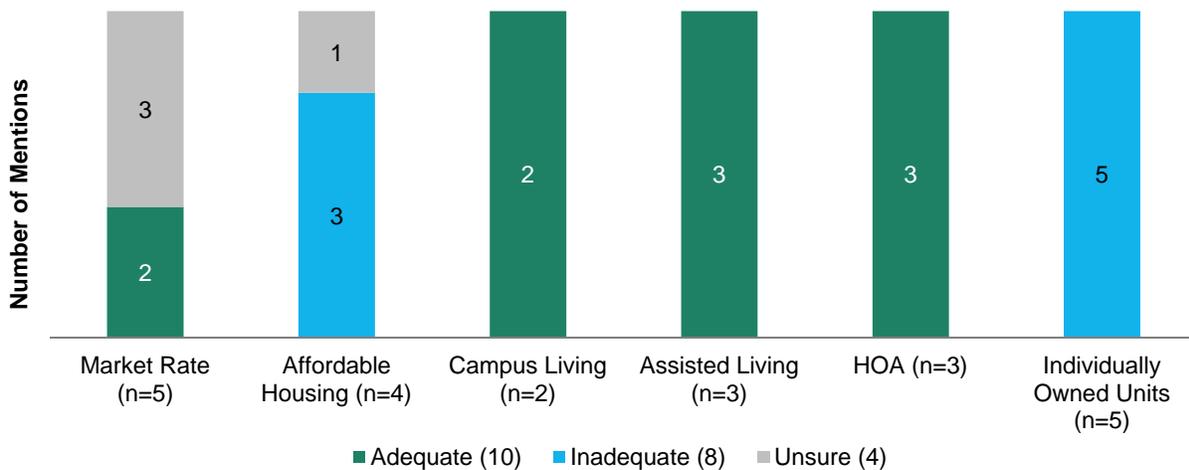
Multifamily Process Evaluation

	Market Rate	Affordable Housing	Campus Living	Assisted Living	HOAs	Individually Owned Units	All
Appliances	21%	9%	9%	11%	0%	8%	14%
ISM Power Strips*	13%	20%	9%	6%	0%	19%	14%
Lighting Prescriptive	8%	6%	14%	27%	77%	0%	9%
Water Heating	7%	7%	9%	5%	4%	2%	5%
Custom	1%	3%	5%	5%	10%	0%	2%
Other	1%	0%	9%	3%	1%	0%	1%

* Power strips were offered beginning in September 2015.

Participants had a variety of perspectives on the adequacy of incented measures as shown in Figure 3-1. About half of the respondents (10 of 22) reported the mix of incented measures to be adequate for what they wanted to do, while four indicated that they were unsure of the full range of incented measures, and asked about the availability of incentives for other measures.¹⁹

Figure 3-1: Participants' Ratings of Incentive Adequacy (n = 22)*



* Participants who only received ISMs were not asked this question.

About one-third of participants (7 of 22) wanted incentives expanded to include a broader range of appliances. For example, two affordable housing representatives reported they wanted dishwashers to be incented, with one of them adding, “Whatever degree they [Energy Trust] can expand the appliance buy-down program would be great; maybe having a few different models to pick from, because usually there’s just one model to pick.”²⁰

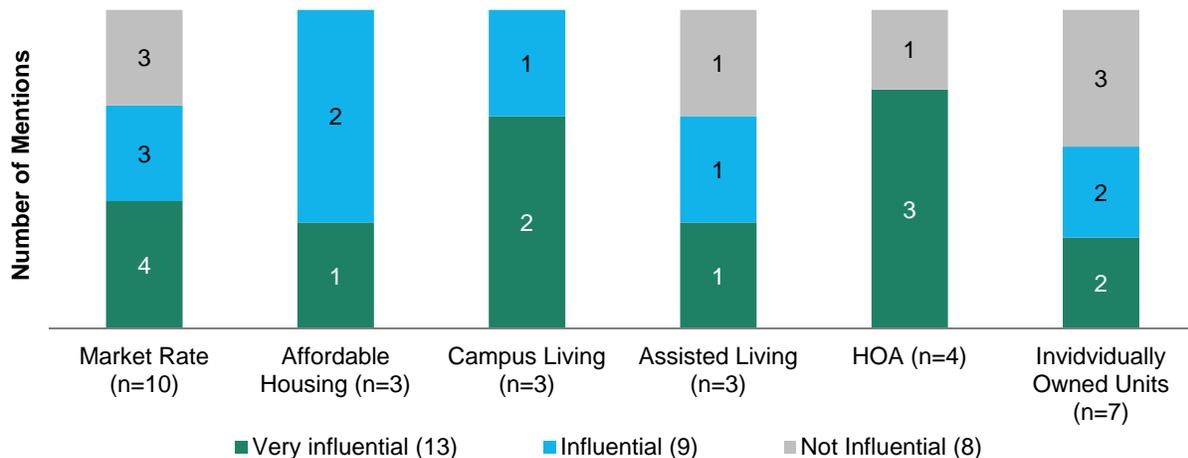
¹⁹ These four participants asked about the availability of incentives for hot water heaters, HVAC mini split systems, insulation, and windows, all of which are currently offered by the program.

²⁰ The program discontinued its dishwasher incentive at the end of 2015 due to a very low uptake.

In addition, five individually owned unit owners reported trouble finding incented equipment, citing the limited number of eligible models. Two of them reported they bought appliances expecting Energy Trust to incent them, but they did not qualify. The other three said it was hard to find eligible appliances, like water heaters, that would fit into the small closet spaces.

Almost three-quarters (22 of 30) of participants reported that the incentives available from Energy Trust influenced their decision to complete energy-saving upgrades at their property (Figure 3-2). Of the 13 who said incentives were “very influential” in their decision-making, six said their projects would not have happened or would have been reduced in scope without them. For example, a market rate participant said “it would have not been the same decision” without incentives when they replaced their windows, and a campus housing participant said that the incentives “expanded their capacity” to do energy-saving projects. Of the nine participants who said the incentives were “influential,” four stated they “probably” would have done the project without the incentive.

Figure 3-2: Influence of Incentive on Decision-Making (n = 30)*



* The 12 participants who **only** received free ISMs were not asked this question.

Of the eight who said the incentive did not influence their decision, three mentioned they had started the project with a contractor before they knew they were eligible to receive an incentive. The other five simply said they would have done the project without incentives.

3.4. Effectiveness of Outreach and Marketing

This section describes respondent views about the program marketing and outreach effectiveness. Participant motivations to pursue energy efficiency and to take part in the program are discussed in a subsequent section. Please note, however, that respondents also talk about those motivations here, particularly when discussing messaging strategies.

3.4.1. Energy Trust Views – Outreach and Marketing

Energy Trust program staff said program marketing primarily supports the PMC’s business development staff, so it’s “very sales oriented.” PMC staff develop an annual marketing plan and handle all program-specific marketing. Energy Trust staff said that their overall business marketing, like the My Business campaign that focuses on lighting, may support the program.

To ensure outreach and marketing are aligned with Energy Trust’s overall goals and branding guidelines, Energy Trust staff review “everything printed and produced for marketing.” PMC staff and Energy Trust staff meet monthly for marketing updates and the PMC also provides Energy Trust with quarterly reports on marketing progress.

Energy Trust program staff noted that PMC business development (BD) staff implement the marketing plan through direct outreach, alongside more global marketing tactics such as videos, newsletters and advertisements that the PMC marketing team implements. BD staff have assigned market segments, as well as regions, such as the Portland Metro area.

Staff at Energy Trust reported successful marketing efforts in the past year included Efficiency Minute videos. These videos highlight particular technologies, are posted to Energy Trust’s website and are promoted in the customer newsletter “Energy Portfolio.” They also noted that some focus groups conducted with specific segments had been very insightful.

3.4.2. PMC Views – Outreach and Marketing

PMC staff noted they reach eligible properties through staffing tables at events, cold-calling, mailing letters, distributing flyers, and developing case studies. They also said they were moving toward a more proactive approach to selling energy efficiency to drive projects forward and provided these insights on their approach to individual market segments.

- › **Market Rate.** PMC staff split their approach based on property size. For larger properties, they take a top-down approach – contacting property management groups, upper management, or portfolio-level managers to make the case for energy efficiency improvements. Staff noted property management groups may manage 200 properties, and each property could have a different owner, so this approach is much more efficient.

For smaller properties with fewer units that are not part of a larger portfolio, staff noted the owners are difficult to identify and, if identified, tend to be less familiar with energy efficiency. In addition, few management groups or trade associations represent these properties. Thus, PMC staff said contractors drive participation for these property types.

Regardless of size, staff noted very low vacancy rates have led them to promote upgrades that do not require access to tenant spaces. One PMC staff member thought financial benefits mainly drive energy efficiency and that environmental messages, except in the Portland Metro area, did not appeal to decision-makers. This staff person thought marketing needed to focus on the “business case for energy efficiency” and its impacts on the bottom line.

- › **Assisted Living.** PMC staff reported trying to establish long-term relationships with decision-makers at assisted living properties. Staff discuss long-term capital planning and a desire to make sure that the decision-makers are aware of the benefits of energy efficiency, such as tenant comfort and retention and lower maintenance costs. Staff perceive that these properties make upgrades on a continual basis and therefore, staff want to have an ongoing relationship with the property decision-makers so when the property owner is ready to move forward with a project, they are positioned to make it energy-efficient.
- › **Affordable Housing.** PMC staff said they position themselves as a long-term trusted resource for affordable housing customers. They identify the needs of the property and focus their messaging around addressing those needs cost-effectively. They may, for instance, start with encouraging free ISMs, then identify other short term cost-effective options, and then suggest improvements that need to be considered in the context of long-term capital plans. Staff also noted that financial constraints play a large role in this segment and identifying funding for a project can take years. PMC staff said they try to stay in contact over time and to be a trusted advisor who is available to provide advice.
- › **HOAs.** PMC staff noted a long-term, trusted advisor approach is also valuable with HOA management groups and boards of directors. They said state law requires every condo property in Oregon to do a reserve study, which maps out improvements to the property over 30 years. The PMC strategy is to try to move energy efficiency improvements up in the timeline – for example, moving an improvement for year three up to year one. PMC staff said they focus their messaging on “this is what you need to do to your building to attract more owners, to keep costs down, keep it more comfortable, and to be the building you want it to be because you’re going to be here long-term.”
- › **Individually Owned Units.** PMC staff talk directly with the unit owners either in response to inquiries or when they encounter them. However, staff said it’s difficult to identify owners, and that often it is the contractor who tells unit owners about the program.

3.4.3. ATAC Views – Outreach and Marketing

ATACs reported that they mostly find and complete projects on their own.²¹ Four of five ATACs we interviewed reported that when they see an opportunity, and the customer is interested, they bring the project to Energy Trust. The one remaining ATAC noted he identified about half of his projects, and Energy Trust assigned him the other half. One ATAC outside Portland voiced concern that Portland-based ATACs were being assigned projects that were closer to him.

²¹ Interestingly, this conflicts with PMC staff’s experience in the Existing Multifamily program, where they report assigning most of the projects to ATACs. Possible explanations are that interviewed ATACs are not representative of the wider program or ATACs may be reflecting some of their experience working with other Energy Trust programs, such as Existing Buildings, where project assignment by program staff is less common.

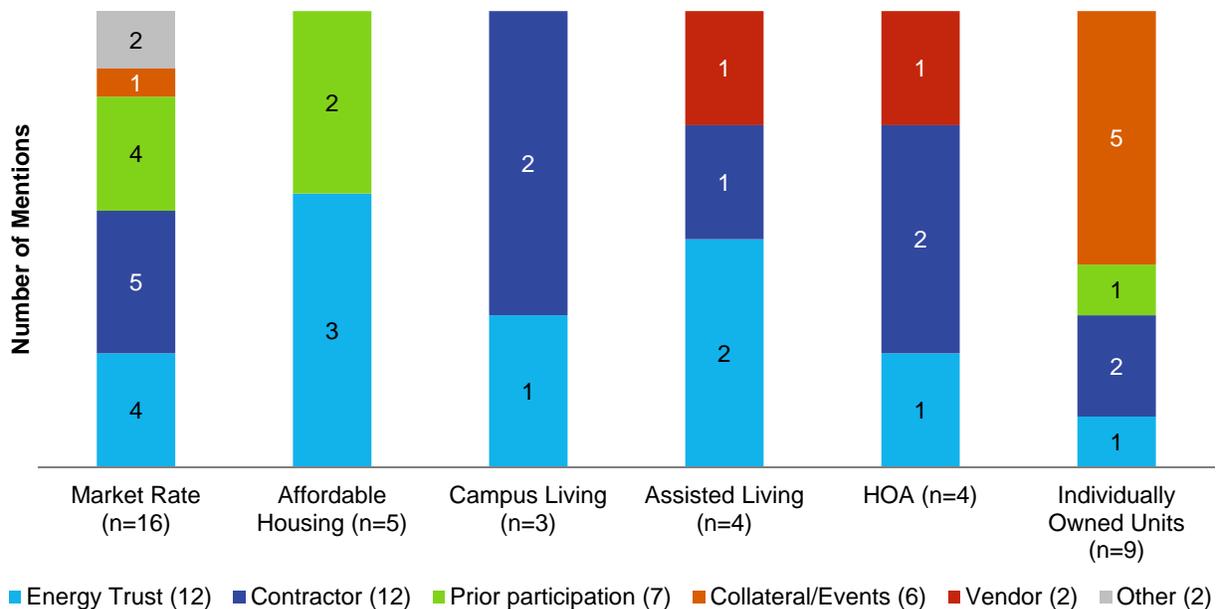
3.4.4. Distributor Views – Outreach and Marketing

All three distributors stated they promote the program directly to property owners and property management companies. Two also said their companies worked with contractors to promote the program. None of the distributors reported working alongside manufacturers to promote efficient equipment with one reflecting, “they [manufacturers] just provide the product to us.” Two of the three distributors reported that return on investment was the key selling point for participants. The remaining distributor said “all the [property] manager cares about is if it’s going to work,” but went on to note that energy-efficient equipment can be sold as durable and long-lasting because it uses less energy and delays equipment replacement costs.

3.4.5. Participant Views – Outreach and Marketing

Across the market segments, except for individually owned units, most participants said they learned about the program through direct human contact – primarily through a contractor or an Energy Trust representative, reported in equal measure (29% each, see Figure 3-3). Four of the nine participants in the individually owned segment, however, learned of the program through direct mail pieces from the program, and one through an Energy Trust sponsored event. Overall, seven participants reported a longstanding awareness of Energy Trust and/or prior program participation, especially in the market rate and affordable housing sectors.

Figure 3-3: How participants learned about the program (n = 41)*



* One Campus Living participant did not know how they heard about the program and is not included here.

3.4.6. Market Expert Views – Outreach and Marketing

As shown in Table 3-4, the campus and affordable housing experts thought program awareness in each of their respective segments was strong. The market rate expert thought the market was “somewhat aware.” The assisted living and HOA experts, on the other hand, thought awareness was low and would benefit from programmatic efforts to increase awareness.

Table 3-4: Awareness of Energy Trust by Market Segment, According to Experts (n = 7)*

Market Segment	Awareness Level
Market Rate (n=1)	"Somewhat aware" among owners and operators
Affordable Housing (n=1)	"Pretty aware," with on-site staff being more aware than owners due to attending trade shows and conferences where the program does marketing.
Assisted Living (n=1)	"Pretty slim"***
Campus Housing (n=3)	"Very aware," with one stating all operators of campus housing facilities in Portland are aware.
HOA (n=1)	"A good portion don't know," and awareness varies.

* One assisted living expert and one market rate expert could not gauge market segment awareness.

** Note that market and program data analysis conducted by the Multifamily program staff found high penetration in this market.

3.5. Effectiveness of Coordination and Communication

This section examines various aspects of communication and coordination for the program.

3.5.1. Energy Trust Views – Coordination and Communication

The two primary entities involved in program management are Energy Trust and PMC staff. Energy Trust staff oversee the PMC delivery of the program, while the PMC subcontracts with, and manages, CLEAResult, and Evergreen Consulting Group to deliver components of the program. The PMC also oversees the ATACs. Both Energy Trust and the PMC communicate with trade ally contractors.

Staff agreed that the overall management of the program is running smoothly and communication is regular and effective. One Energy Trust staff member reported, “[Energy Trust has] regular meetings with [the PMC] and every three weeks we have a planning meeting where we talk about measure development.” The Energy Trust program manager also meets with the PMC program manager every week, and reported that these meetings allow Energy Trust to stay “very attuned to what [PMC staff are] doing.” Finally, staff reported the PMC has a good relationship with trade allies, noting that they have a dedicated trade ally coordinator who talks to trade allies on a regular basis.

