Opinion Dynamics

Portland Office

3934 NE Martin Luther King, Jr. Blvd.
Suite 300
Portland, OR 97212

503-287-9136

Energy Trust of Oregon Fast Feedback 2018

End-of-Year Report

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Contributors

Jordan Folks,
Managing Consultant

Zac Hathaway
Senior Consultant

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MEMO

Date: June 25, 2019
To: Board of Directors
From: Dan Rubado, Evaluation Project Manager
Subject: Staff Response to 2018 Fast Feedback Report

The primary purpose of Energy Trust's Fast Feedback survey is to track participant satisfaction with Energy Trust programs and quantify free-ridership (customers that would have completed the same efficiency measures without Energy Trust's incentives or services). The overall satisfaction and free-ridership results for 2018 participants were largely in line with past years. The format of the 2018 Fast Feedback survey was a departure from past years. In the past, Fast Feedback was implemented through a short phone survey of recent participants. However, increasing costs and decreasing response rates for phone surveys led Energy Trust to explore different options to collect this information. Energy Trust worked with Opinion Dynamics (formerly Research into Action) to design the 2018 survey as an experiment to test a web survey, with several different recruitment methods and incentive conditions, and compare it to the standard phone survey.

For residential participants, the study clearly showed that a web survey delivered higher response rates at lower cost than the phone survey. However, there were variations in response rates and costs per survey completed within the web survey experimental groups. There were nine web survey experimental groups based on combinations of recruitment method (email only, email + mailer, mailer only) and incentive type (fixed incentive, lottery incentive, no incentive). The email only with no incentive group yielded a response rate comparable to the phone survey at the lowest cost. However, the email only with fixed incentive group had the highest response rate, by far, and although it had a higher cost it was still less than the phone survey. There were also significant differences in survey responses between the web and phone survey modes that can't be ignored. As a result of this research, Opinion Dynamics recommended implementing a web-then-phone approach using email recruitment with a fixed incentive and following up with a phone survey to non-respondents. They argued that this method would obtain the highest response rate at the lowest cost while reducing any bias introduced by the survey mode. For the 2019 Fast Feedback residential participant survey, Energy Trust has adopted this approach.

For nonresidential participants, the results were very different. For these customers, the phone survey clearly delivered the best results with much higher response rates and lower costs per response than the web survey. The phone survey probably reached most nonresidential customer contacts on their work phone where they were more likely to answer calls. Differences in responses between the web and phone survey modes were also much smaller than in the residential survey. However, Opinion Dynamics recommended moving to the same web-then-phone approach as the residential survey for business customers. For the 2019 Fast Feedback nonresidential participant survey, Energy Trust decided to

continue with the same phone survey approach that has been used in the past. This approach should obtain the highest response rate at the lowest cost per survey completed with minimal mode bias.

Energy Trust also captured information on participant spillover to non-incentivized efficiency measures in the 2018 survey. Unfortunately, the survey questions were long and awkward, and it was impossible to quantify the energy savings of measures that respondents cited. Thus, the spillover results only offered a qualitative assessment that gave Energy Trust a rough sense for the magnitude of its influence on efficiency beyond incentivized measures. These questions were dropped from the 2019 survey. Overall, roughly 10% of residential and 3% of non-residential participants reported that Energy Trust had influenced them to install additional efficiency measures for which they did not receive incentives.

In 2018, Energy Trust added a battery of demographic questions to the residential Fast Feedback survey instrument for the first time. There are four questions covering respondents' race/ethnicity, income, age, and household size. The goal of adding these questions was to better understand the demographic characteristics of Energy Trust participants. These data will support Energy Trust's Diversity, Equity, and Inclusion efforts by comparing the demographics of residential participants in specific measure categories and to overall state demographics. Although Energy Trust has other sources of data about demographics and program equity, this survey provides another source of information to help identify demographic groups that Energy Trust is not reaching with its residential services. It is important to recognize that these results are only for a subset of single-family residential participants that received a rebate after investing in an efficiency or renewable energy project. Fast Feedback excludes kits, giveaways, and midstream buy-downs, like lighting, showerheads, and water heaters. These questions were not asked of multifamily participants, because these participants are often landlords and property managers.

The 2018 results showed that people of color are generally underrepresented among residential participants that responded to the Fast Feedback survey, particularly African American and Hispanic residents. People of color were somewhat better represented among smart thermostats and solar PV participants. Low-income households were also underrepresented among residential participants in the survey, particularly smart thermostats and solar PV. However, the moderate-income track appears to be reaching lower income households—in which gas furnaces and ductless heat pumps play a large role. The Portland Metro area was overrepresented among participants, while the North Coast, Willamette Valley, and Eastern Oregon were underrepresented. This geographic distribution may be partly due to the limits of Energy Trust's service territory, which does not include all of Oregon. These demographic questions are being continued in the 2019 survey, so Energy Trust will be able to track trends in participant demographics over time.

Energy Trust plans to make further changes to the Fast Feedback survey in 2020 in response to the organization's changing information needs. As of 2020, Energy Trust will begin reporting gross savings, rather than net, and will no longer be quantifying free-ridership. There will still be a need to track Energy Trust's influence in the market, but there is an opportunity to streamline the survey instrument. In addition, there is not as much need to quantify customer satisfaction with the level of precision in the past for each measure group in the residential sector, providing an opportunity to decrease the respondent quotas, which will save money and reduce the survey burden on Energy Trust's participants.

1. Executive Summary

Opinion Dynamics Corp. (formerly Research into Action; "the research team") conducted the 2018 customer feedback survey for Energy Trust of Oregon (Energy Trust), called Fast Feedback, from March 2018 through February 2019. Embedded within the 2018 survey was an experiment testing the impact of different survey modes and recruitment and incentive conditions. This report summarizes the analysis conducted by ODC and results of the survey. The purpose of the analyses was to: 1) summarize Fast Feedback survey findings by program and quota group; and 2) report on the results of the experimental testing of survey mode (phone or web) and recruitment and incentive conditions in the web survey.

1.1 Residential Survey Summary

Residential survey results indicated a high level of overall program satisfaction across all measure groups (Table 1). Satisfaction levels were generally consistent with previous years.

Table 1. Summary of Residential Satisfaction

Measure Group	Number of Survey Respondents	Overall Satisfaction	Free Ridership
Residential - Total	4,380	88%	40%
Residential - Oregon	4,147	94%	39%
Residential - Washington	233	94%	49%
Moderate Income Track	190	96%	37%
Solar PV System	469	90%	20%
Clothes Washer	544	95%	52%
Ceiling Insulation	195	91%	41%
Floor Insulation	53	90%	35%
Wall Insulation	26	84%	40%
Heat Pump	229	95%	38%
Ductless Heat Pump	386	93%	31%
Boiler	14	93%	67%
Windows	703	92%	49%
Gas Fireplace	352	95%	37%
Gas Furnace	310	94%	50%
Spa Cover	136	92%	37%
Thermostat	963	96%	38%

Analysis of the survey results revealed several other key high-level findings. Fewer than half of respondents obtained information from Energy Trust of Oregon (Energy Trust) before taking their efficiency action. Participants' contractors generally had the greatest influence on their decisions, with the incentive and other factors more influential for certain measures.