Staff noted that cross-program coordination has on occasion presented some challenges, particularly in assigning projects to programs and in communicating the results of the measure research that the Multifamily program conducts that might also be useful to other Energy Trust

programs, such as research on advanced power strips and showerhead measures. Energy Trust program managers have set up ‘sorting rules’ that provide official guidance to PMCs when project assignment is unclear, and have encouraged PMCs to coordinate on sorting. In addition, they observed the PMC has become more proactive in communicating the results of their measure research to residential programs.

3.5.2. PMC Views – Coordination and Communication

PMC staff reported regular and frequent communication with Energy Trust staff, including weekly check-in meetings. In addition, staff said they hold regular operations meetings with Energy Trust to discuss data processing, standard protocols for site visits, Energy Trust’s customer relationship management system (CRM) and payments. A lot of ad hoc communication also takes place through email and phone among various parties on an as-needed basis.

PMC staff also reported they communicate well with the ATACs, saying the small group of about eight ATACs is easy to manage, collaborative, and know one another well. Staff did mention that sometimes ATACs will bring project opportunities to the attention of PMC staff.

Like Energy Trust staff, PMC staff discussed project sorting and cross-program coordination. They said they had developed processes with the residential program PMC to ensure that customers reach the right program. For instance, if the residential program receives an application with a unit number in the address, it is flagged and sent to the multifamily program.

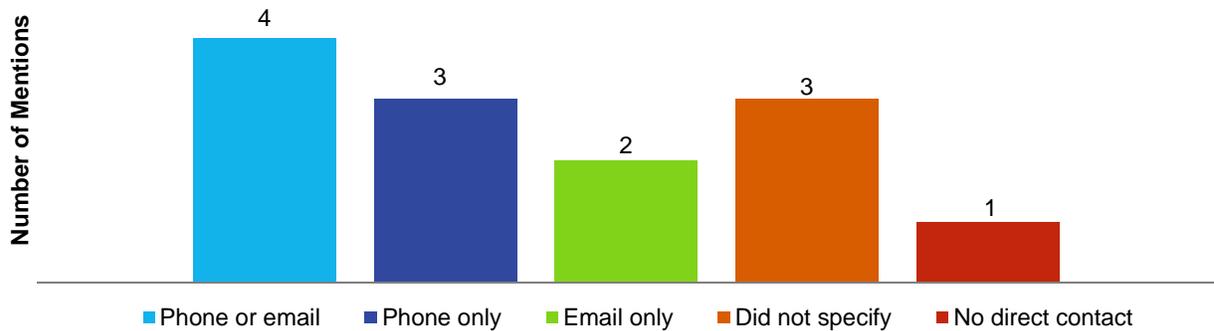
While PMC staff generally thought cross-program coordination was good, they noted two processes that could be improved:

- › **Hand-off of eligible properties to the Multifamily team after participating in the New Buildings program.** A PMC staff member said it would be helpful for the Multifamily team to be aware of these buildings since future upgrades may be needed.
- › **Creating a single point of contact for campus housing.** PMC staff said campus decision-makers encounter different program contacts, depending on whether they want to upgrade a dormitory (Multifamily) or another building type (Existing Buildings). They thought some decision-makers find this separation confusing and would prefer just one contact.

3.5.3. Contactor Views – Coordination and Communication

While all 13 contractors were satisfied with program communication, two said they would like more face-time with program staff to build stronger relationships, and one said he wanted better updates on program rules and requirements. Most contractors (9 of 13) said they contacted PMC staff through phone, email, or both (Figure 3-4), with two adding that program staff sometimes visited their offices to update them about the program.

Figure 3-4: Methods Used by Contractors to Contact Program Staff (n = 13)



3.5.4. ATAC Views – Coordination and Communication

All five ATACs said they were satisfied with program support and communication overall. Most (4 of 5) of the ATACs felt program staff gave them “good support” and noted the WTS information was informative. Four of the five ATACs said they used Energy Trust marketing materials, including the incentive booklet (3). The one ATAC who expected the PMC to provide projects was less active, and felt less supported and satisfied.

3.6. Effectiveness of Technical Services

In this section, we explore the influence of TASs on more comprehensive projects and the role of WTSs. Please note the interview questions for Energy Trust staff, PMC staff, and ATACs focused on the influence of TASs on custom projects, while participants were asked about both types of technical services.

3.6.1. Energy Trust Views – Effectiveness of the TAS

In their assessment of TAS effectiveness, Energy Trust staff compared the value of WTSs and TASs. While they said both services are influential, several believe WTSs are less influential than TASs. As one said, “Walkthrough surveys are essentially marketing opportunities to encourage getting a technical analysis study, installing equipment, or both.”

Staff noted all participants can request a walkthrough survey, but the PMC only recommends a TAS *after* a WTS confirms it would be worth it. As one staff member said, “you don’t want everyone to have a [TAS], so we’ll do a walkthrough . . .and say ‘whoa, this system is pretty complicated’, you can get some big savings here, let’s connect you with an ATAC [for a TAS].”

One staff member noted that they had found the conversion rate from having a TAS to equipment installation is about 65%. To increase conversion rates further, another staff member said they started doing follow-up phone calls in 2015 with participants who received a TAS but had not taken action. In one region, savings from projects identified through a TAS went from 4% of program savings in 2014 to 20% in 2015.

3.6.2. PMC Views – Effectiveness of the TAS

Both on-the-ground PMC staff agreed a TAS strongly influences pursuit of more comprehensive projects. As one said, “. . .the studies definitely help them make decisions and do projects.” They went on to say the key criterion for a TAS is whether the participants “need either prescriptive, one-off equipment installed or if it’s a custom recommendation.”

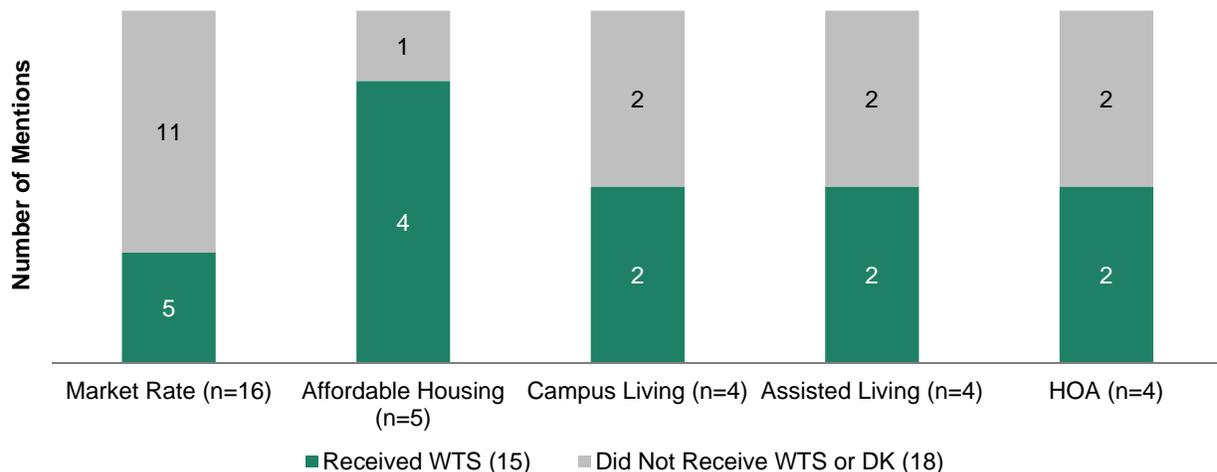
3.6.3. ATAC Views – Effectiveness of the TAS

All five ATACs believe TASs influence participants to move forward with more comprehensive energy upgrades, with one saying “. . .the numbers that fall out of a study show the customer the return on investment – the key piece [of information] for them to make a go/no-go decision.”

3.6.4. Participant Views – Effectiveness of Technical Services

Interviews with participants addressed both WTSs and TASs. As shown in Figure 3-5, fifteen of the 33 participants said they received a WTS, while 18 said they did not, or did not know if they had received one. Upon probing, most (14 of 18) who did not receive a WTS appeared to be unaware of this program offering.

Figure 3-5: Received Walkthrough Survey by Segment (n = 33)*



* The nine individually-owned unit participants were not asked this question.

Most participants (13 of 15) who received a WTS said it influenced their decisions; however, two campus housing participants said it did not influence them because they already knew what they wanted to do. Five participants praised the expertise of the PMC staff in conducting WTSs, saying they informed them how equipment and systems functioned, identified additional ways to save money, suggested available rebates, and prompted action. One HOA participant said their WTS gave them “all the latest information,” including a list of money-saving fixtures and lamps – information they used to convince the HOA board to complete all of the recommended measures. An affordable housing participant said WTS interactions with PMC staff led to several

other projects. Finally, an assisted living participant noted they also used the PMC’s advice to guide energy efficiency upgrades at non-Energy Trust-eligible properties.

Many (12 of 18) participants who did not receive a WTS thought it would help them identify future upgrades to make at their properties. Three of these participants thought a WTS might help them reduce operating costs and help their residents save money, though one worried that time and budget constraints could prevent him from making the upgrades. Four participants, all market rate, thought they already had a good understanding of how to save energy and likely would not benefit from a WTS.

Six of the 15 participants who received a WTS had also received a TAS, and five of the six confirmed the TAS had helped them identify and decide on upgrade opportunities.²² One market rate participant noted the modeling validated the improvements he wanted to make. One affordable housing participant said the TAS was “very influential” in helping them choose systems, while a second one said that when Energy Trust created a custom incentive for them as a result of a study, they usually completed the project.

3.7. Program Success Indicators

This section summarizes the PMC and Energy Trust staff “top” success indicators, and explores program satisfaction among contractors, ATACs, distributors, and participating customers.

3.7.1. Energy Trust Views – Program Successes

When asked to list the key successes for the program in recent years, staff emphasized these areas of achievement:

- › Moving away from reliance on the ISM track and increasing the proportion of savings coming from non-ISM tracks.
- › Enhancement of the ISM track with LEDs (instead of CFLs) and advanced power strips, both highly desirable measures. Fewer building tenants opted out of receiving direct-install devices once LEDs were available, and the availability of LEDs for their tenants may have also encouraged building managers to participate.
- › Expansion of the distributor buy-down track.

²² Of the six respondents who received a technical analysis study, one was in the market rate segment, one was with an HOA, two were in affordable housing, and two were in campus housing. Five did multiple prescriptive measures as a result and one did custom and prescriptive measures.

3.7.2. PMC Views – Program Successes

Two of the three successes named by PMC staff dovetailed with Energy Trust successes:

- › Moving away from reliance on the ISM track and nearly meeting their non-ISM savings goals through more outreach and promotion of non-ISM measures.
- › Enhancing the ISM track through demonstrating savings and getting approval for a tier 1 advanced power strip.²³
- › The American Council for an Energy Efficiency Economy’s praise for being a standalone program, rather than being subsumed within another commercial or residential program.²⁴

3.7.3. Contactor Views – Program Successes

All 13 contractors were satisfied with their program experience, noting these program strengths:

- › PMC staff were helpful and responsive (4).
- › The incentive processing system was easy and speedy (3).
- › The program increased the uptake of energy-efficient equipment with customers (1).
- › The increased focus on HOAs and less staff turnover compared to previous years (1).

In addition, most contractors (9) said the program added value to their business. Six of the nine added more detail to their responses, including that the program:

- › Adds to their credibility because customers are familiar with Energy Trust (2).
- › Provides incentives that have helped them sell more jobs (2).
- › Allows them to leverage cooperative marketing²⁵ funds to expand their visibility (1).
- › Provides marketing that increases customer awareness of energy efficiency, making jobs easier to sell (1).

²³ Tier 1 advanced power strips shut off connected devices when the current to a control or master outlet drops below the level indicated by normal operation.

²⁴ <http://aceee.org/files/pdf/resource/revising-multifamily-incentive-structure.pdf>, 2014

²⁵ Cooperative marketing reimbursement is available to Existing Multifamily trade allies for advertising, website design and development, brochures, business cards and other approved opportunities, subject to Energy Trust requirements.

3.7.4. ATAC Views – Program Successes

Nearly all the ATACs (4 of 5) were satisfied with the program and said it added value to their business,²⁶ despite three saying they often lost money doing site evaluations and TASs. As one explained: “Being able to bring [my customers] the program incentives – that’s good stewardship and that’s a win for everyone.” Another ATAC noted TASs also may produce new work opportunities with clients.

3.7.5. Distributor Views – Program Successes

The three distributors also are satisfied with their program participation and think it adds value to their business. Echoing other support for the program, one distributor said the program “is a nice benefit for our customers and Energy Trust has given us the ability to pass on the incentives.”

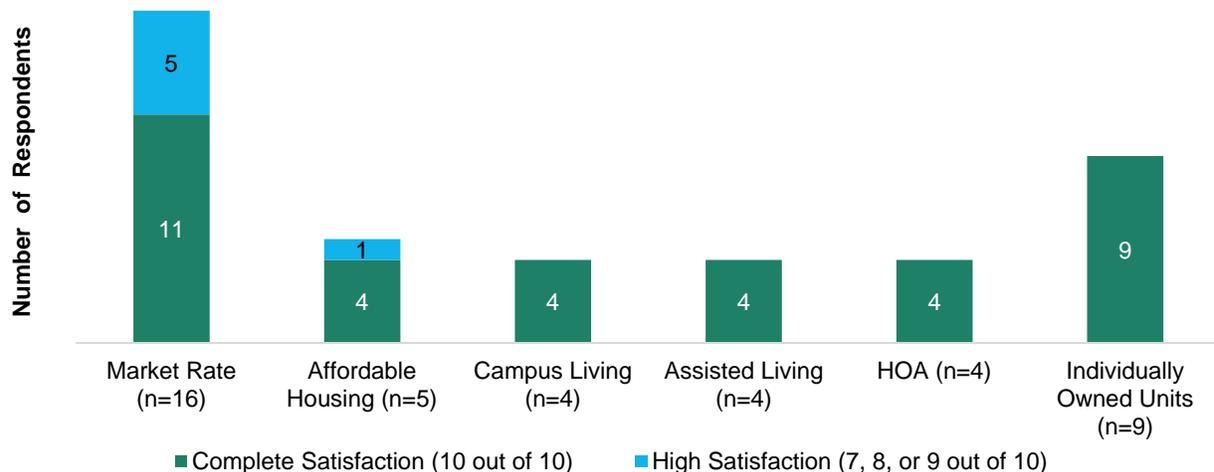
3.7.6. Participant Views – Satisfaction and Program Successes

This section examines customer satisfaction and program areas they think work well.

3.7.6.1. Participant Satisfaction with the Program

Using a rating scale from 1 to 10, with 1 being extremely low satisfaction and 10 being extremely high satisfaction, participants rated the program highly: 83% of the 42 participants across all market segments gave their program experience a 10. In four segments – HOA, assisted living, campus living, and individually owned units – all participants gave the program a 10, and no rating in any segment went below a 7, as shown in Figure 3-6.

Figure 3-6: Customer Satisfaction Ratings



²⁶ The remaining ATAC, who had not done any projects in 2015, reported he was dissatisfied overall, stating, “Being an ATAC means nothing – customers always turn us down when we provide an Energy Trust proposal so it costs us money; however, hopefully we can figure out how to engage. We would like to be involved.”

Of the six participants giving ratings less than 10, three said incentive-related concerns lowered their satisfaction. Two were market rate participants, who had some administrative snags related to incentives, and the third, in affordable housing, cited discontinued dishwasher and bath fan incentives.²⁷ Of the three remaining lower ratings, all in the market rate segment, one said light bulbs had burned out, one wanted to change out CFLs for LEDs, and one said “[My rating is] 8 out of 10, which is great; that number is hard to hit consistently.”

3.7.6.2. Participant Satisfaction with Contractors

Twelve of the 41 participants reported using a contractor to install non-ISM equipment, and all were satisfied with the work their contractor did.²⁸ Participants emphasized the importance of working with Energy Trust affiliated contractors²⁹ because they are committed to high quality work and have specialized knowledge, as shown in these quotes:

- › *“[Using an Energy Trust-affiliated contractor is] very important. He seemed like he would. . . be committed to standing by his product. Having a reliable and competent contractor is critical in the whole process.”*
- › *“They just make the whole process easier. They’re somebody who will get the job done and done right. I wouldn’t consider doing the project with someone not affiliated with Energy Trust.”*

²⁷ Energy Trust notes that bath fan incentives have not been discontinued.

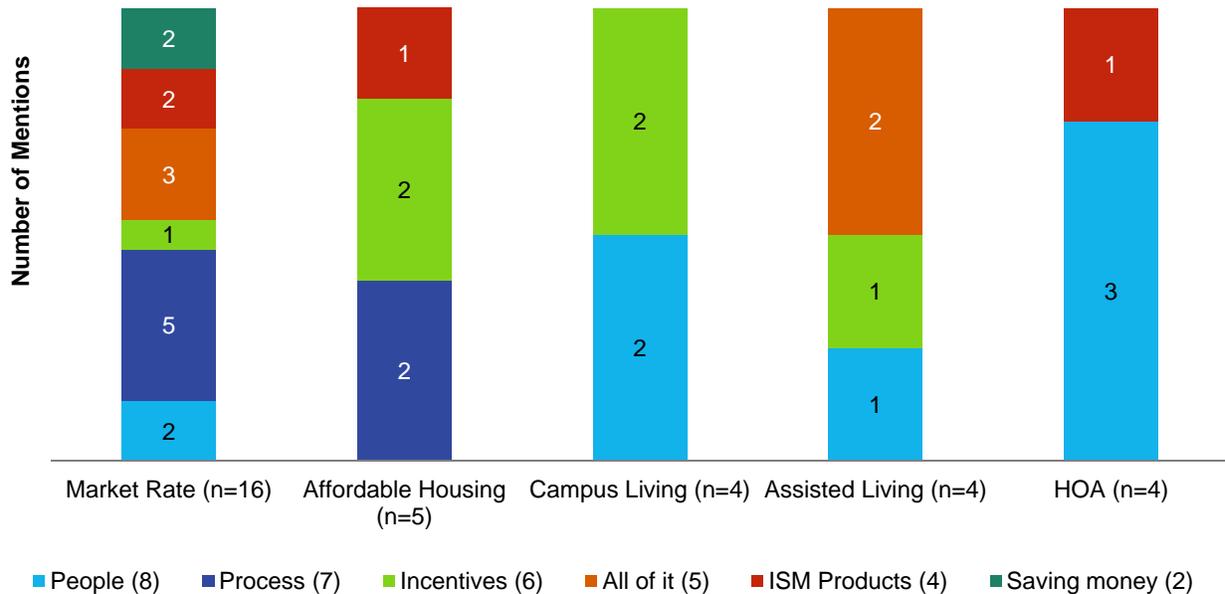
²⁸ The 12 participants consisted of three market rate participants, three HOA participants, one affordable housing participant, one assisted living participant, and four individually owned unit participants.

²⁹ The importance of using an Energy Trust-affiliated contractor was not included in the individually owned unit participant interview guide.

3.7.6.3. Participant Views – Program Areas That Worked Well

As Figure 3-7 shows, participants praised the program’s people, processes, incentives, ISM products, and saving money; in addition, five simply said all aspects of the program worked well.

Figure 3-7: Program Aspects That Worked Well? (n = 32)*



* Instead of this question, the nine individually owned unit participants were asked how satisfied they were with the program experience and why.

The following bullets further explore why participants praise the program:

- › **People (staff).** Eleven participants praised the skills of program staff, as these quotes illustrate:
 - “The people we spoke with were knowledgeable and helpful and turned into a resource for us. They explained how this works and how that works.”
 - “The willingness of the Energy Trust representatives to work with the experts we want to work with. The people they have are presentable and easy to work with.”
- › **Processes.** Seven participants complimented program processing, saying ISM installations were smooth, WTSs revealed energy-saving opportunities, and participation was easy. They also appreciated program representatives being timely, especially when tenants need to be notified about the timing of someone entering their units.
- › **Incentives.** Six participants said the incentives were helpful, valuable, and allowed them to conduct projects sooner.

- › **“All of it.”** The five participants who said “all of it” mentioned multiple positive program elements already mentioned: knowledgeable staff, helpful incentives, and the ease of the whole process. One assisted living participant noted that in another state where they try to get rebates: “It’s all up to the individual to figure out. I have to call five different people to get a rebate or do any sort of preliminary planning for lighting projects.”
- › **ISM Products.** Four participants discussed how they or their tenants liked the ISM products installed at their property. A market rate participant said he and his tenants liked the Energy Trust light bulbs that “turn on right away” instead of taking a few seconds. An affordable housing participant said tenants liked the ISMs because they pay for electricity. And an HOA participant said: “Not only is it a better product, a better quality of lighting, better security, and we can see better, but I feel like I’m doing something good for the whole energy community so that makes me feel good.”
- › **Saving money.** Two participants said that saving money on operations and maintenance was a benefit. They said their new lighting had reduced their utility bills and maintenance requests.

4. Customer Decision-Making

4.1. Chapter Summary

This section provides respondent perspectives on several interrelated topics:

- › Who decides on energy efficiency projects
- › Drivers to make building improvements
- › Drivers for energy efficiency upgrades
- › Barriers to achieving deeper energy savings

For most market segments, owners are the final decision-makers on efficiency projects. However, multiple layers of decision-making may exist, especially for large properties and affordable housing facilities, where on-site managers may identify projects, or even execute small projects, but need to get a higher level of approval for larger projects. For HOAs, the board of directors decides on upgrades that affect common areas of the building.

When asked about what drives them to make *building improvement in general*, participants said:

- › **Immediate need.** Equipment failure, wear and tear, poor condition or performance, or age is, by far, the most universal driver for action.
- › **Long-term improvement plans.** HOA, affordable housing, and market rate segments often follow long-term improvement plans.
- › **Competitive advantage and aesthetics.** This driver is most relevant to market rate, campus living, and individually owned market segments. Owners want to make older units more attractive or “stylish” to renters or buyers by replacing outdated features.

However, when participants, contractors, and Energy Trust and PMC staff were asked to name what drives *energy efficiency upgrades*, the list of drivers changed. Except for contractors, most respondents did not mention immediate need and long-term improvement plans as drivers. Rather, drivers for efficiency improvements focused on:

- › **A good return on investment.**
- › **Operations and maintenance savings.**
- › **Non-energy benefits, including aesthetics.**

These findings suggest a greater emphasis on how the program can meet immediate needs and fit into long-term plans would help move energy upgrades from a “specialty” status to a mainstream improvement status.

Articulating barriers to efficiency projects appeared to be a challenging question for many respondents. Respondents cited the same barriers for any efficiency project, from ‘simple’ to comprehensive, except that certain barriers – such as financial constraints, lack of understanding of the complete business case, complex decision-making, and concerns about taking on complex projects – are exacerbated for large projects.

4.2. Chapter Topics and Respondents

We gathered opinions across market segments about who makes efficiency decisions and the factors that influence customer decisions, and also about the barriers they face in pursuing deeper savings. Table 4-1 shows which respondent groups were asked about each topic.

Table 4-1: Topic Areas by Respondent Group

	Who Decides	Factors Influencing Customer Decisions	Barriers to Deeper Savings
Energy Trust Staff		✓	
PMC Staff		✓	✓
Contactors	✓	✓	✓
ATACs			✓
Distributors			✓
Participants	✓	✓	✓
Market Experts			✓

4.3. Customer Decisions

This section examines stakeholder and customer views about who makes efficiency decisions and the factors that influence customer decisions.

4.3.1. Energy Trust Views – Key Drivers

Energy Trust staff said these factors strongly influence decision-makers, within each market segment, to improve building efficiency:³⁰

- › **Market Rate.** Increased aesthetics; good return-on-investment.³¹
- › **Affordable Housing.** Achieving non-energy benefits, such as comfort and tenant health; access to funding.

³⁰ Energy Trust staff did not comment on possible differences in motivation by geographical area.

³¹ The program data from 2015 revealed the top two installed measures were lighting ISM and water efficiency ISM measures across most market segments.

- › **Campus Housing.** Cost savings.
- › **Assisted Living.** Maintaining required facility standards, such as temperature and lighting levels (which may be easier or less costly when using efficient equipment).
- › **HOAs and Individually Owned Units.** Cost savings (lower bills and on-going operations and maintenance); increased aesthetics.

4.3.2. PMC Views – Key Drivers

While the two groups had considerable overlap, PMC staff characterized key influencers on decision-makers somewhat differently than Energy Trust staff.

- › **Market Rate.** Return on investment; increased property value.
- › **Affordable Housing.** Increased tenant services due to Operations and Maintenance (O&M) savings; access to funding.
- › **Campus Housing and Assisted Living.** Attracting/retaining tenants; cutting O&M costs.
- › **HOA.** Attracting tenants; increased property value; decreased O&M costs through more durable equipment.
- › **Individually Owned Units.** Equipment failure; non-energy benefits such as comfort and aesthetics.

In answer to this question on what drives decision-makers to make efficiency improvements, PMC staff also noted these other factors that they believe influence program uptake:

- › Greater marketing in the Portland Metro areas than in less populated areas.
- › Most large energy-saving opportunities exist in the Portland Metro area due to greater density and older building stock.
- › The program's inability to address the gas needs of dual-fuel property owners in some parts of southern Oregon has hindered program participation.³²

4.3.3. Contractor Views – Decision-Makers and Influencers

Contractors were asked to identify who the decision-makers are for efficiency upgrades and what factors influence them to take action.³³

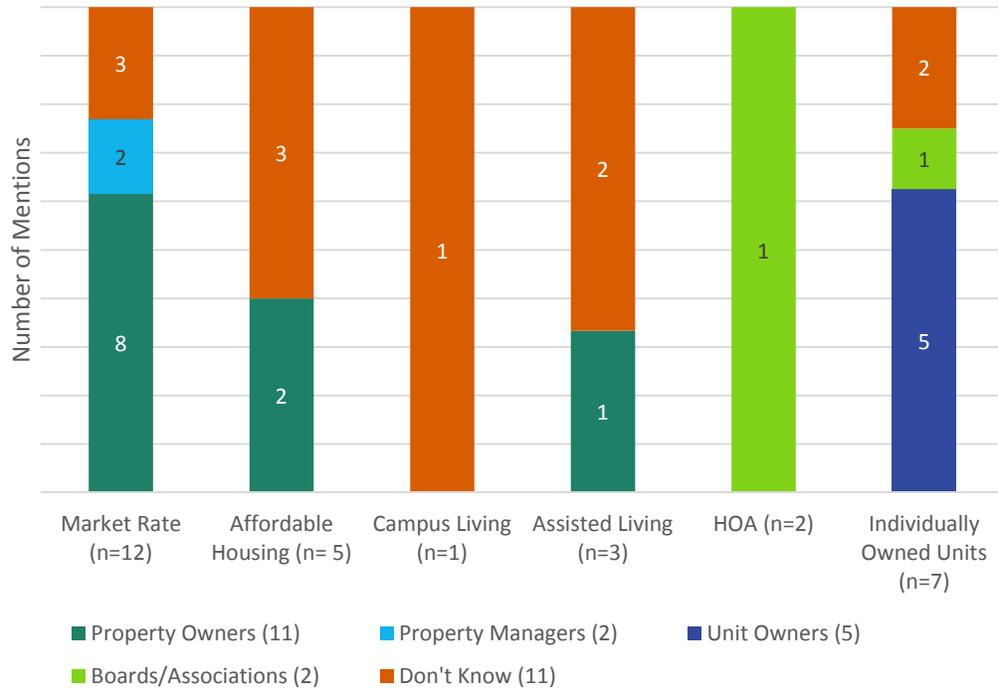
³² Energy Trust and the Multifamily program began serving Oregon Avista gas customers on January 1, 2017.

³³ Of the four contractors who worked in multiple geographic areas, none reported any differences in the number of completed projects or level of savings by geographic area.

4.3.3.1. Who Decides on Energy Efficiency Upgrades

Figure 4-1 shows contractor views of who makes efficiency decisions within each market segment. Notably, contractors often weren't sure who makes decisions, but among those who identified decision-makers, property or unit owners, or their deputies, predominated.

Figure 4-1: Contractor Views: Who Decides on Energy Upgrades* (n = 10)

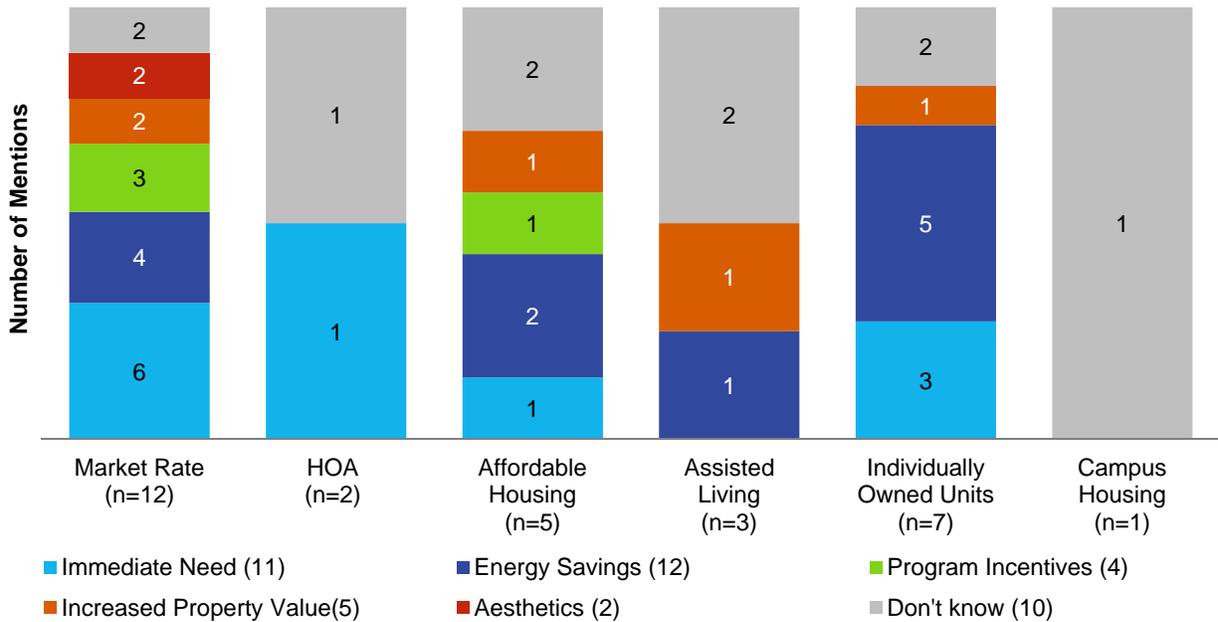


* Multiple responses allowed.

4.3.3.2. Customer Influencers

Contractors reported customers usually make efficiency upgrades for one of three reasons: 1) an immediate “need” such as code compliance or equipment failure, 2) energy savings, or 3) program incentives, but that these reasons vary by market segment as shown in Figure 4-2. For example, immediate need and energy savings most often drive market rate decisions, while those factors are less dominant for affordable housing and assisted living segments.

Figure 4-2: Contractor Views: Customer Motivations to Make Energy Upgrades* (n = 12)



* Multiple responses allowed.

When asked what influences decision-makers to make comprehensive upgrades rather than single-measure energy efficiency upgrades, many contractors (7) did not know, either because they only handled a single type of equipment (4 of 7) or they had limited experience with customers wanting comprehensive upgrades (3 of 7). The remaining contractors cited an array of influencers, from the availability of tax credits to being able to increase rents (Table 4-2).

Table 4-2: Contractor Views: Key Influencers for Comprehensive Upgrades (n = 6)*

Circumstance	Count
Availability of tax credits or large incentives	2
Refinancing properties	1
Locally owned, non-corporate properties	1
Having an older building	1
When market is not cash constrained	1
Justification for increasing rent	1

* Multiple responses allowed.

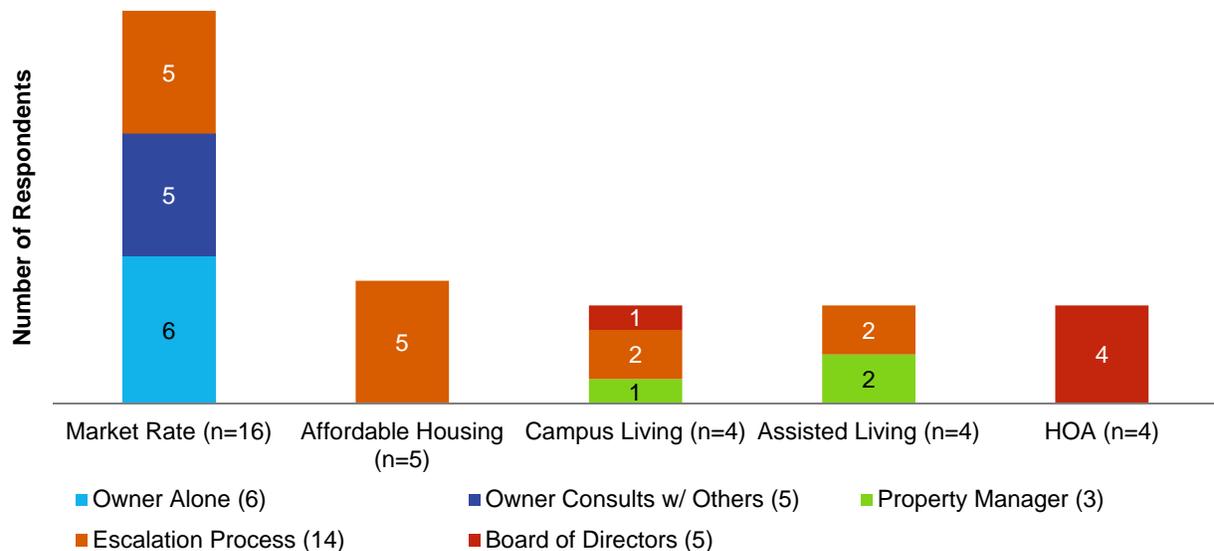
4.3.4. Participant Views – Key Decision-Makers, Motivators and Influencing Factors

This section explores participant views about decision-making from a variety of perspectives, including: who decides; key motivators to make any building improvements; other factors that influence improvements; the importance of energy efficiency when improving properties; and the specific reasons participants sign up for the Multifamily program.