Respondents easily found and selected contractors, most commonly by word of mouth, usually after getting one or two bids. For most measure groups, a minority of respondents (about one-third or fewer) reported

having considered the Energy Trust list of trade allies, in large part because about one-quarter to one-third of them were not aware of the list. Of those who did consider the list, in all cases the majority (usually just over half to about two-thirds) reported they considered the star rating system.

In terms of measure-specific questions, the survey found that most incented smart thermostats were still installed; somewhat more than half of heating systems replaced operating systems, the percentage being highest for heat pumps; and gas fireplaces most likely replaced a wood burning fireplace or stove.

About 10% of respondents reported spillover (energy efficient measures that did not receive incentives but were influenced by Energy Trust), with the percentage ranging from 0% to 24% for specific measure groups.

Almost all assessed indices showed some variability among measure groups.

1.2 Nonresidential Survey Summary

Nonresidential survey results indicated a high level of overall program satisfaction across all quota groups; satisfaction with interactions with the Energy Trust program representative was more variable among quota groups (Table 2). Satisfaction levels were generally consistent with previous years.

Table 2. Summary of Nonresidential Satisfaction

Quota Group	Unweighted	Satisfaction	
		Overall	Interaction with Program Representative
Existing Buildings - Oregon	320	94%	87%
Existing Buildings - Custom	10	86%	100%
Existing Buildings - Lighting	133	91%	83%
Existing Buildings - Standard	113	98%	85%
Existing Buildings - Direct Install	64	95%	93%
Existing Buildings - Washington	11	100%	69%
Production Efficiency	223	96%	88%
Production Efficiency - Custom	21	100%	100%
Production Efficiency - Lighting	91	94%	88%
Production Efficiency - Standard	111	97%	85%
Existing Multifamily	202	96%	87%
Existing Multifamily - Incentives	148	96%	84%
Existing Multifamily - Direct Install	54	94%	94%
Commercial Solar	16	96%	81%

Free-ridership varied among programs and quota groups (Table 3).

Table 3. Summary of 2018 Annual Nonresidential Free Ridership

Program	Fuel	Quota Group	Years of Data[a]	n	Free Ridership (Low)	Free Ridership (Mid)	Free Ridership (High)
Existing Buildings[b]	Electric	Custom	2017-2018	36	7%	11%	15%
		Lighting		249	13%	15%	18%
		Standard		84	15%	17%	19%
		Direct Install		64	12%	13%	15%
		Combined[c]		433	13%	15%	17%
	Gas	Custom	2016-2018	33	13%	15%	17%
		Standard		167	28%	30%	31%
		Combined[c]		200	21%	22%	24%
Existing Multifamily	Electric	Incentives	2018	122	23%	25%	27%
		Direct Install		54	32%	34%	35%
		Combined[c]		176	26%	27%	29%
	Gas	Combined[c]	2018	47	13%	27%	41%
Production Efficiency	Electric	Custom	2017-2018	64	15%	16%	17%
		Lighting		172	16%	16%	16%
		Standard		176	26%	27%	28%
		Standard + Lighting[c]		348	18%	19%	19%
		Combined[c]		412	17%	18%	18%
	Gas	Combined[c]	2017-2018	35	16%	19%	22%

Notes: Non-residential free ridership rates are savings-weighted, meaning that each project's influence on free ridership is directly proportional to its share of savings in the program track and fuel sample.

[a] Multiple years of survey data are aggregated together to compute free ridership for a program track and fuel combination if the sample size for an individual cell is below 30. Additional years of data are added until 30 or more survey responses are achieved for each program track and fuel combination.

[b] Free ridership is not computed for NWN WA participants, so they are excluded here.

[c] These combined program level free ridership rates are computed as the savings-weighted averages of the track level results, even if the track level results are not reported. Thus, the influence of track-specific results on program level free ridership rates is directly proportional to their share of savings in the 2018 program.

Among nonresidential survey respondents, the Energy Trust incentive was the most consistently highly rated influencer, followed by information received from Energy Trust. Nonresidential respondents showed high levels of satisfaction with their program experience, with levels generally consistent with those observed in prior years. About 3% of nonresidential respondents reported spillover, with the percentage ranging from 0% to 8% for specific quota groups.

1.3 Effects of Experimental Conditions

Analyses of survey data assessed whether survey mode (phone or web) and/or incentive condition affected response rate (RR), cost per interview (CPI), and responses to Fast Feedback survey questions as well as whether web and phone respondents differed in how well they represented the overall Energy Trust population or Oregon population.

In the residential survey, survey mode did not have an overall effect on RR, but within the web mode, incentive condition affected RR (Table 4). Thus, while overall phone and web RRs were about equal, the web survey with a fixed incentive produced a considerably higher RR than the phone survey. The CPI for the web survey with an email recruitment and fixed incentive was considerably lower than that for the phone survey, although the web survey with no incentive had the lowest CPI of all. The nonresidential phone survey delivered more than twice the RR than the web survey. In that survey, there was less difference between the CPIs for the phone and web surveys.

Table 4. Response Rates and Cost per Interview, By Mode and Web Incentive Condition

Sector	Mode							
	Phone	Web						
		Web, Overall	Web Recruitment Condition			Web Incentive Condition		
			Email Only	Mailer & Email	Mailer Only	Fixed	Lottery	None
Weighted Response Rate (RR)								
Overall	26%	22%	25%	27%	3%	30%	19%	22%
Residential	23%	24%	26%	28%	3%	32%	20%	22%
Nonresidential	40%	17%	18%	12%	5%	18%	11%	17%
Unweighted Cost Per Interview (CPI)								
Overall	$13.29	$8.30	Recruitment by Incentive Condition (Overall)		Email Only	$12.51	$12.10	$4.36
Residential[a]	$13.01	$8.19			Mailer & Email	$16.31	$19.90	$8.36
Nonresidential[a]	$8.08	$10.86			Mailer Only	$81.57	$126.01	$78.43

While residential web and phone respondents were similarly representative of the state population on most demographic factors, some differences suggest that the web survey may select for customers more inclined to use online resources. Results also suggest some mode differences on free-ridership rated program influence on equipment purchase decisions, and satisfaction with various aspects of program participation. Among web survey respondents, satisfaction ratings do not appear to be affected by incentive condition.

Together, the results of the Fast Feedback experiment suggest the use of a combined phone-and-web survey, with the web component delivered by email only with a fixed incentive. Instead of allocating each participant to one mode or the other, the best approach may be to start with a web survey recruitment and then conduct a phone recruitment with a subset of those who did not respond to the web survey. This would control survey costs while providing an opportunity to control for mode biases. This is discussed in detail in Section 7, Summary and Conclusions.

2. Introduction

Opinion Dynamics Corp. (formerly Research into Action; "the research team") conducted the 2018 customer feedback survey for Energy Trust of Oregon (Energy Trust), called Fast Feedback, from March 2018 through February 2019. Embedded within the 2018 survey was an experiment testing the impact of different survey modes and recruitment and incentive conditions. This report has two main purposes: 1) to report on Fast Feedback survey findings by program and quota group to provide useful feedback for program staff and stakeholders; and 2) to report on the results to date of the experimental testing of survey mode (phone or web) and recruitment and incentive conditions in the web survey.[1]

The rest of this report is divided into five main sections:

- Methods and Survey Response
- Residential Combined Survey Results
- Nonresidential Combined Survey Results
- Effects of Experimental Conditions
- Summary and Conclusions

The first section provides a brief explanation of the survey modes and experimental conditions; information on the availability of contact information and survey responses by sector and group; and a description of how the research team weighted the combined data to control for possible mode effects.