4.3.4.1. Key Decision-Makers

As Figure 4-3 illustrates, decision-making responsibility varies by segment.

Figure 4-3: Upgrade Decision Making Process (n = 33)*



* Individually owned unit participants were not asked about the decision-making process.

These nuances in decision-making emerged for three market segments:

- › **Property size matters for market rate properties.** Owners make the final decisions for small- and medium-sized market rate properties (60 units or less) or they consult with those very close to them such as family, co-owners, and business partners. The participants who represented large properties (between 200 and 25,000 units owned or managed) said the on-site property manager is likely to be the first to identify the upgrade opportunity; they then need to get approval from someone higher up in the organization, such as the property owner, their supervisor, or “corporate.”
- › **Affordable housing encompasses multiple layers of decision-makers.** All affordable housing participants (5) reported there was an escalation process to decide on upgrades, beginning with on-site staff identifying opportunities. Participants added that the on-site property managers often can approve small upgrades, such as those less than \$1,000,

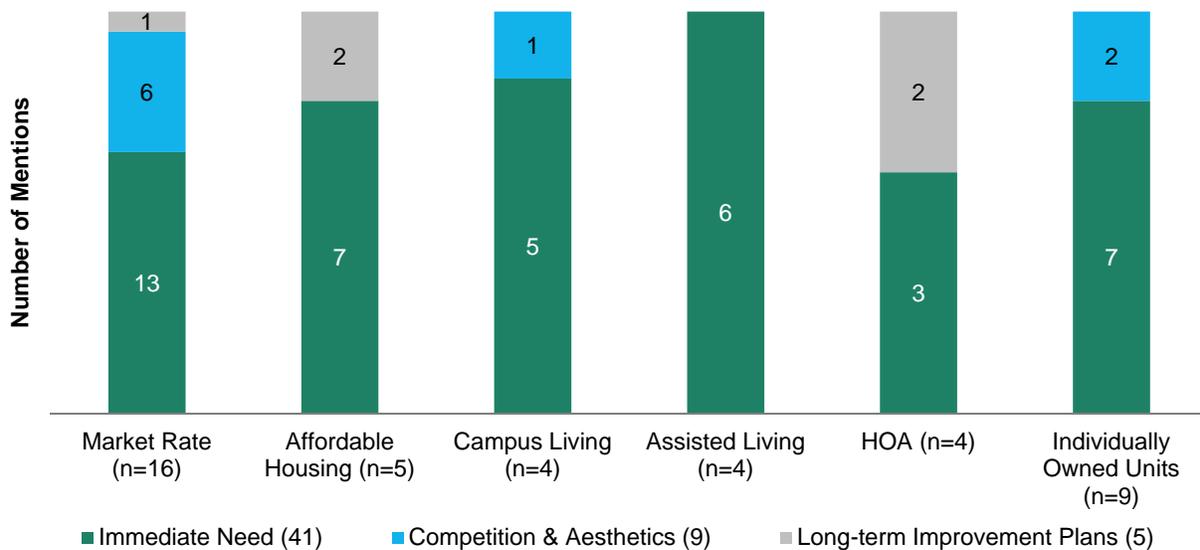
while supervisors or owners must approve larger projects. For projects receiving federal funds, a development team may decide on upgrades while properties without federal funding may rely on asset managers or a property management team to decide on the upgrades.

- › **HOA board of directors have the final say.** All HOA participants (4) reported that on-site maintenance staff report potential upgrades to the board of directors and the board of directors decides whether to move forward with the upgrade.

4.3.4.2. Motivations to Make Property Improvements

As shown in Figure 4-4, participants reported three primary motivations to make *any* property improvements: immediate need, competitive edge and aesthetics, and long-term improvement plans. While energy efficiency is not a driver, these improvements could include energy using equipment and systems.

Figure 4-4: How Property Improvements Are Identified (n = 42)*



* Multiple responses allowed.

- › **Immediate need.** Almost all participants interviewed (41 of 42) said the predominant driver of most property improvements is immediate need based on failure, wear and tear, poor condition or performance, or age of the equipment. They said they consider if the equipment is near the end of its effective useful life and whether they expect it to fail soon. Some participants (6) said they assess the level of need through regular inspections of their properties.
- › **Competitive advantage and aesthetics.** Nine participants said that they identify upgrade opportunities to stay competitive in the market, which includes making older units more

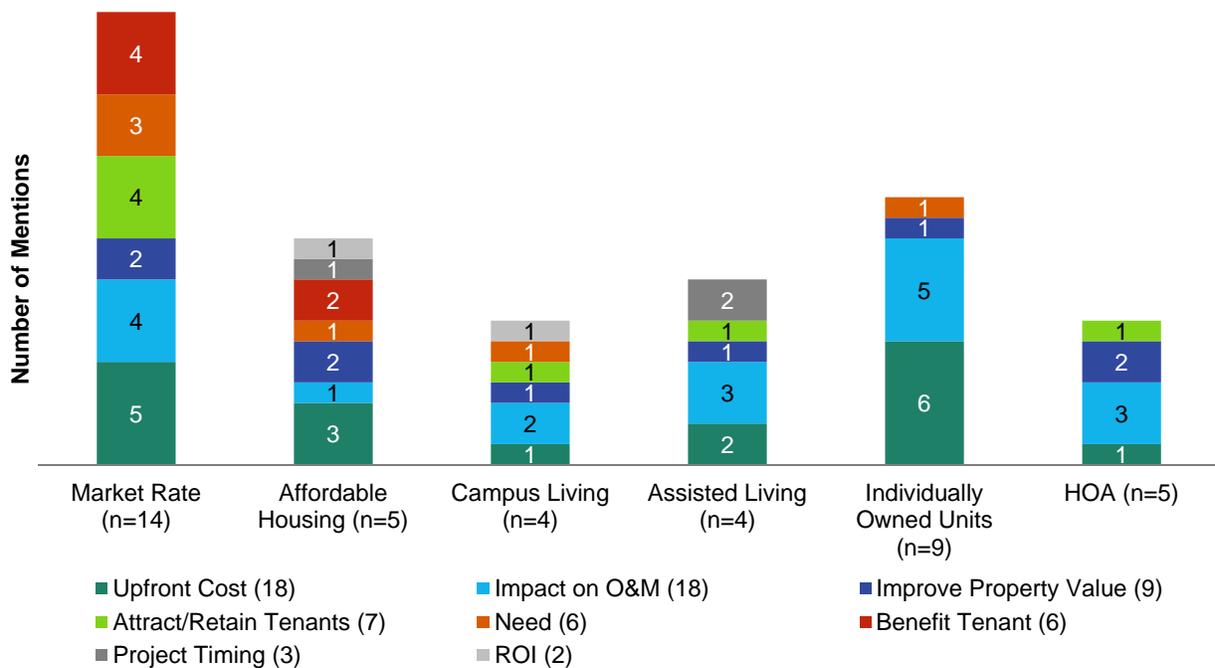
attractive or “stylish” to renters and removing outdated features like baseboard heating, plumbing fixtures, and lighting.

- › **Long-term improvement plans.** Two HOA, two affordable housing, and one market rate participant said that they follow long-term improvement plans that provide them with a blueprint and schedule for spending funds on upgrades.

4.3.4.3. Other Factors Influencing Property Improvements

Participants considered a number of other factors when deciding about property improvement (Figure 4-5).³⁴ Various types of financial considerations predominated, but other factors also entered in.

Figure 4-5: Other Factors Influencing Property Improvements (n = 40)*



* Multiple responses allowed. Two market rate participants did not know what factors their supervisors considered.

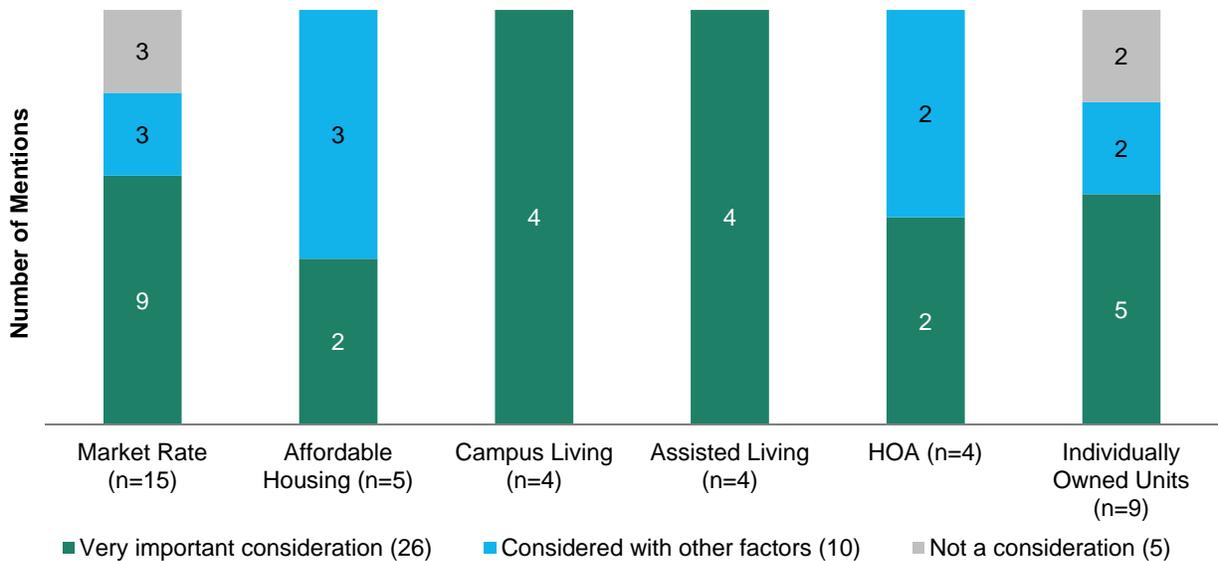
- › **Finances.** Nearly half of participants considered the cost of the project and/or funds available to pay for the project.
- › **Reduced O&M costs.** A similar proportion of participants reported they considered how the upgrade would reduce their ongoing costs. These participants emphasized the quality, durability, and longevity of the of the equipment upgrade they were considering.

³⁴ Respondents provided unprompted responses.

- › **Improved property value.** Nearly a quarter of participants consider how an upgrade will impact the value of their property and its resale value.
- › **Attracting and retaining tenants/staying competitive.** Improving property “rentability” and attractiveness factored into the decision-making of seven participants, with this factor being more common among market rate participants. These participants wanted properties to stay competitive. One market rate participant volunteered, for instance, that they installed stainless steel ENERGY STAR® appliances because tenants valued them.
- › **Benefits for tenants.** Another six respondents, four from the market rate segment and two from affordable housing, said they consider how the upgrade will benefit their tenants in terms of comfort or tenant costs.
- › **Immediate Need.** Six participants reported they factor in how urgently they need the upgrade.
- › **Project timing.** Three participants factored how quickly they could start and finish the project. Two of these participants were from the assisted living segment and noted they tried to minimize disruptions because their tenants tend to be in their units most of the time.
- › **Return on investment.** Two participants explicitly calculated the return on investment for upgrades.

When asked how much energy efficiency factored into their decision-making, the large majority (36 of 41) participants said they consider it, with more than half (26 of 41) saying that it was a very important consideration (Figure 4-6).

Figure 4-6: Extent to Which Energy Efficiency is Considered in Property Improvements (n = 41)*



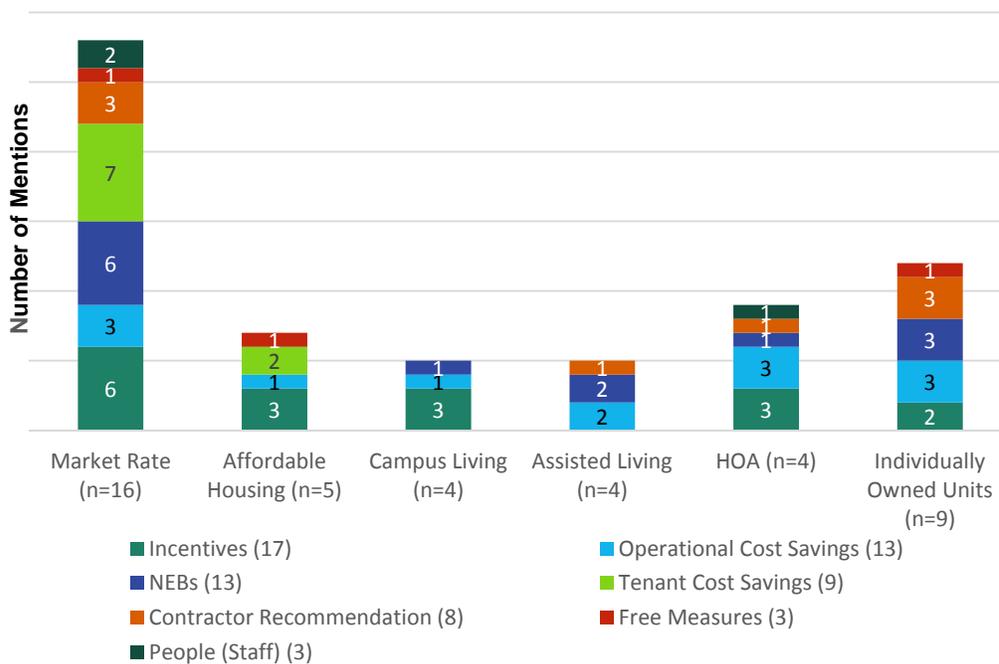
* One market rate participant could not answer this question.

4.3.4.4. Motivation to Participate in the Multifamily Program

Participants reported a number of reasons why they chose to take part in the Multifamily program (Figure 4-7). Note that while some of these reasons duplicate the factors that motivate making any type of improvement (e.g., saving on O&Ms), many motivations are specific to the program (e.g., incentives, staff, contractor recommendation, free measures), and some key motivators were not mentioned (e.g., immediate need).

- › **Incentives and operational cost savings.** Participants most often reported program incentives motivated them to participate, closely followed by operational cost savings.³⁵

Figure 4-7: Motivations to Participate in the Program (n = 42)*



* Multiple responses allowed. Two respondents who said 'don't' know' are not included in this figure.

- › **Non-energy benefits.** Twelve participants reported non-energy benefits (NEBs) were a central motivation to participate in the program and one said it was their sole reason to participate. Participants discussed these types of non-energy benefits:
 - **Increased property value.** HOA and individually owned unit participants said energy efficiency helps sell units, especially in Oregon.

³⁵ Three participants reported both incentives and ongoing O&M savings, meaning a total of 29 participants mentioned one of these factors as a motivation to participate.

- **Quality of lighting.** One HOA and one campus housing participant said they participated to achieve better lighting.
 - **Reduced maintenance.** One market rate and one assisted living participant were motivated to install energy-efficient equipment to reduce ongoing maintenance.
 - **Environmental/Social benefits.** Three market rate participants wanted to benefit the environment by reducing fossil fuel use and by “doing good for the community” and being “socially responsible.”
 - **Comfort and safety.** One participant valued enhanced comfort due to floor insulation and a second cited improved safety from the removal of baseboard heating.
- › **Tenant cost savings.** Nine participants specified they wanted to help their tenants save money on their electricity bills. One affordable housing participant noted that reducing the tenants’ expenses on utility bills makes it easier for them to pay their rent.
 - › **Contractor recommendation.** Eight participants reported that they had hired a contractor to install something they needed and the contractor told them about the program.
 - › **Free measures.** Three participants who received ISMs said they participated because the program would install free energy-saving items.
 - › **People (staff).** Three participants indicated they participated because Energy Trust representatives provided the expertise and information they needed. One said, “Mostly I know they’re very experienced and can . . .open my eyes to what things need to be done.”

4.4. Barriers to Deeper Savings

This section examines views about what factors prevent the pursuit of more comprehensive efficiency projects, such as whole building retrofits, and projects that involve more than one measure or the most convenient or most immediately needed measure. Notably, respondents noted that similar key barriers exist for any type of efficiency upgrade from ‘simple’ to comprehensive projects, except that those barriers are exacerbated for larger projects. Such barriers include financial constraints, lack of understanding of the complete business case, complex decision-making, and concerns about taking on complex projects.

4.4.1. PMC Staff Perspectives

PMC staff thought the following were the most salient barriers to achieving more in-depth savings for each market segment.