The second and third sections present the Fast Feedback summary findings (combining the phone and web responses) for the residential and nonresidential sectors. They are subdivided by survey topic and include assessment of spillover by measure/quota groups and satisfaction ratings by time (program year).

The fourth section describes the results of the analyses of the experimental test. They include mode and/or incentive condition effects on response rate, cost per interview, and responses to Fast Feedback survey questions. They also include an analysis of the representativeness of the web and phone respondents, relative to the overall Energy Trust population or Oregon population.

The final section summarizes the findings across all sections and presents the research team's conclusions and recommendations for future Fast Feedback data collection.

[1] The nonresidential quota groups were based on program and program track, while the residential quota groups were based on the measure types for which participants received Energy Trust incentives.

3. Methods and Survey Response

This section describes the survey modes and experimental conditions; the availability of contact information and the number of survey responses by sector and group; and the method for weighting the combined data to control for possible mode effects.

3.1 Survey Modes and Experimental Conditions

Energy Trust has been using the monthly Fast Feedback phone survey since 2010 to assess free-ridership, satisfaction, and selected other aspects of program experiences in a sample of customers who participated in Energy Trust programs in the prior month.

With declining phone response rates and increasing phone survey costs, Energy Trust sought to explore the use of a web survey to supplement or replace the phone survey. In collaboration with Energy Trust, the research team developed an experimental design to test the effect of data collection mode (phone or web) on survey response rate, cost, respondent representativeness, and the survey responses themselves. In addition, for the web survey mode, the experimental design tested the effects of various survey recruitment methods (mailer only, mailer and email, and email only) and the effects of offering two types of survey completion incentive condition (lottery incentive and fixed incentive).

Each month, the research team randomly assigned all of the previous month's program participants (except those recently surveyed) to either the phone or web survey condition. From those randomized to the phone condition, the team randomly sampled a sufficient number of participants to meet quotas for each residential measure type or nonresidential quota group. All participants sampled for the phone survey were handled in the same manner, with up to five contact attempts and no survey incentives.

For the web survey, the team further assigned participants to one of nine subgroups representing three recruitment and three incentive conditions. The three recruitment conditions were: mailer only, mailer+email, and email only. Participants who provided a mailing address but no email address formed the mailer only condition. The mailers were simple postcards that contained a brief recruiting message, describing the survey and incentive condition (if applicable), and the link to the web survey. The research team sent one mailer to each of those participants: experience indicates that most responses come after the first such contact and so sending more than one mailer would not be a cost-effective recruitment strategy. Historically, participants with a mailing address but no email address comprised approximately 15% of participants. The research team randomly assigned a comparable number of participants from among those who had an email address (about 15% of all participants) to the mailer+email condition: those participants received one mailer followed by one email. All other participants were in the email only condition, receiving one email.

The three incentive conditions were: no incentive; lottery incentive; and fixed incentive. Within each of the web survey recruitment conditions, the research team randomized 76% of respondents to the no incentive condition and the remaining respondents in equal numbers to the two incentive conditions. For participants in the lottery condition, the recruitment mailer and/or email offered to enter the participant into a lottery for a $100 gift card (for that month's participants) contingent on completing the survey. For those in the fixed incentive condition, the mailer and/or email offered a fixed $10 incentive contingent on completing the survey.

Table 5 shows the approximate percentage of participants in each web survey condition each month. The actual distributions could vary by month since the percentage of customers with a mailing address, but no email address could vary by month.

Table 5. Web Survey Recruitment Conditions

Survey Condition	Mailer Only	Mailer + Email	Email Only	Total
No Incentive	11.5%	11.5%	53%	76%
Lottery Incentive	1.75%	1.75%	8.5%	12%
Fixed Incentive	1.75%	1.75%	8.5%	12%
Total	**15%**	**15%**	**70%**	**100%**

3.2 Availability of Contact Information

Table 6 shows the percentages of all residential and nonresidential program participants with phone and email contact information as well as the percentages who had both types and at least one type. In both sectors, more participants have phone than email information, and in the nonresidential sector, both types of contact information are more plentiful. All participants have one or the other type of information.

Table 6. Availability of Contact Information by Sector and Type

Type of Information	Residential (n = 23,907)	Nonresidential (4,765)
Phone	91%	99%
Email	88%	93%
Both	79%	92%
Either	100%	100%

3.3 Number of Respondents

In the residential sector, the phone responses met or exceeded the 12-month quotas for five of the 13 measure groups and came reasonably close in another group. With the added web responses, the survey met or exceeded all quotas except for boiler, floor insulation, wall insulation, and spa cover. The research team made multiple contact attempts with all available participants in these last three groups.

Table 7 shows the total number of survey responses by mode, sector, and quota group. Through 2018, the research team completed the survey with 5,152 respondents – 4,380 residential and 772 nonresidential.[2] In the residential sector, the phone responses met or exceeded the 12-month quotas for five of the 13 measure groups and came reasonably close in another group. With the added web responses, the survey met or exceeded all quotas except for boiler, floor insulation, wall insulation, and spa cover. The research team made multiple contact attempts with all available participants in these last three groups.

Table 7. Number of Responses by Mode, Sector, and Quota Group

Measure Group (Residential) or Quota Group (Nonresidential)	Web	Phone	Total	12-Month Phone Quota
Residential				
Clothes Washer	403	141	544	140
Ceiling Insulation	99	96	195	120
Wall Insulation	10	16	26	80

[2] These numbers are slightly smaller than the numbers we reported in the previous monthly summary. In that summary, we mistakenly counted individuals who started but did not complete the survey. That did not affect the response rate, which was calculated from separately constructed counts.

Measure Group (Residential) or Quota Group (Nonresidential)	Web	Phone	Total	12-Month Phone Quota
Floor Insulation	24	29	53	80
Ducted Heat Pump	101	128	229	140
Ductless Heat Pump	218	168	386	140
Gas Fireplace	212	140	352	140
Gas Furnace	125	185	310	140
Boiler	9	5	14	20
Residential Solar PV	335	134	469	140
Smart Thermostat[a]	779	184	963	140
Smart Thermostat – Rebate	674	131	805	
Smart Thermostat – Instant Coupon	57	8	65	
Spa Cover	47	89	136	140
Windows	546	157	703	140
Residential Total[b]	2,908	1,472	4,380	1,560
Residential – Oregon	2,792	1,355	4,147	1,440
Residential – Washington	116	117	233	120
Moderate Income Track	86	104	190	120
Nonresidential				
Commercial Solar	2	14	16	40
Existing Buildings	152	179	331	260
Existing Buildings - Oregon	147	173	320	220
Existing Buildings - Washington	5	6	11	40
Existing Buildings - Custom	1	9	10	40
Existing Buildings - Direct Install	18	46	64	60
Existing Buildings - Lighting	74	59	133	60
Existing Buildings - Standard	54	59	113	60
Existing Multifamily	59	143	202	160
Existing Multifamily - Direct Install	15	39	54	40
Existing Multifamily - Incentives	44	104	148	120
Production Efficiency	79	144	223	160
Production Efficiency - Custom	6	15	21	40
Production Efficiency - Lighting	25	66	91	60
Production Efficiency - Standard	48	63	111	60
Nonresidential Total	292	480	772	620
Residential + Nonresidential				
Total	**3,200**	**1,952**	**5,152**	**2,180**

[a] Of the 963 Smart Thermostat responses, 870 were in either the Rebate or Instant Coupon quota group; the remaining 93 were in the Residential – Washington quota group, and the project data did not indicate whether those received a rebate or instant coupon. Note that 12-month phone quota was for Smart Thermostats overall.