- › **Market Rate.** PMC staff noted two primary barriers for market rate properties:
 - **Lack of awareness of the business case.** Staff noted that some decision-makers do not fully understand how spending money upfront for energy-efficient upgrades is a

good investment that pays off over time in the form of lowered utility bills and O&M costs.

- **Split incentives.** One PMC staff member pointed to split incentives as a barrier, where the owner invests the funds, but tenants receive the energy bill savings.
- › **Affordable Housing.** PMC staff agreed that funding was the biggest barrier for affordable housing properties because they are capital-constrained.
- › **Assisted Living and Campus Housing.** PMC staff noted that although these segments tend to have general capital improvement plans and budgets, the challenge is coordinating with the appropriate staff so that these plans include comprehensive efficiency upgrades.
- › **HOAs.** PMC staff agreed that the primary barrier to comprehensive upgrades for HOA properties is the Board of Director’s approval process, which tends to be protracted. PMC staff first talk with one or two people on the board, then those people present the project to the whole board, who then discuss the potential project with residents and the management group, and conduct a “reserve study” before a decision is made.
- › **Individually Owned Units.** One PMC staff member thought the need for board authority for certain projects may prevent these owners from doing comprehensive projects. Another PMC staff member said the space constraints of utility closets to accommodate qualified equipment limited comprehensive upgrades in this sector.

4.4.2. Contractor Perspectives

Contractors suggested a number of barriers that inhibit deeper savings.

- › **Across segments.** Slightly more than half (7 of 13) of the contractors reported financial factors impede more comprehensive upgrade decisions, especially up-front costs and return on investment.
- › **Market Rate.** One contractor cited low program awareness, while another said the current low vacancy rates, as factors inhibiting deeper savings.
- › **Affordable Housing.** One contractor felt split incentives were the key barrier for owners to invest in comprehensive projects.
- › **HOAs and Individually Owned Units.** Two contractors noted the complicated decision-making process as the primary barrier to completing deeper upgrades.

Two contractors (one focused on market rate and one on individually owned units) reported they did not think customers have barriers to deeper efficiency upgrades.

4.4.3. ATACs’ Perspectives

Because all five ATACs focused on individual market segments, they were unable to comment on any possible differences in barriers to participation between segments; however, most (3 of 5)

ATACs perceived financial constraints as the key barrier to completing deep energy-efficient upgrades.³⁶ The remaining two respondents reported that participants struggled to know how to take the next step for such projects, including “knowing how to get bids for installation of equipment, who to get bids from, what they mean, and if the bids really meet their needs; [there is] no process to ensure bidders are bidding on the same equipment.”

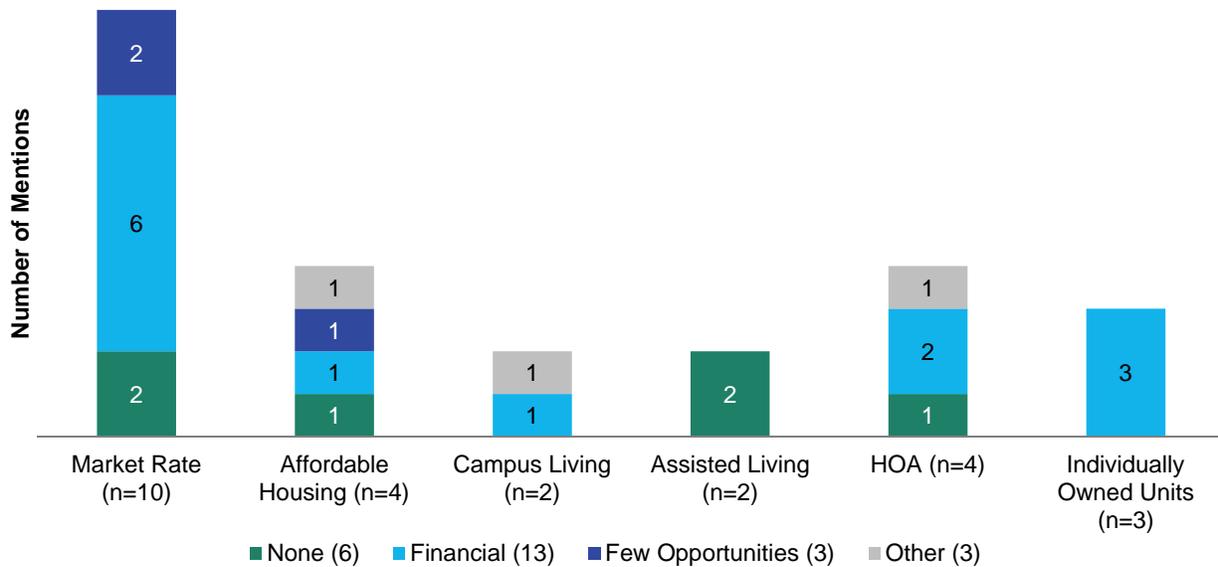
4.4.4. Distributors Perspectives

Two of the three distributors reported that the upfront cost of energy-efficient equipment remains a critical barrier to more comprehensive approaches. The remaining distributor noted that program updates due to changes in codes and standards or technologies can disqualify the equipment they have purchased from receiving incentives from Energy Trust, and thus prevent owners from participating.

4.4.5. Participant Perspectives

As shown in Figure 4-8, participants cited financial constraints as the largest barrier to completing additional energy-saving improvements at their properties (13 of 25 respondents). The assisted living participants said they had no constraints at all.

Figure 4-8: Barriers to Completing Additional Energy Saving Upgrades (n = 25)*



* Multiple responses allowed. Only participants in common area lighting, ISM, and standard measure tracks were asked this question.

³⁶ Out of the 5 ATACs, one focuses on campus housing, one on assisted living, one on affordable housing, and two on HOA buildings.

The 13 participants who reported financial constraints indicated they knew what improvements they wanted to make and often were aware of potential energy-saving opportunities, but cited upfront costs as the reason they had not moved forward with the project.

The three respondents in the “other” category cited the following reasons to not pursue further energy-saving upgrades.

- › The extended timeline for board approval (HOA).
- › A bad fit between qualified equipment and remodeling needs (campus housing).
- › Replacement of appliances on an as-needed basis only (affordable housing).³⁷

When asked what, if anything, Energy Trust could do to help participants complete more energy-saving projects, nearly half of the twenty respondents to this question (9) said “nothing,” while four said to continue offering existing incentives; three suggested increasing incentives; one suggested a bonus if they (HOA) could get all their units to upgrade; and three, who had installed standard measures, said a walkthrough survey might help identify opportunities.³⁸

4.4.6. Market Experts Perspectives

Most (7 of 10) market experts reported that financial constraints were the primary barrier to conducting comprehensive energy efficiency upgrades and several also said access to units was a barrier (Table 4-3).

Table 4-3: Experts’ Perceived Barriers to Completing Upgrades (n = 10)*

Barrier	Number of Respondents
Cost	7
Units occupied	3
Lack of information	1
Individually owned units	1

* Multiple responses allowed.

- › **Market Rate.** Both experts discussed upfront cost, a lack of information about energy efficiency, and access to occupied units as barriers to completing deeper energy efficiency upgrades. One market rate expert reflected that the tight market complicated owners’ ability to conduct upgrades that require the unit to be vacant, such as windows. This same expert also stated that a lack of information about the benefits of energy efficiency and how Energy Trust can assist with upgrades may act as a barrier.

³⁷ Note that single appliance purchases are still available through the program’s standard track.

³⁸ These three were not aware of the walkthrough survey option.

- › **Affordable Housing.** The one expert said that if the upgrade was not a part of a planned retrofit, then there would not be tax credits to help cover the cost, making it more difficult to complete even with incentives.
- › **Assisted Living.** The two experts cited financial constraints as a primary barrier. One reported that the increasing minimum wage has put financial pressures on assisted living properties which may reduce the funds available for energy efficiency upgrades. The other discussed how energy-efficient equipment has higher upfront costs, making it difficult to convince the facility owner to approve the upgrade.
- › **Campus Housing.** All three experts identified cost as a barrier; one stated this was particularly the case for state universities. Two mentioned that it was important to demonstrate the return on investment to help justify higher equipment costs. The third campus expert added variability in unit occupancy as a barrier, since some universities require students to live on campus and some students live on campus year-round.
- › **HOA.** The sole expert discussed two key barriers:
 - **Shared ownership,** where the tenants own the interior of their units, but the board oversees the common areas and walkways. This expert said HOAs have little control over what the owner does in their unit (for example, which showerhead or light bulbs to use), especially if the unit owner pays their energy bills. In another scenario, if the HOA pays the utility bills, and/or the unit owner rents the unit to short-term renters, the owner may not care about bills they don't pay.
 - **Uniform appearance,** where properties have requirements to consistently maintain certain visible building features. This expert noted that this became an issue when unit owners wanted to install heat pumps or split systems that required a unit on the outside of the building. In such cases, the board may not approve these visual changes or may be concerned about water intrusion through the side of the building.

5. Program Opportunities

5.1. Chapter Summary

This summary provides a synopsis of respondent perspectives on these topics:

- › The state of the multifamily housing market in Oregon
- › Market opportunities for energy efficiency
- › Program-specific opportunities for energy efficiency

Please note that we only asked distributors and market experts about market opportunities, and we did not ask market experts about program opportunities.

5.1.1. Market Insights

For many multifamily market segments, demand is high, especially in western Oregon Metro areas. Where markets are tight, energy efficiency, especially as a means to attract renters and buyers, loses some of its cachet.

- › Distributors noted, however, that they see a growing demand for higher efficiency products, and credited Energy Trust with generating some of this demand.

5.1.2. Program Process Opportunities

Respondents suggested these process improvements:

- › Enhance coordination and communication across Energy Trust programs, especially between Existing Buildings and Multifamily program teams, and the hand-off of completed New Buildings multifamily projects to the Multifamily program team.
- › Continue to streamline and automate the incentive application forms and processes where possible.
- › Increase outreach to owners of individually owned units.
- › Provide more or improved communication to keep various program actors up to date.

5.2. State of the Housing Market

Four market experts reported housing supply and demand varies across the state.³⁹ Two assisted living experts reported that there are some vacancies at assisted living facilities. One market rate

³⁹ One campus housing expert was not knowledgeable about housing supply/demand and could not comment.

expert said occupancy rates are very high (90% or more) in the western Oregon Metro areas, but that in eastern Oregon occupancy is much lower. In addition, the campus housing expert also noted a tighter market in Portland than in more rural areas, citing how in Portland there are few affordable places near campus for students to live, making demand for on-campus housing very high. The expert suggested more affordable off-campus housing may be available outside Portland, resulting in less demand for on-campus units.

Four market experts described multifamily markets as tight. The affordable housing expert said that there is not enough supply for the demand statewide. In addition, one market rate expert described how units rent very quickly when they become available. Finally, the HOA expert reported that construction of new individually owned units had stagnated since 2007, which has contributed to the steady demand for existing individually owned units.

5.3. Market Opportunities

5.3.1. Distributor Perspectives

Although distributors acknowledged that upfront cost remains a barrier, they see a growing market for energy-efficient equipment. All three distributors reported increased sales of efficient equipment over the past several years. Similarly, all three noted that sales tied to the Energy Trust Multifamily program have steadily risen, with two stating their sales have increased 20% in the last year. These two distributors said that overall the increased sales were most likely tied to changes in codes and standards, and the third respondent noted, “People are learning and want to be green and energy-efficient.”

5.3.2. Market Expert Perspectives

While market experts reported a range of awareness of Energy Trust offerings among the segments, experts suggested ways Energy Trust may be able to increase awareness of the Multifamily program specifically and energy efficiency more generally.⁴⁰

The three campus housing experts thought that the best strategy for reaching campus housing facilities was for Energy Trust to establish a relationship with key decision-makers. They suggested open and frequent communication through a variety of methods including emails and phone calls. One of the campus housing experts noted that university decision-makers have multiple contacts at Energy Trust, likely for both the Multifamily and Existing Buildings programs. This expert suggested it might be easier for campus decision-makers if the Energy Trust representative could make identifying which buildings qualify for which program less complicated.

All six of the other market experts suggested Energy Trust reach out to certain organizations using specific strategies, as shown in Table 5-1.

⁴⁰ Experts did not provide insights on the individually owned unit segment.

Table 5-1: Outreach Strategies Suggested by Non-Campus Market Experts (n = 6)⁴¹

	Organization(s) through which outreach can be conducted	Suggested Strategies
Market Rate (n=2)	Oregon Rental Housing Association	Mailings to registered landlords
HOA (n=1)	Oregon Washington Community Association Managers; Community Association Institute	Educational materials or presentations at board meetings to explain long-term benefits
Affordable Housing (n=1)	Development groups	Webinar to demonstrate the simplicity of participation
Assisted Living (n=2)	Oregon Healthcare Association (suggested by both); or Leading Age of Oregon	Demonstrate the savings and return on investment

Experts from these market segments offered this additional advice:

- › **Market Rate.** Continue offering incentives; two market rate experts stated that the incentives make property improvements more feasible for property owners.
- › **Affordable Housing.** Communicate with affordable housing property owners and managers before they make rehabilitation decisions. The expert reported that oftentimes the property owners and managers will work with a development group when they apply for tax credits as part of their rehabilitation, stating, “Developers will be key in getting information to non-profit owners [for large retrofit projects].”

This expert also expressed the concern that some affordable housing owners and operators may perceive Energy Trust to be a marketer trying to sell them something. For this reason, they suggested conference calls for Energy Trust to explain the program, explain the benefits for the property owner, and what the property owner or manager needs to do. In addition, they reported that busy affordable housing property managers were unwilling to participate in some programs because of the perceived administrative burden. Hence, the expert suggested that a conference call or a webinar could demonstrate how easy participation can be and highlight its benefits.

- › **Assisted Living.** Conduct outreach through the Oregon Healthcare Association and highlight return on investment. The two market experts noted that associations have annual conferences and suggested that could be an effective way to reach administrators of these facilities. One said, “if you want to reach us, the easiest, most effective way to do that is to work with the Oregon Healthcare Association.” They both reiterated that demonstrating savings and payback would be important because potential participants are still unsure if the savings would actually accrue if they did a project.
- › **HOA.** Talk with the people who prepare the reserve studies and encourage them to replace standard equipment with efficient equipment and get “face time” in front of a board of directors. The expert noted meeting in-person with the board could be an effective tactic as the board is the decision-making body. To address both the desire for

⁴¹ Notably, the program currently uses most of these outreach strategies with most of the target audiences.

uniformity and wariness when a resident wants to do something different, the expert suggested sharing relevant case studies to demonstrate how other associations successfully integrated similar efficient products into their communities.

5.4. Program Opportunities for Improvement

5.4.1. Energy Trust Program Staff Perspectives

Energy Trust staff identified three areas for improvement: two pertaining to cross-program coordination and one regarding outreach to the individually owned unit owner segment:

- › **Enhance coordination and communication between the Multifamily and Existing Homes programs.** Some measures are similar or the same between the Multifamily and Existing Homes programs and Energy Trust staff saw an opportunity for the people leading those programs to discuss measure promotion strategies that may overlap. For example, both programs had engaged the same distributor for the buy-down track each program was developing, but had not coordinated with each other.
- › **Expand outreach to owners of individually owned units.** Staff noted that the individual unit owners are harder to reach and they are considering ways to develop targeted marketing strategies.

5.4.2. PMC Staff Perspectives

PMC staff reported a number of opportunities to enhance the Multifamily program:

- › **Enhance coordination and communication between Energy Trust programs.** Staff noted that communication with campus housing participants could be better coordinated between the Existing Buildings and Multifamily program teams. In addition, staff also expressed a desire for a clearer hand-off process for buildings that participated in the New Buildings program and could participate with the Multifamily program in the future.
- › **Streamline the incentive application process.** One staff member commented, “More projects could be completed if the application process was more automated.” PMC staff are working on making the incentive application process easier.

5.4.3. Contactors Perspectives

Although all thirteen contractors reported being generally satisfied with their program experience, many (9 of 13) also provided suggestions for improvement (Table 5-2). Many suggestions related to improvements to the incentive application process, including:

- › **Streamline the application process**, including shortening the incentive processing time (2), lessening the burden of getting manufacturer documentation for windows (1), and making the process more consistent with the Existing Homes Program (1).
- › **Improve the clarity of application forms** (2).

- › **Other comments about windows** (4), including a request to keep providing incentives for windows, changing program qualifications for windows, increasing the inspection rate for windows, and lessening the burden of documentation for windows.

Table 5-2: Contractor Suggestions for Improving Program (n = 9)*

Suggestion	Count
Additional contractor outreach regarding program changes	2
Improve clarity of incentive application forms	2
Shorten incentive processing time	2
Continue providing incentives for window upgrades	1
Change program qualification requirements for windows (unspecified)	1
Decrease incentive processing time	1
Increase inspection rate for window projects	1
Lessen the burden of getting documentation from window manufacturers	1
Make application process more consistent with Existing Homes Program	1
Make trade ally application process more stringent	1
Make improvements to the online application portal**	1
Provide contractor installation training	1

* Multiple responses allowed.