[b] Residential Total includes both Oregon and Washington. The Moderate Income Track overlaps with Oregon and Washington.

In the nonresidential sector, the phone responses exceeded two of the 11 quotas and came within one completion of meeting three others. With the added web responses, the survey still fell short of five quotas: Commercial Solar, Existing Buildings - Custom and Washington, Existing Multifamily - Direct Install, and Production Efficiency - Custom. The research team made multiple contact attempts with all available participants in these last five quota groups.

3.4 Language of Survey and Language Barriers

All surveys – both web and phone, residential and nonresidential were offered in English and Spanish. All completed surveys were completed in English. The phone survey subcontractor noted 11 instances of language barriers in the residential sector and one in the nonresidential sector. Interviewers identified most such respondents as South or East Asian, with one identified as Farsi or Arabic. One nonresidential participant was Spanish speaking but refused to be interviewed by a Spanish-speaking member of the call center staff.

3.5 Use of Weighted Data

The research team used weighted for two purposes: 1) to control for measure and quota group differences that occurred despite random sampling, when examining mode differences; and 2) to control for differences in the likelihood that a participant would be recruited to the web and phone survey. The weighting approaches are described in the following subsections. Unless otherwise specified, all results reported below are based on analyses with weighted data.

3.5.1 Controlling for Measure and Quota Group Differences

The research team randomly assigned participants to the web or phone survey. The two surveys varied slightly in the distribution of measure and quota groups in the residential and nonresidential samples, respectively (Table 8). Although the variability was generally low, failing to control for it could paint a false picture of actual mode differences in survey responses.

The mode differences in the distribution of measure categories in the residential survey are particularly a concern given that respondent demographics and mean free-ridership levels varied across measure type (Table 9). Moreover, the demographic and free-ridership differences across the measure categories covaried with the percentage of survey completions by web (Table 10). Specifically, measure groups with a higher percentage completion by web tended also to have a higher percentage of respondents who reported high income levels (at least $100,000 per year) but they tended to have lower percentages of White or Caucasian respondents and a lower mean free-ridership percentage. Measure groups with higher percentages of respondents reporting high income tended to have lower percentages of White or Caucasian respondents and lower free-ridership.[3]

[3] Note that the overall correlation between income and ethnicity (White/Caucasian-only vs. other) in the sample is weak (r = -.09), indicating that White/Caucasian-only respondents in this sample have lower incomes, on average, than other respondents. This is consistent with the fact that the major "other" ethnicity represented in this sample is Asian Americans, who have higher household incomes, on average, than White/Caucasians (source: https://statisticalatlas.com/state/Oregon/Household-Income). The research team will explore the relationships among ethnicity, income, and measure selection more deeply in the year-end report.

The research team used data weights to control for these interrelationships. First, for each respondent, the team assigned a Measure weight. For web respondents, the Measure weight was calculated as:

$$\text{Measure weight (web)} = \frac{\%\text{ all respondents with respondent's measure}}{\%\text{ web respondents with respondent's measure}}$$

The Measure weight was calculated similarly for phone respondents.

The team also calculated weights to adjust for the percentage of White/Caucasian respondents (Ethnicity weight) and the percentage of respondents with incomes at least $100,000 (Income weight). As most ethnicity categories, other than White/Caucasian, constituted a very small percentage of respondents, the team dichotomized all respondents as either White/Caucasian or other to calculate the Ethnicity weight.

Table 8. Distribution of Quota Groups, by Mode

Residential			Nonresidential		
Measure	Web	Phone	Quota Group	Web	Phone
Boiler	<1%	0%	Commercial Solar	<1%	1%
Ceiling Insulation	3%	7%	Existing Buildings – Custom	0%	1%
Clothes Washer	14%	10%	Existing Buildings - Direct Install	2%	4%
Ducted Heat Pump	3%	9%	Existing Buildings – Lighting	10%	5%
Ductless Heat Pump	7%	11%	Existing Buildings – Standard	7%	5%
Floor insulation	1%	2%	Existing Buildings – Washington	1%	1%
Gas fireplace	7%	10%	Existing Multifamily - Direct Install	2%	3%
Gas furnace	4%	13%	Existing Multifamily – Incentives	6%	9%
Residential Solar PV	12%	9%	Production Efficiency – Custom	1%	1%
Smart Thermostat	27%	13%	Production Efficiency – Lighting	3%	6%
Spa Cover	2%	6%	Production Efficiency – Standard	7%	6%
Wall Insulation	0%	1%			
Windows	19%	11%			

Table 9. Distribution of Residential Survey Web Completion %, Demographics, and Mean Free-Ridership by Measure [a]

Measure	% Surveyed by Web	% Income ≥$100,000	% White/ Caucasian	Mean Free-Ridership %
Boiler (n = 14)	64%	14%	86%	67%
Ceiling Insulation (n = 195)	51%	24%	91%	41%
Clothes Washer (n = 544)	74%	33%	82%	52%
Heat Pump (n = 229)	44%	29%	94%	38%
Ductless Heat Pump (n = 386)	56%	15%	89%	31%
Floor Insulation (n = 53)	45%	26%	92%	35%
Gas Fireplace (n = 352)	60%	30%	91%	37%
Gas Furnace (n = 310)	40%	17%	87%	50%
Res. Solar PV (n = 469)	71%	49%	83%	20%
Smart Thermostat (n = 963)	81%	49%	76%	38%
Spa Cover (n = 136)	35%	35%	93%	37%

Measure	% Surveyed by Web	% Income ≥$100,000	% White/ Caucasian	Mean Free-Ridership %
Wall Insulation (n = 26)	38%	27%	81%	40%
Windows (n = 703)	78%	33%	91%	49%

[a] These are the correlations between each set of columns in Table 2 5.

Table 10. Correlations Among Web Survey Completion Percentage and Demographic Characteristics Across Residential Measures

	% Income ≥$100,000	% White/ Caucasian	Mean Free-Ridership %
% Surveyed by Web	.46	-.51	.10
% Income ≥$100,000	-.41	-.51	

For web respondents, the Ethnicity weight was calculated as:

$$\text{Ethnicity weight (web)} = \frac{\%\text{ all respondents with respondent's ethnicity}}{\%\text{ web respondents with respondent's ethnicity}}$$

The Ethnicity weight was calculated similarly for phone respondents.

Finally, for web respondents, the Income weight was calculated as:

$$\text{Income weight (web)} = \frac{\%\text{ all respondents with income } \geq \$100{,}000}{\%\text{ web respondents with income } \geq \$100{,}000}$$

The Income weight was calculated similarly for phone respondents.