** Note that there is no online application form or portal for Multifamily; the respondent was likely referring to the Existing Homes online application or trade ally web portal.

5.4.4. ATACs’ Perspectives

Three of the five ATACs had no recommendations to improve the program, with one simply saying, “Just keep on doing good work.” One of the remaining respondents recommended a higher bar for the technical analysis studies, alluding that while some ATACs provide a fully comprehensive analysis others are less complete in the measures they consider. The final respondent suggested providing more help to participants on identifying good bids so more projects are completed.

5.4.1. Distributors Perspectives

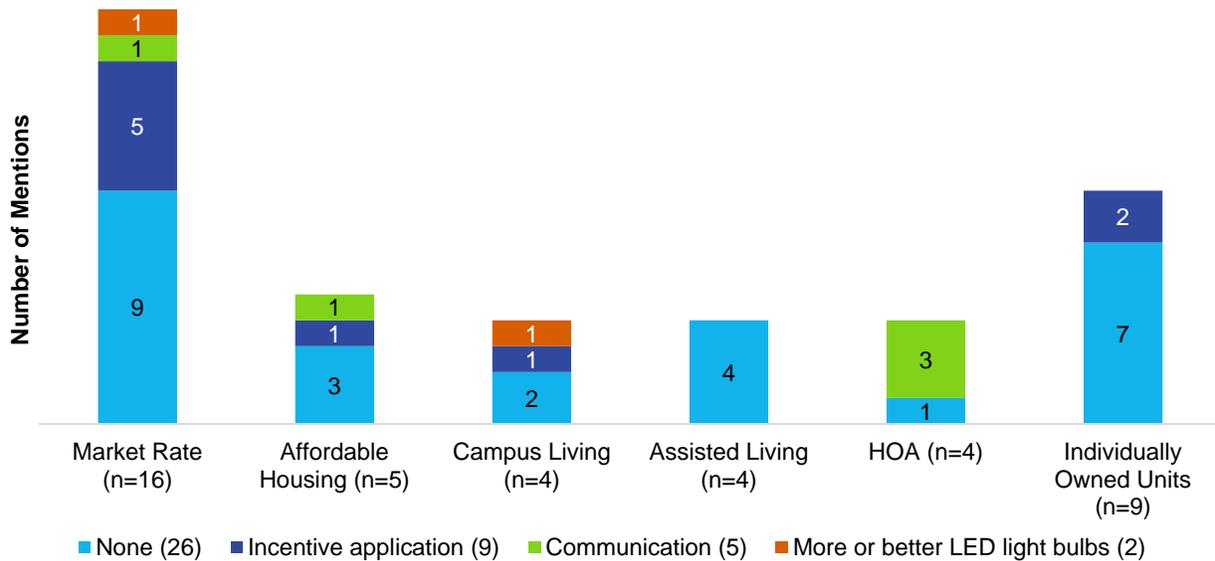
Two of three distributors provided only positive program feedback. The remaining respondent’s only recommendation was that the program needed more staffing stability. As this distributor put it, “They change every two or three years and we have to learn a bunch of new people every time.” None of the distributors provided new equipment ideas for the program. One noted that “front load washers, refrigerators, and dishwashers are the only ones [appliances] that save energy.”

5.4.2. Participants Perspectives

As shown in Figure 5-1, more than half (26 of 42) of the participants reported no aspect of the program needed improvement; however, those that did provide suggestions indicated several areas for improvement, primarily with communication and/or incentive applications:

- › **Market Rate.** Improve incentive applications (5 of 16).
- › **HOAs.** Improve communications (3 of 4).
- › **Affordable Housing.** Improve incentive applications (1 of 4) and communications (1 of 4).
- › **Campus Housing.** Improve communications (1 of 4) and LED offerings (1 of 4).
- › **Individually Owned.** Improve incentive applications (2).

Figure 5-1: Suggested Program Improvements (n = 42)



Two participants talked about the light bulbs they received. One campus housing participant wanted more light bulbs, including some for the closets, dormitory rooms, and outdoor lighting. One market rate participant said some LED light bulbs prematurely burned out, indicating bulbs installed through Energy Trust should have been of higher quality and lasted longer.

5.4.2.1. Incentive Application Improvements

Help with administrative details, such as the incentive application form, was the most common suggestion (9 of 16) for improvement. Of these, most (6) were market rate participants. Two of these participants wanted less “red tape” and a third said the form was “cumbersome.” The other two market-rate participants owned triplexes and reported unique administrative snags. As one owner stated, “If Energy Trust could find some way to help the smaller multifamily folks that aren’t running giant complexes who are less savvy about rebate programs [it would help].”

Another similar concern came from one affordable housing participant, one campus housing participant and one individually owned unit owner. The affordable housing participant said that there were a lot of steps involved with the incentive paperwork, and that forms were too cumbersome to justify the incentive amount received for a standard project. They added that when they did a comprehensive project, they had assistance to fill out the paperwork and the incentive amount was greater, which, together, made the administrative work more reasonable in this participant's opinion. The individually owned unit owner reportedly had to fill out the forms twice, which they disliked and the campus housing participant simply stated he desired the process to be "a little less administrative."

5.4.2.2. Communication Improvements

Five participants gave recommendations regarding how Energy Trust could improve its communication with participants.

- › One market rate participant expressed that most property owners are unaware of the program and thought Energy Trust could enhance its marketing to owners.
- › One HOA participant desired advance notice before an incentive is discontinued. In one case, it took the HOA a while to identify funding for the project and by the time they were ready to start, the incentive was no longer available.
- › Another HOA participant suggested a follow-up system to encourage further retrofits. He said that one project can lead to another and if Energy Trust staff were to follow-up within a year of the first retrofit, it would help them continue to make improvements at his property.⁴²
- › A third HOA participant wondered if it was feasible for the program to have a "bat phone," a centralized phone number that he could call to get information right away.⁴³ He gave examples of when this would be useful to him, including when a "hot water boiler goes down and we need to know what is covered or if the HOA demands to know something about a program right away." He said that he looks at the website to get information, but sometimes he needs more detailed information very quickly.
- › One affordable housing participant reported receiving regular follow-up messages from his Energy Trust representative; however, he said that he had been approached by multiple people for what "felt like the same thing." In addition, when he responded to one of these follow-up messages to let his representative know about an upcoming heat pump project his property had planned, he did not get a response, which led him to wonder if he was talking to the right person. Due to these complications, he suggested that Energy Trust could improve its communications.

⁴² Energy Trust staff reported that they are routinely pursuing follow-up with participants who have received a technical analysis study, but who have not taken action.

⁴³ Notably, the program has a main line for fielding questions and providing information.

6. Conclusions and Recommendations

6.1. Conclusions

These conclusions are drawn from the detailed findings in the report chapters.

6.1.1. Conclusions: Program Evolution

The Existing Multifamily program has historically focused on larger properties and their business and institutional decision makers who have influence over the bulk of savings opportunities. Smaller “mom and pop” properties and residential homeowners, also served through the program, collectively offer savings opportunities, but these targets are more dispersed and have been more challenging for the program to reach cost-effectively.

The interviews with Energy Trust and PMC staff show the program has successfully used a continuous improvement, research-based, and proactive approach to evolve the program, by:

- › Expanding beyond traditional multifamily segments to more specialized segments, while, at the same time, maintaining one point of entry for all segments.
- › Adding mid-stream buy-down incentives through distributors.
- › Tailoring custom track forms and processes and developing the Energy Savings Action Plan to meet market and customer needs.
- › Shifting away from marketing ISMs as a “gateway” to deeper savings, and shifting focus toward driving standard and custom projects.
- › Development of tailored marketing to reach specific segments.
- › The PMC taking over measure development responsibilities to relieve an over-burdened Energy Trust planning group.

6.1.2. Conclusions: Program Effectiveness

Most respondents (PMC and Energy Trust program staff, contractors, distributors, ATACs, participants) agreed the program is highly effective, and pointed to these success indicators:

- › Effective coordination between the PMC and Energy Trust, and with other program actors.
- › Successful development of new ISM measures, including LEDs and advanced power strips, and continued research to foster new measures.
- › A notable shift to more savings from standard and custom projects rather than from ISMs.

- › Program staff being seen as long-term trusted advisors for most market segments.
- › Developing a proactive approach to sell energy efficiency to higher-level decision-makers.
- › Successful expansion of the distributor buy-down track.
- › Participants saying WTSs influence their decisions; incentives influence pursuit of non-ISM projects; and TASs prompt more comprehensive projects.
- › Strong contractor, distributor, ATAC, and customer satisfaction across all program dimensions: 83% of customers gave the program a “10” overall, and had high praise for customer service, program processes, trade ally quality, and project results.

While the Multifamily program is successful, respondents reported these challenges:

- › Finding new cost-effective ISMs, gas measures, and replacements for electric baseboard heating.
- › Providing personalized marketing to all market segments.
- › Ensuring all participants are aware of the WTS offering and all available measures.
- › Improving project hand-off between other Energy Trust programs and the Multifamily program.
- › Finding a ‘one point of contact’ solution for campus living participants.
- › Coordinating and communicating the results of measure research it performs that has implications for other Energy Trust programs.
- › Handling resistance from program stakeholders when desired measures are removed from the program, such as window measures.

6.1.3. Conclusions: Customer Decision-Making

For most market segments, owners are the final decision-makers on efficiency projects. However, multiple layers of decision-making may exist, especially for large properties and affordable housing facilities, where on-site managers may identify projects, or even execute small projects, but need to get a higher level of approval for larger projects. For HOAs, the board of directors decides on upgrades that affect common areas of the building.

When asked about what drives them to make *building improvement in general*, participants said:

- › **Immediate need.** Equipment failure, wear and tear, poor condition or performance, or age is, by far, the most universal driver for action.
- › **Long-term improvement plans.** HOA, affordable housing, and market rate segments often follow long-term improvement plans.

- › **Competitive advantage and aesthetics.** This driver is most relevant to market rate, campus living, and individually owned market segments. Owners want to make older units more attractive or “stylish” to renters or buyers by replacing outdated features.

However, when participants, contractors, and Energy Trust and PMC staff were asked to name what drives *energy efficiency upgrades*, the list of drivers changed. Except for contractors, most respondents did not mention immediate need and long-term improvement plans as drivers. Rather, drivers for efficiency improvements focused on:

- › **A good return on investment.**
- › **Operations and maintenance savings.**
- › **Non-energy benefits, including aesthetics.**

These findings suggest a greater emphasis on how the program can meet immediate needs and fit into long-term plans would help move energy upgrades from a “specialty” status to a mainstream improvement status.

Articulating barriers to efficiency projects appeared to be a challenging question for many respondents. Respondents cited the same barriers for any efficiency project, from ‘simple’ to comprehensive, except that certain barriers – such as financial constraints, lack of understanding of the complete business case, complex decision-making, and concerns about taking on complex projects – are exacerbated for large projects.

6.1.4. Conclusions: Program Opportunities

6.1.4.1. Market Insights

For many multifamily market segments, demand is high, especially in western Oregon Metro areas. Where markets are tight, energy efficiency, especially as a means to attract renters and buyers, loses some of its cachet.

- › Distributors noted, however, that they see a growing demand for higher efficiency products, and credited Energy Trust with generating some of this demand.

6.1.4.2. Program Process Opportunities

- › Enhance coordination and communication across Energy Trust programs, especially between Existing Buildings and Multifamily program teams, and the handing off of New Buildings completed projects to the Multifamily team.
- › Streamline and automate the incentive application forms and processes where possible (some work is already underway).
- › Increase outreach to owners of individually owned units.
- › Provide more or improved communication to keep various program actors up to date.

6.2. Recommendations

- › Continue to devote program resources to proactive continuous program improvement based upon strong communications between the PMC and Energy Trust, building long-term relationships with market actors, conducting ongoing research to establish cost-effective measures, and collecting input and insights from market actors.
- › Take time to focus on key program suggestions and challenges emerging from this research. While work may already have begun on some of these issues, it would be valuable to document how each one will be addressed, including a timeline. The key program challenges are to:
 - Develop marketing tailored to each market segment. Consider how the program can help decision-makers meet their immediate and long term planning needs, in addition to the typical benefits emphasized for efficiency upgrades.
 - Increase effective outreach to the individually owned unit segment.
 - Ensure target audiences across all segments are aware of the WTS offering and its value.
 - Ensure target audiences are up to date on available measure and incentives.
 - Enhance coordination with other Energy Trust commercial and residential programs in two key areas: (1) hand-off of projects, such as from New Buildings to Existing Multifamily; and (2) communicating about the results of measure research that the Multifamily program conducts but which has implications for other programs.
 - Find a ‘one point of contact’ solution for campus living participants.
 - Proactively develop an approach to deal with resistance from program stakeholders when popular measures are dropped from the program.
 - Continue research to find new cost-effective ISMs, gas measures, and replacements for electric baseboard heating.
 - Improve tools to sell more comprehensive projects, including presenting the business case to customers, solving financial barriers, simplifying the process, and fitting the projects into long-term improvement plans.

Appendix A. Instruments

A.1. Energy Trust and PMC Program Staff Interview Guide

A.1.1. Introduction

Hello, may I speak to *[Name from call list]*?

Hello, my name is _____ from Research Into Action. I am calling regarding Energy Trust of Oregon's (Energy Trust) Existing Multifamily program. I am working with Energy Trust on an evaluation of this program. As a key staff member on the program, I would like your perspective and insight. Is there a convenient time for us to talk for about 45 to 60 minutes during the next week?

[Start of Interview]

Thank you for taking the time to talk with me today. As I mentioned earlier, my firm is evaluating Energy Trust's Multifamily program and I am interested in your feedback about the program's structure, its offerings, marketing, and decision-making by the multifamily building owners.

I will be taking notes as we talk, but I would also like to record our conversation to ensure the accuracy of the notes. The notes and the recording are for research purposes only and will not be provided to anyone outside the Research Into Action team.

- S1. Is it ok that I record our conversation?
Do you have any questions before we get started?

A.1.2. Business Background

First, I would like to know a little bit about you.

- Q1. What is your job title at *[Lockheed Martin or Energy Trust]*?
Q2. How would you describe your role in Energy Trust's Existing Multifamily program?
Q3. How long have you been in that role?

A.1.3. Program Design and Evolution

Now, let's discuss the program...

- Q4. I'd first like to learn how the program has evolved over time. Please describe the program's design (e.g., roles, target audiences, offerings, implementation approach) when it began (broke off from the residential sector as of 2011), and then tell me about the major changes that have occurred since then. *[If needed: When the program first started, what offerings or tracks were included? Who, within the multifamily sector, was the*

target audience? What roles do the trade allies, non-network contractors, Allied Technical Assistance Contractors (ATACs), distributors play?]

1. What led to those changes?
- Q5. *[If not covered in Q4]* We understand the program has been pursuing, over the past few years, a shift from fewer direct install measures and toward more incented measures offered in the standard or custom tracks. How has this process been going?
- Q6. *[If not covered in Q4]* When did the distributor buy down track start and how, if at all, has it changed over time?
- Q7. *[If not covered in Q4]* What prompted the custom process redesign? How has it been working so far?
- Q8. In the next year, are there any more planned changes to the program?
 1. *[If yes]* What are those changes?
 2. *[If changes are planned]* What is prompting those changes?
- Q9. How does the program set its goals and budget?
 1. Are market segments tied to any internal program savings targets?
 2. Does this differ by utility?
 3. Are the program measure offerings tied to any internal program savings targets?
 4. Does this differ by utility?
 5. Is there anything that can be improved regarding goal and budget setting?
- Q10. How are program measure offerings decided and by whom?
- Q11. *[If aware of decision-making process]* What, if any, challenges have there been in deciding which measure offerings to include?
 1. *[If challenges]* How were those challenges overcome?
- Q12. Please tell me about the savings realization rate (SRAF) and what challenges it presents the program in terms of achieving its goals.
 1. Has the program made any implementation changes in response to realization rate findings?
- Q13. How effective is the current measure and incentive mix in terms of attracting participation? In terms of meeting program goals?
 1. Are there other measures that should be included in the program?
 2. *[If suggestions]* How do you suggest fitting these measures into the current program structure?
 3. *[If suggestions]* What might the challenges be to adding these measures?

A.1.4. Coordination and Communication

Now, let's talk about program coordination and communication.