The team calculated a final overall weight for each respondent as the product of the Measure weight, the Ethnicity weight, and the Income weight.

The nonresidential survey did not capture respondent demographic data. Therefore, for nonresidential respondents, the research team applied only a Quota Group weight, calculated in the same way as the Measure weight was calculated for the residential respondents.

Note that the research team applied *only* the Measure weight when comparing residential web and phone respondents on demographic variables. The team applied the overall weight when comparing web and phone respondents on other survey responses.

3.5.2 Controlling for Mode Differences

When examining the demographics of the combined web and phone responses for each measure group, there is no need to control for any possible interrelationship among mode (web or phone), measure group, and demographics, as each analysis is of a single measure type.[4] Therefore, the existing Measure and overall weights, described above, are not appropriate for this set of analyses.

[4] The one exception is the combination of wall and floor insulation into the "other insulation" group. These are sufficiently similar that the research team did not consider controlling for interrelationships among mode, measure group (wall or floor insulation), and demographics to be a concern.

However, it is still necessary to account for possible demographic differences between web and phone respondents. Web and phone respondents were extremely similar on household size but differed somewhat on income, ethnicity, and age (web respondents were more likely to have household incomes of at least $100,000, less likely to report being white only, and less likely to be 60 or older). Therefore, if web respondents are over- or under-represented in the survey, relative to phone respondents, then failing to account for that fact when combining responses may misrepresent the demographics of the participant population.

The weighting of web and phone responses must take two factors into consideration: the number of participants solicited by each mode and the response rate for each mode. The first factor is important because more than twice the number of participants were solicited to take the web survey (11,963) than to take the phone survey (6,042). This is because, although the participant population was initially split evenly between the web and phone modes each month, all those randomized to the web survey were sent an invitation to take the survey while the phone survey included only a sample of those randomized to the phone mode. Therefore, other things held equal, the demographic characteristics of the web survey respondents will have a disproportionate influence on the overall results. The second factor is important as the response rate can either exaggerate or mitigate the impact of the first factor, depending on whether the response rate is greater for web or for phone respondents.

The overall web and phone response rates were very close – 24% and 26%, respectively – and so the slightly lower web response rate would not much mitigate the impact of the much larger number of participants solicited by web. However, since we are examining demographics separately by measure and quota group, it is necessary to weight the results separately for each of those groups. The web and phone response rates differed much more within some measure or quota groups than in the overall sample. For example, for the Clothes Washer measure, the web and phone response rates were 21% and 16%, respectively, and for Gas Furnace, they were 14% and 31%. Therefore, when examining demographics, the research team weighted the data to adjust for differences, within each measure and quota group, both in the number of participants solicited to the web and phone surveys and in response rate.

For each measure or quota group, the Number Solicited weight for web respondents was calculated as:

$$\text{Number Solicited weight (web)} = \frac{\text{Half the total number of respondents in group}}{\text{Number of web respondents in group}}$$

The numerator for this weight is half the total number of respondents because that is the expected number of respondents by mode if both modes have an equal response.

The Number Solicited weight was calculated similarly for phone respondents.

For each measure or quota group, the Response Rate weight for web respondents was calculated as:

$$\text{Response Rate weight (web)} = \frac{\text{Overall response rate for group}}{\text{Web response rate for group}}$$

The Response Rate weight was calculated similarly for phone respondents.

For each respondent, the Mode weight was calculated as the product of the Number Solicited weight and the Response Rate weight.

3.6 Spillover Assessment

The research team identified as spillover any energy efficiency improvements or appliances that respondents reported having performed or installed in their home (residential) or workplace (nonresidential) in the previous 12 months that did not receive an Energy Trust incentive but were influenced by Energy Trust. The latter was defined as having an influence rating of 4 or 5 on a scale from 1 (no influence) to 5 (great influence).

For the residential assessment, the team analyzed responses separately for two groups of possible spillover measures. The first were high-efficiency measures identified as pre-coded response options in the survey instrument. The second group were measures recorded as open-ended "other" responses. The research team coded these responses into several measure categories. The nonresidential instrument did not include pre-coded response options, and so the team coded all responses into measure categories.

4. Residential Combined Survey Results

Analysis of the survey results revealed details about participants' experiences. Some key high-level findings are:

- More than four out of five instant incentive recipients recalled receiving the discount, with the level of recollection varying among measure groups.
- Two in five respondents received some information from Energy Trust before taking their efficiency action; again, this varied among groups.
- Of those who installed heating systems, three in five replaced operating systems, but that was more common among those installing heat pumps than gas furnaces. Gas fireplaces were by far most likely to have replaced a wood burning fireplace or stove.
- For most measures, contractors had the greatest influence on participant decisions, but the incentive was most influential for the thermostat, and appearance and efficiency rating were most influential for gas fireplaces.
- Respondents easily found and selected contractors, most commonly by word of mouth but also using a variety of other channels; they usually chose a contractor after getting one or two bids; about one-quarter considered the Energy Trust list of trade allies and just over half of those considered the start rating system, but both varied by measure group.
- Participants most commonly paid for their equipment with cash or a credit card.
- Respondents were satisfied with their program experience, at levels generally consistent with previous years. Satisfaction varied somewhat by measure type, and both Moderate Income and Washington participants differed from other respondents on some satisfaction indices.
- About 8% of respondents reported spillover from a list of possible spillover measures pre-identified in the survey instrument, and about 2% reported spillover as open-ended "other" responses; a total of 10% of respondents reported either.

The following subsections provide details of the above for each measure group. Where percentages are reported, they are based on weighted data, as described in Section 3.5. In some cases, where subsamples are small, reporting percentages may imply a false level of precision. In those cases, we report *unweighted* counts.

4.1 Residential Respondent Demographics

Analysis of respondent demographics indicate that Black, Hispanic/Latino, and other non-white groups are under-represented and those with higher incomes and those who are older are over-represented in the Energy Trust participant population compared to the general Oregon population. Analysis also shows that Oregon Energy Trust participants tend to be more concentrated in the Portland Metro and Hood River area, and less

concentrated in the North Coast, Willamette Valley, and East Oregon areas, compared to the general Oregon population.[5,6]

In general, Black, Hispanic/Latino, and other non-white groups are under-represented in the Energy Trust participant population (Table 11). Those groups are *most* represented among participants surveyed about smart thermostats, residential solar PV, ceiling insulation, and boilers. They were *least* represented among participants surveyed about heat pumps (ducted), gas fireplaces, wall or floor insulation ("other insulation"), spa covers, and windows.

[5] Energy Trust participant population figures come from, Final Report: 2018 Energy Trust Customer Insights Survey. Prepared by Research Into Action for Energy Trust of Oregon, April 2, 2018. The Oregon income, household size, and ethnicity population data come from the U.S. Census Bureau (https://www.census.gov/quickfacts/or; https://statisticalatlas.com/state/Oregon/Household-Income).

[6] Note that all tables show the distribution of demographic characteristics for boiler participants as percentages despite the small sample size for that participant group. Normally, the research team does not show percentages for groups with small sample sizes, as doing so may suggest a level of precision that does not exist. In this case, the research team decided to show percentages for the sake of consistency. However, the research team advises caution in interpreting the percentages for the boiler group as those percentages have a 90% confidence interval of about plus-or-minus 22%.

Table 11. Respondent Race/Ethnicity by Measure or Quota Group

Measure/Quota Group	Respondent Race/Ethnicity (%)							
	White or Caucasian	Black or African American	Hispanic or Latino	Asian, Indian, or Pacific Islander	Native American	Other Non-White Race	Middle Eastern or North African	Non-White Race or Hispanic Total
Boiler (n = 14)	93.5%	0.0%	0.0%	6.5%	0.0%	0.0%	0.0%	6.5%
Ceiling Insulation (n = 195)	93.7%	0.5%	4.2%	3.1%	1.0%	1.5%	1.6%	11.5%
Clothes Washer (n = 544)	88.8%	0.5%	2.4%	7.9%	1.3%	0.1%	1.4%	13.6%
Heat Pump (n = 229)	96.7%	0.8%	1.5%	0.0%	1.4%	0.0%	1.5%	5.2%
Ductless Heat Pump (n = 386)	93.7%	0.3%	1.8%	2.4%	1.0%	0.5%	3.0%	8.8%
Other Insulation (n = 79)	94.2%	1.8%	0.0%	1.1%	1.6%	0.0%	4.0%	8.5%
Gas Fireplace (n = 352)	95.7%	0.2%	1.6%	2.6%	0.5%	0.0%	0.9%	5.6%
Gas Furnace (n = 310)	92.3%	1.0%	2.3%	2.8%	0.7%	0.0%	2.0%	8.8%
Residential Solar PV (n = 469)	84.8%	0.8%	4.2%	7.9%	2.2%	1.1%	4.8%	20.0%
Smart Thermostat (n = 963)	79.8%	1.2%	4.9%	14.4%	0.6%	0.9%	2.0%	23.8%
Spa Cover (n = 136)	94.5%	0.6%	0.0%	3.9%	1.7%	0.0%	3.9%	9.4%
Windows (n = 703)	94.6%	0.3%	1.4%	3.5%	1.1%	0.5%	2.3%	8.7%
Moderate Income Track (n=190)	91.4%	1.5%	3.9%	2.1%	1.1%	0.0%	3.3%	11.9%
Residential - Washington (n=233)	88.2%	0.9%	1.4%	7.2%	0.0%	0.0%	2.7%	12.2%
Residential - Oregon (n=4,147)	90.1%	0.8%	2.7%	6.1%	1.1%	0.5%	2.2%	13.1%
Oregon Overall (Census)	87.1%	2.5%	12.7%	5.2%	1.1%	3.0%	not reported	20.0%

Energy Trust participants tend to have higher incomes than the general Oregon population (Table 12). Participants most similar to the Oregon population were those surveyed about insulation (ceiling and other), clothes washers, heat pumps (ducted), gas fireplaces, spa covers, and windows. Participants surveyed about residential solar PV and smart thermostats tended to have higher incomes than the Oregon population, while those surveyed about ductless heat pumps, gas furnaces, and boilers tended to have lower incomes.

Table 12. Household Income by Measure or Quota Group

Measure/Quota Group	Household Income (%)			
	< $35,000	$35,000 to $50,000	$50,000 to $100,000	≥ $100,000
Boiler (n = 14)	9%	22%	48%	22%
Ceiling Insulation (n = 195)	11%	12%	45%	31%
Clothes Washer (n = 544)	7%	9%	43%	41%
Heat Pump (n = 229)	14%	15%	34%	36%
Ductless Heat Pump (n = 386)	18%	20%	44%	18%
Other Insulation (n = 79)	7%	19%	42%	31%
Gas Fireplace (n = 352)	3%	13%	46%	38%
Gas Furnace (n = 310)	20%	20%	39%	20%
Residential Solar PV (n = 469)	2%	9%	35%	54%
Smart Thermostat (n = 963)	2%	6%	38%	54%
Spa Cover (n = 136)	7%	8%	43%	42%
Windows (n = 703)	7%	14%	42%	38%
Moderate Income Track (n=190)	39%	36%	23%	1%
Residential - Washington (n=233)	6%	13%	36%	45%
Residential - Oregon (n=4,147)	8%	12%	40%	40%
Oregon Overall (Census)	33%	14%	31%	22%

Energy Trust participants tend to be slightly older than the general Oregon adult population (Table 13).[7] Participants most similar in age to the Oregon population were those surveyed about clothes washers, smart thermostats, and residential solar PV: those surveyed about smart thermostats were the only group younger, on average, than the Oregon population. Those surveyed about boilers, heat pumps (both types), gas fireplaces, gas furnaces, and spa covers and those in the Moderate Income Track tended to be the oldest respondents.

Table 13. Respondent Age by Measure or Quota Group

Measure/Quota Group	Respondent Age			
	% 18-39	% 40-59	% 60+	Mean Age
Boiler (n = 14)	6%	13%	81%	64
Ceiling Insulation (n = 195)	24%	31%	45%	54
Clothes Washer (n = 544)	27%	37%	36%	51

[7] The U.S. Census reports the percentage of the entire population across all age brackets. The research team recalculated the percentages in each age group 18 years old and older, to compare to the Energy Trust participant population.

Measure/Quota Group	Respondent Age			
	% 18-39	% 40-59	% 60+	Mean Age
Heat Pump (n = 229)	10%	29%	60%	61
Ductless Heat Pump (n = 386)	16%	32%	52%	58
Other Insulation (n = 79)	20%	41%	39%	54
Gas Fireplace (n = 352)	8%	25%	67%	62
Gas Furnace (n = 310)	11%	28%	61%	61
Residential Solar PV (n = 469)	25%	39%	36%	53
Smart Thermostat (n = 963)	49%	37%	14%	43
Spa Cover (n = 136)	5%	42%	54%	60
Windows (n = 703)	13%	32%	55%	57
Moderate Income Track (n = 190)	11%	27%	63%	62
Residential - Washington (n = 233)	24%	37%	38%	53
Residential - Oregon (n = 4,147)	22%	34%	44%	54
Oregon Overall (Census)	38%	33%	29%	48

Energy Trust participants tend to be similar to the general Oregon adult population in size of household (Table 14). Most participant groups were similar to the Oregon population. Those surveyed about boilers and gas fireplaces and Moderate Income Track participants tended to have smaller households, while those surveyed about clothes washers, residential solar PV, and smart thermostats tended to have larger households.