- Q14. Who within Energy Trust, Program Management Contractor (PMC), Trade Allies, ATACs, or non-network contractors, are involved in program communications and coordination
1. Is there anyone missing that should be involved?
 2. *[If yes] Who?*
- Q15. How effective are communications and coordination between Energy Trust and PMC staff? *[Probe: weekly meeting, reporting, etc.]*
1. Are there any ways you would like to see communication and coordination changed? *[If yes] How?*
- Q16. From your point-of-view, how effective are communications and coordination between the...
1. PMC and the trade allies? *[Probe if appropriate] How would you like to see communication and coordination changed?*
 2. PMC and the non-network contractors? *[Probe if appropriate] How would you like to see communication and coordination changed?*
 3. PMC and the ATACs? *[Probe if appropriate] How would you like to see communication and coordination changed?*
- Q17. How does the program interact with other Energy Trust programs such as the new and existing commercial building programs? *[If needed, probe measure development, customer sorting rules e.g., application process]*
1. How is the coordination accomplished?
 2. How effective is that coordination?

A.1.5. Program Implementation

The next set of questions covers program implementation, specifically, how owners hear about the program and your views of why they decide to participate. I will be asking about each segment to make sure I have a clear understanding of how they are different.

A.1.5.1. Marketing and Outreach

- Q18. What is the program's overall approach to outreach and marketing to attract participation?
1. What has worked well and what hasn't?

Multifamily Process Evaluation

Q19. For each of the six multifamily segments the program serves, what has been the most successful marketing and outreach effort?

Segment	Successful Marketing Effort	Why do you think that is?
Market Rate		
Affordable Housing		
Assisted Living		
Campus Housing		
Home Owners Association (HOA)		
Condo/Attached Residential Owner		

Q20. What, if any, are the market segments that currently participate the least within Energy Trust territory?

Q21. What, if any, efforts have been made to reach these segments?

1. How successful have these efforts been? What, if any, future efforts are planned?

A.1.6. Decision Making and Deeper Savings

Q22. Now I'd like to gather any insights and observations you have about the decision making process for participants in each of the six segments. Let's start with Market Rate decision-makers – who gets involved in the decisions, what factors are involved, and what motivates them to participate in the program? *[Discuss each segment and program offering]*

Market Segment	Instant Saving Measures (ISM)	Common Area Lighting	Standard	Custom	Buy-Down
Market rate					
Affordable housing					
Assisted living					
Campus housing					
HOA					
Condo/Attached Residential Owner					

Q23. Are some program offerings more attractive to certain market segments? *[Probe: why do you think the Assisted Living segment is more weighted towards gas savings than other segments?]*

1. Why do you think that is?

Q24. How, if at all, does participation differ by geographic region?

1. *[If appropriate]* Why do you think that is?

- Q25. Under what circumstances do owners tend to take on deeper upgrades? *[If needed, probe motivations: tenant retention, increase property value, increase rent, save energy, save money, good for the environment, etc.]*
- Q26. What are the key motivations for Market Rate owners to participate? *[Discuss each segment]*
1. Market rate
 2. Affordable housing
 3. Assisted living
 4. Campus housing
 5. HOA
 6. Condo/Attached Residential Owner
- Q27. For this question about barriers, I want to go segment by segment again. First, what barriers do Market Rate owners or their representatives face when considering comprehensive upgrades and how do you think they might be overcome? *[Discuss each segment] [If needed, probe barriers: Lack of program awareness, timing, convenience, financial constraints, lack of recognition of retrofit value, ownership complexity, and spilt incentive, etc.]*
1. Market rate
 2. Affordable housing
 3. Assisted living
 4. Campus housing
 5. HOA
 6. Condo/Attached Residential Owner
- Q28. Do these barriers vary by geographic region?
1. *[If so]* How?
- Q29. How influential are the ATACs and the Technical Analysis Studies they perform in encouraging customers to take on comprehensive retrofits?
1. What could be done to encourage ATACs to generate more projects/leads?
- Q30. Based on factors we just discussed, what program changes are needed to encourage participants to complete more comprehensive projects? *[If needed: such as through the custom or standard track]*
- Q31. How can Energy Trust work with trade allies, non-network contractors, and ATACs, to increase energy savings and/or generate more projects/leads?

A.1.7. Wrap Up

Just a few more questions.

- Q32. What, if any, challenges have you experienced with the program in the last year? [*Probe: internal or external communications; interactions with customers, trade allies, ATACS, or non-network contractors; tracking and reporting*]
1. [*If any challenges*] How were those challenges resolved?
- Q33. What aspects of the program do you think have been most successful? [*Probe: program offerings; outreach and marketing; interactions with customers, trade allies, ATACS, or non-network contractors; tracking and reporting*]
1. What makes you say that?
- Q34. Last question, what key lessons have you learned during your time with the Existing Multifamily program?

A.1.8. Closing

Those are all the questions I have for you today.

- Q35. Is there anything else you would like to add about Energy Trust's Existing Multifamily program that would help us understand its goals and operations better?

Thank you for your time and insight.

A.2. Contractor Interview Guide

A.2.1. Introduction

Hello, may I speak to *[Name from call list]*?

[If needed] If you have any questions about this interview, you can call Andy Eiden at Energy Trust at 503-445-2945 or email him at *andy.eiden@energytrust.org*.

[If needed] It's my understanding that you help participants in the Multifamily program install equipment, for which they get Energy Trust incentives. Does that sound familiar?

[If yes] Continue

[If no] Is there anyone else at the company who many know about participating the in Energy Trust of Oregon's Multifamily program?

[If yes, collect information. Thank and terminate.]

[If no] Thank and terminate

Hello, my name is _____ from Research Into Action. I am calling on behalf of Energy Trust of Oregon. As part of our evaluation of their Existing Multifamily program, we are talking with *[Trade Allies/contractors]* like you to learn about your working relationship with Energy Trust. I would like to schedule a time to speak with you about your involvement. When would be a convenient time for us to talk for roughly *[20-30 min ATACs and trade allies or 15 min for non-network contractor]* during the next week?

[Start of Interview] Thank you for taking the time to talk with me today. As I mentioned earlier, we are evaluating Energy Trust's Existing Multifamily program and are interested in your feedback.

I'm taking notes as we talk and audio recording this interview to ensure the accuracy of the notes. The notes and the recording are for research purposes only and will not be provided to anyone outside the Research Into Action team.

S1. Is it ok that I record our conversation?

Do you have any questions before we get started?

Interviewer directions: ask non-network contractors only the questions labeled [NNC].

The raw data from the Communications and Customer Service (CCS) questions will be provided to Energy Trust for analyzing.

A.2.2. Business Background

To get started, I would like to ask you a few questions about your business.

- Q1. [NNC] Please tell me your job title and briefly summarize your role as a contractor for the Existing Multifamily program?
- Q2. [NNC] What geographical areas does your company serve?
- Q3. [NNC] What types of Multifamily projects do you specialize in?
- A. For example, do you primarily complete gas or electric projects?
 - B. What types of equipment do you install?
 - C. What multifamily customer segment do you work with most? *[If needed: Market rate, affordable housing, assisted living, Homeowner's Associations (HOA for condos), condo/attached individually owned units, campus housing]*
- Q4. [NNC] Are you an approved Energy Trust Trade Ally?
- A. **[IF Q4 = Yes]** How long have you been a Trade Ally?
 - B. **[IF Q4 = No]** Have you ever been a Trade Ally in the past?
[If yes] Why are you no longer a Trade Ally?
[If no] Why have you not chosen to become a Trade Ally?
- Q5. Are you involved in any other Energy Trust programs besides the Existing Multifamily program? *[Probe: New Buildings, residential programs, etc.]* If yes, which ones?
- A. **[If Q5 = Yes]** Is trade ally support consistent across programs? *[If needed: This may be in the form of incentive processing, call centers, account managers?]* [CCS]⁴⁴
 - B. **[If Q5 = No]** What could help to improve the support you receive across Energy Trust programs? [CCS]

A.2.3. Program Experience

Now, let us talk more about your experience with Energy Trust's Multifamily program.

- Q6. How long have you been working with the program?
- Q7. Roughly how many projects did you complete for Energy Trust's Multifamily program in 2015?
- A. In 2014? Why did the number increase/decrease?
- Q8. What types of equipment do you most frequently install for customers of this program?
[If needed: lighting, HVAC, insulation, water heating, other?]
- Q9. [NNC] How effective do you think the current measure and incentive mix is in terms of attracting program participation?

⁴⁴ Energy Trust marketing division requested all CCS question. We provided the raw data from these questions to Energy Trust and did not analyze them as part of this evaluation.

Q10. [NNC] What specific aspects of the program are working well?

Q11. [NNC] What aspects of the program need to be improved?

A. *[If improvements needed]* What changes do you recommend?

A.2.4. Program Marketing Support and Communication

Next, I would like ask you a few questions about program marketing and communication.

Q12. [NNC] How, if at all, do you coordinate and communicate with program implementation staff at Energy Trust?

Q13. [NNC] How satisfied have you been with Energy Trust’s communication with you regarding the program? *[Probe: Why do you say that?]*

A. *[If appropriate]* How can Energy Trust improve general communications with you as a [Trade Ally/contractor]?

Q14. Which Energy Trust tools and services, if any, do you use in your interactions with customers? *[If needed: incentive booklets, listing on the Energy Trust website, cooperative marketing opportunities, marketing materials, etc.]* [CCS]

A. Do you receive the Insider Blog and the new email template meet your needs? If not, how can it be improved? [CCS]

Q15. [NNC] Do the marketing materials and support from the program that are available to you help you reach more customers? [CCS]

A. [If Q15= No] What could Energy Trust do to improve these materials or support?

A.2.5. Decision Making and Deeper Savings

We would like to learn about how your customers decide to make energy efficiency improvements to their facilities.

Q16. Let’s start with [Insert market segments mentioned in Q3.2] *[Ask one at a time]* Who is involved in the decisions? What motivates them to participate? What prevents them from participating? *[Discuss each relevant segment]*

Market Segment	Who is involved	Motivation	Barriers
Market rate			
Affordable housing			
Assisted living			
Campus housing			
HOA			
Condo/Attached Residential Owner			

- Q17. And how effectively does the program help customers overcome the challenges you identified?
- Q18. [If Q2 = multiple areas] What, if any, differences have you observed in regards to the number of complete projects or level of savings by geographic area?]
1. *[If appropriate]* Why do you think that is?
- Q19. What about members of different ethnic or cultural groups, how do they differ in the ways they approach energy efficiency upgrades and programs?
1. How can Energy Trust help you better reach the groups you just mentioned? [CCS]
- Q20. [NNC] Under what circumstances do owners tend to take on deeper upgrades? *[If needed, probe motivations: tenant retention, increase property value, increase rent, save energy, save money, good for the environment, etc.]*
- Q21. Based on factors we just discussed, what could the program do to encourage participants to complete more comprehensive projects? *[If needed: such as larger savings projects supported by site studies, or installing multiple measures instead of single]*

A.2.6. Views of Energy Trust

Just a few more questions.

- Q22. [NNC] Overall, how satisfied are you with your program experience?
1. What makes you say that?
- Q23. Do you feel that the program provides value to your business?
1. Why do you say that?
- Q24. What, if any, recommendations do you have to improve Energy Trust's multifamily program?
- Q25. What would make the Trade Ally Network more valuable? [CCS]
- Q26. [NNC] Is there anything else you would like to add about Energy Trust's Existing Multifamily program that we haven't talked about?

That is all the questions I have for you. Thank you for your time and insights.

A.3. Distributor Interview Guide

A.3.1. Introduction

Hello, may I speak to *[Name from call list]*?

[If needed] If you have any questions about this interview, you can call Andy Eiden at Energy Trust at 503-445-2945 or email him at andy.eiden@energytrust.org.

[If needed] It's my understanding that your company is a distributor participating in Energy Trust of Oregon's Multifamily program buy-down offering. Does that sound familiar?

[If yes] Continue

[If no] Is there anyone else at the company who many know about participating in the Multifamily program?

[If yes, collect information. Thank and terminate.]

[If no] Thank and terminate

Hello, my name is _____ from Research Into Action. I am calling regarding Energy Trust of Oregon's Existing Multifamily program. I am working with Energy Trust on an evaluation of this program and would like to schedule a time to speak with you about your involvement.

When would be a convenient time for us to talk for roughly *[15 min]* during the next week?

[Start of Interview]

Thank you for taking the time to talk with me today. As I mentioned earlier, we are evaluating Energy Trust's Existing Multifamily program and are interested in your feedback as a participating distributor.

I'm taking notes as we talk and audio recording this interview to ensure the accuracy of the notes. The notes and the recording are for research purposes only and will not be provided to anyone outside the Research Into Action team.

S1. Is it ok that I record our conversation?

Do you have any questions before we get started?

A.3.2. Company Characteristics

To get started, I would like to ask you a few questions about you and your business.

Q1. Please tell me your job title and how long you have been with your company

- Q2. What types of equipment does your company deal in?
- Q3. What geographic markets do you serve?
- A. **[If serve areas outside of Oregon]** Overall, how significant is the Oregon market to your business?
- Q4. What market sector do you primarily serve? For example, multifamily, single family, or commercial?

A.3.3. Experience with Energy Trust

I would like to know about your experience with Energy Trust and the Multifamily program in particular.

- Q5. How would you describe your company's role and involvement with the Multifamily program?
- Q6. *[If not covered in Q5]* How long has your company been working with the Multifamily program?
- Q7. What types of energy-efficient equipment do you distribute through the program?
- A. Are there any equipment categories that are not addressed by the program that should be?
- B. Why would they be good candidates?
- Q8. What have been the most positive aspects of being a distributor in the program?
- Q9. What, if any, aspects of the program would you like to see improved? *[PROBE: tracking and invoicing]*
- A. *[If appropriate]* What specific suggestions do you have for improvements?

A.3.4. Marketing and Sales

I'd like to know a bit more about how you market eligible equipment for the program.

- Q10. Does your company serve specific market sectors within the multifamily market? *[If needed: market rate properties, affordable housing, assisted living, etc.]*
- Q11. Who do you consider to be your main customers in the multifamily market? *[If needed: property owners, property management companies, contractors]*
- Q12. **[For each type of customer]** What are the selling points you make with these customers when marketing efficient equipment? *[PROBE: energy savings, desire for improved technology, bill savings, incentives, etc.]*
- Q13. How, if at all, does your company work with equipment manufacturers to promote sales of your products?
- Q14. How, if at all, does your company work with Energy Trust trade allies to promote sales of your products?

A.3.5. Market Trends and Barriers

Now, we would like to talk a bit about market trends and the future.

- Q15. How has the economic landscape shaped your company's overall equipment sales over the last few years?
- Q16. For the equipment types incentivized through the Existing Multifamily program, about what part of your sales qualify for an Energy Trust incentive?
- Q17. Do you see energy-efficient equipment as a growing part of your sales?
- A. Why or why not?
- Q18. What are some of the barriers to increasing sales of energy-efficient equipment?
- A. *[If applicable]* How could these barriers be overcome?

A.3.6. Final Thoughts and Wrap-up

We just have a few more questions; we're almost done.

- Q19. Overall, how satisfied is your company in working with Energy Trust on the Multifamily program? *[Probe for reasons]*
- Q20. How, if at all, does the program provide value to your business?
- A. Why do you say that??
- Q21. What, if any, recommendations do you have to improve Energy Trust's Multifamily program?
- Q22. Is there anything else you would like to add about the program that we haven't talked about?

That is all the questions I have for you. Thank you for your time and insights.

A.4. Participant Interview Guide

A.4.1. Introduction

Hello, may I speak to *[Name from call list]*?

Hello, my name is _____ and I'm calling on behalf of Energy Trust of Oregon from Research Into Action to speak with you about your experience with Energy Trust's Multifamily energy efficiency program. Our records show that you own, or can make decisions on behalf of the owner about energy efficiency improvements, for the property at [INSERT ADDRESS], is that correct?

[If yes continue]

[If needed] If you have any questions about this interview, you can call Andy Eiden at Energy Trust at 503-445-2945 or email him at andy.eiden@energytrust.org.

[If no] Is there someone at your organization that makes decisions on behalf of the owner about energy efficiency improvements that I may speak to? *[Collect name and contact information; Thank and terminate call]*

And were you involved in making decisions about receiving [INSERT INFORMATION FROM TABLE BELOW] through Energy Trust's Multifamily program?

Offering	Measures
Research Into Action staff will fill in with program offering and measures	

[If needed: Through this program you may have received a walkthrough survey (audit), site evaluation, or technical analysis study with recommendations on how to improve your property's energy efficiency; incentives for upgrades such as windows, furnaces, or clothes washers; free light-emitting diode (LED) lightbulbs, showerheads, and faucet aerators; or discounted appliances]

[If yes continue]

[If no] Is there anyone else in your organization that may have been involved in the decision to participate in the Multifamily program? *[Collect name and contact information; Thank and terminate call]*

We are evaluating the Multifamily program for Energy Trust and would like your perspectives and insights as a participant. Is there a convenient time for us to talk for about 30 minutes during the next week or so? *[For in-person interviews confirm address from contact list]*

[Start of Interview]

Thank you for taking the time to talk with me today. As I mentioned earlier, my firm is evaluating the Energy Trust Multifamily program and I am interested in your feedback.