Table 14. Size of Household by Measure or Quota Group

Measure/Quota Group	Size of Household			
	% 1-2	% 3-4	% 5+	Mean # of Occupants
Boiler (n = 14)	73%	27%	0%	2.0
Ceiling Insulation (n = 195)	66%	28%	6%	2.4
Clothes Washer (n = 544)	57%	35%	8%	2.8
Heat Pump (n = 229)	68%	25%	7%	2.5
Ductless Heat Pump (n = 386)	69%	25%	6%	2.4
Other Insulation (n = 79)	64%	27%	10%	2.6
Gas Fireplace (n = 352)	76%	20%	4%	2.3
Gas Furnace (n = 310)	63%	29%	8%	2.5
Residential Solar PV (n = 469)	51%	36%	12%	2.9
Smart Thermostat (n = 963)	52%	41%	7%	2.8
Spa Cover (n = 136)	63%	33%	5%	2.6
Windows (n = 703)	65%	29%	6%	2.5
Moderate Income Track (n=190)	72%	21%	7%	2.3
Residential - Washington (n=233)	62%	32%	7%	2.6
Residential - Oregon (n=4,147)	61%	31%	7%	2.6

Measure/Quota Group	Size of Household			
	% 1-2	% 3-4	% 5+	Mean # of Occupants
Oregon Overall (Census)	n/a	n/a	n/a	2.5

In terms of geographic dispersion, Oregon Energy Trust participants tend to be more concentrated in the Portland Metro and Hood River area, and less concentrated in the North Coast, Willamette Valley, and East Oregon areas, than the general Oregon population; the percentage of surveyed participants from Southwest Washington was similar to that in the entire Oregon-Southwest Washington region (Table 15). The distribution of participants across geographic areas differed considerably among measure and quota groups. Those most heavily concentrated in the Portland Metro and Hood River area were those surveyed about boilers, ceiling insulation, clothes washers, gas fireplaces, and residential solar PV. Those least heavily concentrated in that area were those surveyed about heat pumps (ducted and ductless) and gas fireplaces and those in the Moderate Income Track.

Other notable aspects of the geographic distribution of participant groups are:

- Spa covers were under-represented in the Willamette Valley.
- Heat pumps (ducted and ductless), gas furnaces, spa covers were over-represented in Southern Oregon.
- Other insulation (wall and floor), gas fireplaces, residential solar PV, and smart thermostats were under-represented in Southern Oregon.
- Heat pumps (ducted and ductless) were over-represented in Central Oregon.
- Gas fireplaces, gas furnaces, and windows were under-represented in Central Oregon.
- Gas fireplaces, smart thermostats, and windows were over-represented in Southwest Washington.

Table 15. Geographic Region by Measure or Quota Group

Measure/Quota Group	Geographic Region (%)						
	Portland Metro and Hood River	North Coast	Willamette Valley	Southern Oregon	Central Oregon	Eastern Oregon	SW Washington
Boiler (n = 14)	61%	0%	18%	15%	6%	0%	0%
Ceiling Insulation (n = 195)	63%	1%	17%	10%	5%	3%	1%
Clothes Washer (n = 544)	62%	2%	20%	12%	4%	0%	0%
Heat Pump (n = 229)	32%	0%	25%	27%	15%	1%	0%
Ductless Heat Pump (n = 386)	25%	2%	28%	33%	11%	1%	0%
Other Insulation (n = 79)	57%	3%	19%	8%	5%	5%	3%
Gas Fireplace (n = 352)	70%	1%	22%	1%	0%	0%	5%
Gas Furnace (n = 310)	31%	2%	16%	23%	1%	2%	24%
Residential Solar PV (n = 469)	61%	1%	20%	10%	8%	1%	0%
Smart Thermostat (n = 963)	59%	2%	13%	7%	4%	1%	15%
Spa Cover (n = 136)	53%	1%	6%	33%	5%	1%	0%
Windows (n = 703)	59%	1%	20%	8%	2%	1%	8%
Moderate Income Track (n = 190)	32%	3%	28%	28%	7%	2%	0%
Residential - Washington (n = 233)	0%	0%	0%	0%	0%	0%	100%
Residential - Oregon (n = 4,147)	57%	1%	20%	15%	6%	1%	0%
Residential - Total (n = 4,380)	54%	1%	19%	14%	5%	1%	5%
Oregon Overall (Census)	41%	4%	25%	13%	6%	5%	n/a
Oregon & SW WA Overall (Census)	44%	4%	27%	14%	6%	5%	7%

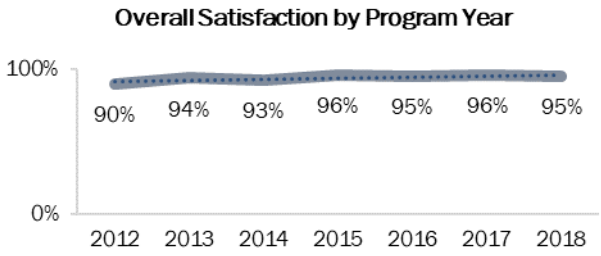
4.2 Program Experience by Measure and Quota Group

4.2.1 Clothes Washer

Clothes washer participants (*n* = 544) showed high levels of satisfaction with all facets of the experience (Table 16), consistent with previous years.[8]

Table 16. Satisfaction with Program Experience

Satisfaction Item	
Overall experience (n = 541)	95%
Performance of new measure (n = 540)	95%
Ease of finding eligible products (n = 505)	94%
Incentive application form (n = 536)	91%
Time it took to receive incentive (n = 533)	84%



Note: Don't know and no response excluded from analysis. Note that dotted line in figure represents trend in overall satisfaction over time.

About one-third of clothes washer participants (31%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

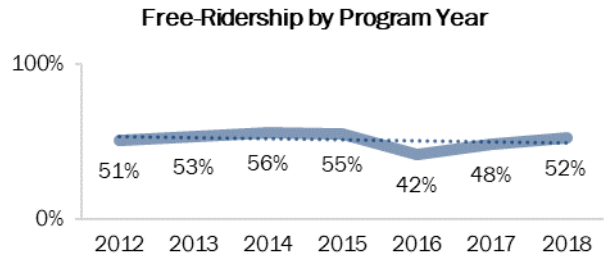
Participants most commonly paid for their clothes washer with cash or a credit card (Table 17). Free-ridership was 52%, consistent with previous years, and 9% of respondents reported spillover (Table 18).

Table 17. Payment Method (n = 544)

Method	Percent
Cash	24%
Credit card	71%
Loan	0%
On-bill financing	2%
Vendor financing	4%
Non-Energy Trust incentives	1%
Other	0%
Don't know or no answer	1%

Table 18. Free-Ridership and Spillover [a]

Index	Rate
Free-ridership	52%
Any spillover	10%



[a] Note that dotted line in figure represents trend in free-ridership over time.

[8] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

Of all items assessed, the Energy Trust incentive had the greatest influence on participants' purchase decision (Table 19).

Table 19. Influence Ratings

Influence Level	Energy Trust Incentive (n = 540)	Information from Energy Trust (n = 540)	Retail Salesperson (n = 542)
High	49%	30%	44%
Medium	25%	19%	15%
Low	25%	32%	35%
Don't know or no answer	1%	19%	7%

Participants most commonly said that, without the program, they would have done exactly the same thing they did with the program (Table 20).[9]

Table 20. Actions Would Have Taken without Program Support (n = 544)

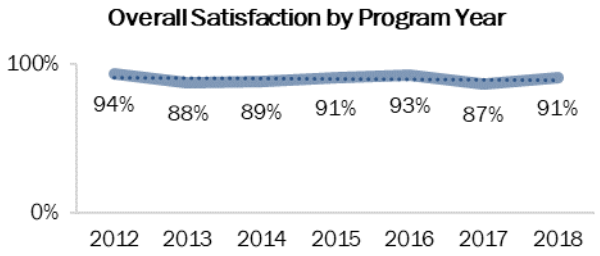
Action	Percent
Would not have purchased or installed the measure	2%
Would have postponed purchase and installation for a year or more	6%
Would have purchased or installed a less expensive alternative	22%
Would have purchased or installed a less energy efficient alternative	10%
Would have done exactly the same thing	61%

4.2.2 Ceiling Insulation

Ceiling insulation participants (*n* = 195) showed high levels of satisfaction with all facets of the experience except for the time it took to receive the incentive (Table 21), consistent with previous years.