I will be taking notes as we talk, but I would also like to record our conversation to ensure the accuracy of the notes. The notes and the recording are for research purposes only and will not be provided to anyone outside the Research Into Action team. Additionally, all of your responses will be kept confidential; nothing that you say will be attributed to you in the report.

- S1. Is it ok that I record our conversation?
Do you have any questions before we get started?

A.4.2. Respondent and Business Characteristics

First I'd like to know a little bit about you, your organization, and the participating properties.

- Q1. What is your title at your organization?
- Q2. How long have you been in this role?
- Q3. What is the property ownership structure like at your organization?
1. **[If not covered in Q3]** Does your organization have both on-site managers and portfolio level managers?
- Q4. How many properties does your organization own or manage in Oregon?
1. Roughly, how many units is that?
- Q5. About what proportion of your properties have participated in the Energy Trust Multifamily Program?
- Q6. Have there been other major equipment upgrades or improvements made to your properties in 2015 or 2016 that did **not** receive an incentive from Energy Trust?
1. If yes, what was installed?
 2. Why did that not receive an incentive?

A.4.3. Decision-Making Factors

Let's start with how your organization makes property improvement decisions.

- Q7. How do you **identify** potential improvements or needed repairs?
1. Are there any differences in this regard between unit upgrades or repairs versus common areas?
- Q8. Please tell me the process you go through to make improvement decisions? If this differs by the type of improvement or the investment being made, please describe the processes separately.
1. How do you decide when to make improvements?
 2. How are projects recommended to the final decision makers?
 3. Who are the final decision makers for making improvements?

- Q9. What are the key factors your organization considers when making property improvement decisions? *[For reference: ROI; tenant retention; saving money, saving energy, capital improvement/maintenance budget, financing, split incentive issues]*
- Q10. How does the decision-making differ when considering improvements to the units versus common areas?
- Q11. How, if at all, does energy efficiency factor into your decision-making when you are making property improvements?

A.4.4. Program Experience

For the remainder of the interview, please consider your overall experience with Energy Trust's Multifamily program when answering the questions. If more than one of your properties has received services from the program and your experience in the program differed substantially among the properties, please let me know.

- Q12. What motivated your organization to participate in the program? *[For reference: saving money/stop wasting money, ROI, saving energy, increase property value, tenant retention, tenant comfort, cash incentives]*
1. [If non-energy benefit (NEB) is mentioned ask] How do you see participating in the program helping you achieve [INSERT MENTIONED NEB].
- Q13. How did you first learn about Energy Trust's Multifamily program? *[For reference: Trade ally/contractor, program representative (PMC or Energy Trust), colleague, Energy Trust website, social media, exhibition (trade show or assertion), case studies or other collateral]*
- Q14. What was your understanding of what the program would provide?
- Q15. Now I'd like to ask you about various program services. Did you receive a walkthrough survey where an Energy Trust representative provides basic recommendations on how to improve your property's energy efficiency and receive Energy Trust incentives?
1. *[If yes]* Was this service helpful? How did it influence your decisions about what energy savings upgrades to complete at your properties?
 2. *[If no]* Would you have found such a walkthrough survey helpful in making decisions about energy savings upgrades to your properties?

*[Prompt if needed: A **site evaluation** provides budgeting information based on building size and may identify standard incentives and offer more robust quantification of potential custom projects.]*

*[Prompt if needed: A **technical analysis study** evaluates custom project savings, project costs, simple payback and other metrics and generates a report detailed enough for a contractor to base an accurate bid on.]*

- Q16. **[Skip if Q15= No]** In certain cases, program staff identify unique opportunities during the walkthrough survey to save additional energy at a property in addition to what is

offered through the standard incentive listings. In these cases, the program may provide a site evaluation or a technical analysis study, which are similar to a walkthrough survey only more comprehensive. Did you receive either of these services?

1. *[If yes: **document service**]* How influential was this service in your decision-making process to complete energy savings upgrades to your properties?

Q17. **[SKIP IF ISM ONLY]**

1. How influential were the incentives you received in your decision-making process to complete energy savings upgrades to your properties?

Q18. **[SKIP IF ISM ONLY]** How adequate was the range of equipment incentivized through the program?

1. *[If not adequate, probe]* What additional type of energy saving equipment would you have liked to see incentivized?

Q19. **[ISM, Common Area Lighting, or limited standard measure only]** As you may know, the program offers cash incentives for a wide array of energy saving improvements. Please tell me about any factors that may have kept you from completing additional energy saving improvements? *[For reference: Financial constraints, time, access to tenant units, lack of need]*

1. What, if anything, could Energy Trust do to help you complete additional energy savings improvements?

Q20. **[Custom and comprehensive participant ONLY]** We're especially interested in hearing about why your organization chose to pursue [custom/ more comprehensive] upgrades. Can you tell me about your organization's thinking behind those decisions?

Q21. **[Custom and comprehensive participant ONLY]** Were there any challenges or barriers you faced when pursuing this project? *[Probe for each factor given]*

[For reference: Lack of program awareness, timing, convenience, financial constraints, lack of recognition of retrofit value, ownership complexity, and split incentive, etc.]

1. How might this/these factor(s) be overcome?

Q22. **[Custom and comprehensive participant ONLY]** When installing your new equipment, did you work with an Energy Trust trade ally/contractor?

Q23. **[SKIP If Q22= No]** How important to you was it to work with an Energy Trust trade ally contractor?

1. Why do you say that?

Q24. **[SKIP If Q22= Yes]** Why didn't you work with an Energy Trust trade ally contractor?

1. Why do you say that?

Q25. **[If Q3.1 = Yes]** How, if at all, did Energy Trust help you coordinate with the you/portfolio managers to plan future projects?

1. How valuable is this service to your organization?

- Q26. Overall, what aspects of the program worked well for you? [*For reference: incentives, incentive application process, easy to select installation contractor, etc.*]
- Q27. What, if any, aspects of the program need improvement?
1. What could be done to improved your participation experience?
- Q28. Overall, how satisfied are you with your program experience?
1. What makes you say that?

A.4.5. Closing

- Q29. Is there anything else you'd like to add about your experience with the Multifamily program that we haven't talked about?

Thank you for your time and insights.

A.5. Condo Owner Interview Guide

A.5.1. Introduction

Hello, may I speak to *[Name from call list]*?

Hello, my name is _____ and I'm calling on behalf of Energy Trust of Oregon from Research Into Action to speak with you about your experience with Energy Trust's Multifamily energy efficiency program. Our records show that you own the property at [INSERT ADDRESS], is that correct?

[If yes continue]

[If needed] If you have any questions about this interview, you can call Andy Eiden at Energy Trust at 503-445-2945 or email him at andy.eiden@energytrust.org.

[If no] Is there someone in your household that makes decisions about energy efficiency improvements that I may speak to? *[Collect name and contact information; Thank and terminate call]*

And were you involved in making decisions about receiving [INSERT INFORMATION FROM TABLE BELOW] through Energy Trust's Multifamily program?

Offering	Measures
Research Into Action staff will fill in with program offering and measures	

[If needed: Through this program you may have received incentives for upgrades such as windows, furnaces, or clothes washers; free LED lightbulbs, showerheads, and faucet aerators; or discounted appliances]

[If yes continue]

[If no] Is there anyone else in your household that may have been involved in the decision to participate in Energy Trust's Multifamily program? *[Collect name and contact information; Thank and terminate call]*

We are evaluating the Multifamily program for Energy Trust and would like your perspectives and insights as a participant. Is there a convenient time for us to talk for about 20 minutes during the next week or so?

[Start of Interview]

Thank you for taking the time to talk with me today. As I mentioned earlier, my firm is evaluating the Energy Trust Multifamily program and I am interested in your feedback.

I will be taking notes as we talk, but I would also like to record our conversation to ensure the accuracy of the notes. The notes and the recording are for research purposes only and will not be provided to anyone outside the Research Into Action team. Additionally, all of your responses will be kept confidential; nothing that you say will be attributed to you in the report.

- S1. Is it ok that I record our conversation?
Do you have any questions before we get started?

A.5.2. Respondent Characteristics

First I'd like to a few quick questions about your property and how you learned about Energy Trust.

- Q1. Would you describe your residence as a condo, a townhome, or something else?
- Q2. How long have you owned your residence?
- Q3. Is your home attached side by side to other dwellings, or stacked one on top of the other?
- Q4. Have there been other major equipment upgrades or improvements made to your properties in 2015 or 2016 that did **not** receive an incentive from Energy Trust?
1. If yes, what was installed?
 2. Why did that not receive an incentive?

A.5.3. Decision-Making Factors

Now let's talk a bit about how you identify and make home improvements.

- Q5. How do you identify potential improvements or needed repairs?
- Q6. What are the key factors you consider when making property improvement decisions?
[For reference: ROI; saving money, saving energy, available financing, increase the property value]
- Q7. How, if at all, does energy efficiency factor into your decision-making when you are making property improvements?

A.5.4. Program Experience

For the remainder of the interview, please consider your overall experience with Energy Trust's Multifamily program when answering the questions.

- Q8. What motivated you to participate in the program? *[For reference: saving money/stop wasting money, ROI, saving energy, increase property value, cash incentives, old equipment was giving out]*
1. [SKIP IF DISCUSSED IN Q8] To clarify, was the equipment you replaced no longer functional or did you want to replace working equipment with more efficiency equipment?
 2. [If NEB IS DISCUSSED IN Q8] How do you see participating in the program helping you achieve [INSERT MENTIONED NEB]?

- Q9. How did you first learn about Energy Trust's Multifamily program? *[For reference: Trade ally/contractor, program representative (PMC or Energy Trust), colleague, Energy Trust website, social media, exhibition (trade show or assertion), case studies or other collateral]*
- Q10. What was your understanding of what the program would provide?
- Q11. **[SKIP IF ISM ONLY]** How influential were the incentives you received in your decision-making process to complete energy savings upgrades to your home?
- Q12. **[SKIP IF ISM ONLY]** How adequate was the range of equipment incentivized through the program?
1. *[If not adequate, probe]* What additional type of energy saving equipment would you have liked to see incentivized?
- Q13. **[ISM or limited standard measure only]** As you may know, the program offers cash incentives for a wide array of energy saving improvements. Please tell me about any factors that may have kept you from completing additional energy saving improvements? *[For reference: Financial constraints, time, lack of need]*
1. What, if anything, could Energy Trust do to help you complete additional energy savings improvements?
- Q14. **[IF COMPREHENSIVE OR STUDY]** How did you find the contractor who installed your incentivized equipment?
- Q15. **[IF COMPREHENSIVE OR STUDY]** How satisfied or dissatisfied were you with the overall services of the contractor who installed your incentivized equipment?
- Q16. What, if any, aspects of the program need improvement?
1. What could be done to improved your participation experience?
- Q17. Overall, how satisfied are you with your program experience?
1. What makes you say that?

A.5.5. Closing

- Q18. Is there anything else you'd like to add about your experience with the Multifamily program that we haven't talked about?

Thank you for your time and insights.

A.6. Market Expert Interview Guide

A.6.1. Introduction

Hello, may I speak to [*Name from call list*]?

Hello, my name is _____ and I'm calling from Research Into Action on behalf of Energy Trust of Oregon. I am working with Energy Trust to evaluate their Existing Multifamily energy efficiency program. I am speaking with a number of multifamily experts to better understand the market across various types of multifamily properties in Oregon. We've identified you as one of our experts. I would greatly appreciate if you would participate in our study. Your answers will remain strictly confidential. Is there a convenient time for us to talk for roughly 30 minutes in the next week or so?

[If needed] If you have any questions about this interview, you can call Andy Eiden at Energy Trust at 503-445-2945 or email him at andy.eiden@energytrust.org.

[Start of Interview]

Thank you for taking the time to talk with me today. As I mentioned earlier, my firm is working with Energy Trust of Oregon to study the multifamily market and are talking with people who have expertise in various parts of the market to get their advice. The first thing I'd like to do is pinpoint the one area where you feel you have the MOST expertise. In which of the following five areas of the multifamily market do you feel you are the most expert? *[Begin with segment listed for the person on the contact list but ask about all four segments]?*

- A. Assisted Living
- B. Campus Housing
- C. Condominium/HOAs
- D. Market Rate
- E. Affordable Housing

[If they indicate an area of expertise, continue]

[If no area of expertise] Is there someone at your organization, or someone you know, who you would identify as having expertise in the multi-family market that you could refer me to?

[Collect name and contact information; Thank and terminate call]

I will be taking notes as we talk, but I would also like to record our conversation to ensure the accuracy of the notes. The notes and the recording are for research purposes only and will not be provided to anyone outside the Research Into Action team.

S1. Is it ok that I record our conversation?

Do you have any questions before we get started?

A.6.2. Respondent and Organization Characteristics

First, I'd like to know a little bit about you and your organization.

- Q1. Can you briefly describe the organization you work for?
- Q2. Please tell me your job title and summarize your job responsibilities?
- Q3. Would you say your expertise is state-wide or specific to certain parts of the state?
 - 1. *[If area specific]* In what regions of the state do you primarily work? For example, Portland-metro, Southern OR, Central OR, Eastern OR.
- Q4. How long have you worked with [INSERT SEGMENT CONFIRMED IN SCREENING] properties in the multifamily market?

A.6.3. Market Characterization

Let's briefly talk about the overall [SEGMENT] market.

- Q5. How would you describe the market in terms of growth, supply and demand, or any other relevant factors?
- Q6. Does the [SEGMENT] market differ by geographic region in Oregon?
 - 1. *[If yes]* Why do you think that is?

A.6.4. Property Upgrade Decisions

This next set of questions is about property improvement decisions in general.

- Q7. In the [SEGMENT] market, what would you say are the factors that drive property improvement decisions overall? *[For reference: ROI; tenant retention, saving money, saving energy, capital improvement/maintenance budget, financing]*
- Q8. How do these factors differ for upgrades to dwelling units versus the common areas?
- Q9. Who is usually involved in those decisions? *[For reference: Is it the owner, property management firm, facility maintenance staff, someone else, or a collection of people who makes the decisions?]*
- Q10. What sort of upgrades are decision-makers pursuing at these properties?
 - 1. *[If an expert in more than one segment]* Does this process differ by market segment? If so, how?
- Q11. To what extent are decision-makers considering energy efficiency when deciding what property upgrades to make?

A.6.5. Energy Efficiency Participation, Motivations, and Barriers

Now, let's talk about participation in energy-efficiency programs, the motivation to install energy efficient equipment, and the barriers to completing upgrades.

- Q12. Roughly what proportion of the [SEGMENT] market do you think has made energy efficiency improvements to their properties?
- Q13. What are the key motivations for decision-makers in the [SEGMENT] market to complete energy efficiency improvements? *[For reference: saving money/stop wasting money, ROI, saving energy, increase property value, tenant retention]*
1. [If NEB is mentioned ask] How do you see participating in the program helping you achieve [INSERT MENTIONED NEB].
- Q14. What are the primary barriers that decision-makers in the [SEGMENT] market confront when making energy efficiency improvements?
1. How do you think these barriers can be overcome?
- Q15. What are the most effective marketing and outreach tactics to reach the [SEGMENT] market?
- Q16. How familiar are you with Energy Trust of Oregon's Multifamily energy efficiency program?
1. What have you heard or do you know about it?
- Q17. What is your sense of how aware the [SEGMENT] market is of Energy Trust's Multifamily program?
1. And how actively they are participating in it?
- Q18. What is your impression of what the program has done to encourage the [SEGMENT] to participate?
- Q19. Finally, given your knowledge about decision-making in the [SEGMENT] market, what ideas do you have for how to encourage greater investments in energy improvements?

A.6.6. Closing

- Q20. Is there anyone else, outside of your organization, who you identify as having expertise in the multifamily market that you could refer me to? *[Collect name and contact information]*

Thank you very much for taking the time to talk with me today. Those are all the questions I have for you.

Appendix B. Document Review

We reviewed the following documents, provided by Energy Trust, which informed the data collection instruments and program insights.

- › Monthly and Quarterly PMC Reports
- › 2015 Participant Database
- › Program Manuals
 - 2015 Allied Technical Assistance Contractor Guide V3
 - 2016 Program Implementation Manual V6.1
- › Strategic Documents
 - 2015 Multifamily Program Management Contractor Request for Proposals
 - 2015 Marketing Plan
 - 2015 Custom Redesign Successes and Lessons Learned
 - 2015-2019 Commercial Sector Strategic Plan
- › Past Evaluations
 - 2012 Existing Multifamily Process Evaluation
 - 2013 Fast Feedback Report
 - 2013 Existing Multifamily Market Research Results
 - 2013 Trade Ally Survey Report
 - 2014 Trade Ally Network Evaluation Report