Table 21. Satisfaction with Program and Contractor Experience

Satisfaction Item	Percent
Program-related Experience	
Overall experience (n = 192)	91%
Comfort of home after measure (n = 193)	94%
Incentive application form (n = 162)	91%
Time it took to receive incentive (n = 165)	65%
Contractor-related Experience	
Overall Experience (n = 157)	92%
Quality of Installation (n = 154)	94%
Information on Energy Trust Incentive (n = 152)	85%
Communication (n = 157)	92%
Completion of Incentive Paperwork (n = 118)	87%



Note: Don't know and no response excluded from analysis. Note that dotted line in figure represents trend in overall satisfaction over time.

[9] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

Most (14 of 16) ceiling insulation participants who received an instant incentive recalled receiving it. About half of ceiling insulation participants (52%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

Most participants reported it was easy to find and select a contractor (Table 22).[10] Participants most commonly found their contractor through an online source or word of mouth. Most (68%) *did not* report considering Energy Trust's list of approved trade allies, in large measure because they were not aware of the list. Of those who *did* consider the list, somewhat more than half (58%) considered the star rating system. About half (52%) of participants got two to three contractor bids to do the work, and most of the others got just one bid (39% of all ceiling insulation participants). A large majority (84%) reported that the contractor did at least some of the application paperwork.

Table 22. Contractor Selection and Use

Response	Percent
Ease of Finding and Selecting Contractor (n = 160)	
Easy (4 or 5)	87%
Not easy or difficult (3)	11%
Difficult (1 or 2)	1%
Don't know or no answer	1%
How Participant Found Contractor (n = 160) (Multiple Responses Allowed)	
Word of mouth	23%
Energy Trust website or service	14%
Online (Yelp, Angie's List, etc.)	34%
Retailer or manufacturer	4%
Govt./non-profit event or referral	1%
Prior use or acquaintance	10%
Advertisement	6%
Utility	4%
Miscellaneous or don't know	6%

Response	Percent
Considered List of Approved Trade Allies (n = 159)	
Yes	32%
No	41%
Was not aware of list	26%
Don't know or no answer	1%
If Considered List: Considered Star Rating System (n = 44)	
Yes	58%
No	14%
Was not aware of system	26%
Don't know or no answer	3%
Number of Contractor Bids (n = 156)	
One bid	39%
Two to three bids	52%
More than three bids	4%

[10] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

Participants most commonly paid for their ceiling insulation with cash or a credit card (Table 23). Free-ridership was 40%, consistent with previous years, and 9% of participants reported spillover (Table 24).

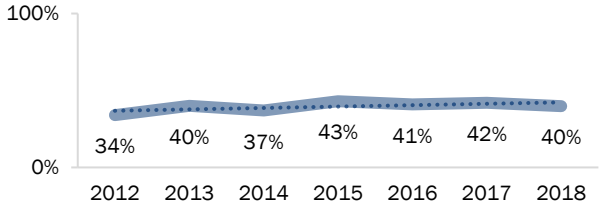
Table 23. Payment Method (n = 195)

Method	Percent
Cash	59%
Credit card	36%
Loan	1%
On-bill financing	0%
Vendor financing	1%
Non-Energy Trust incentives	0%
Other	3%
Don't know or no answer	0%

Table 24. Free-Ridership and Spillover[a]

Index	Percent
Free-ridership	40%
Any spillover	9%

Free-Ridership by Program Year



[a] Note that dotted line in figure represents trend in free-ridership over time.

Of all items assessed, the contractor had the greatest influence on their purchase decision (Table 25).

Table 25. Influence Ratings

Influence Level	Energy Trust Incentive (n = 195)	Information from Energy Trust (n = 195)	Contractor (n = 160)
High	63%	40%	68%
Medium	17%	19%	13%
Low	18%	23%	14%
Don't know or no answer	2%	17%	5%

Participants most commonly said that, without the program, they would have done exactly the same thing as they did with the program support (Table 26).

Table 26. Actions Would Have Taken without Program Support (n = 194)

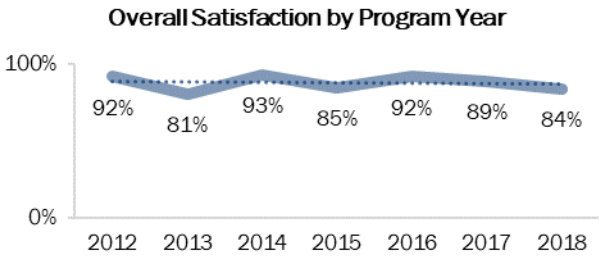
Action	Percent
Would not have had the services or work performed	7%
Would have postponed purchase and installation for a year or more	18%
Would have purchased or installed a smaller amount or quantity	18%
Would have made fewer energy efficient improvements	15%
Would have done exactly the same thing	47%

4.2.3 Wall Insulation

Wall insulation participants (*n* = 26) showed moderate levels of satisfaction with all facets of the experience (Table 27), consistent with previous years.[11]

Table 27. Satisfaction with Program and Contractor Experience

Satisfaction Item	Count
Program-related Experience	
Overall experience (n = 26)	22
Comfort of home after measure (n = 26)	22
Incentive application form (n = 16)	15
Time it took to receive incentive (n = 20)	14
Contractor-related Experience	
Overall Experience (n = 26)	22
Quality of Installation (n = 26)	24
Information on Energy Trust Incentive (n = 26)	25
Communication (n = 26)	21
Completion of Incentive Paperwork (n = 21)	20



Note: Don't know and no response excluded from analysis. Note that dotted line in figure represents trend in overall satisfaction over time.

Half (2 of 4) of the participants who received an instant incentive recalled receiving it. Somewhat more than half of participants (14 of 26) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

Most participants reported it was easy to find and select a contractor (Table 28).[12] Participants most commonly found their contractor through the Energy Trust website or another online source. About half (12 of 26) reported considering Energy Trust's list of approved trade allies. Of those who considered the list, about one-third (8 of 26) considered the star rating system. Somewhat more than half (16 of 26) of the participants got two to three contractor bids to do the work, and most of the others got just one bid (7 participant). Twenty-two participants reported that the contractor did at least some of the application paperwork.

[11] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).
[12] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

Table 28. Contractor Selection and Use

Response	Count
Ease of Finding and Selecting Contractor (n = 26)	
Easy (4 or 5)	24
Not easy or difficult (3)	2
Difficult (1 or 2)	0
Don't know or no answer	0
How Participant Found Contractor (n = 26) (Multiple Responses Allowed)	
Word of mouth	5
Energy Trust website or service	6
Online (Yelp, Angie's List, etc.)	9
Retailer or manufacturer	0
Govt./non-profit event or referral	0
Prior use or acquaintance	1
Advertisement	2
Utility	1
Miscellaneous or don't know	0

Response	Count
Considered List of Approved Trade Allies (n = 26)	
Yes	12
No	13
Was not aware of list	0
Don't know or no answer	0
If Considered List: Considered Star Rating System (n = 12)	
Yes	8
No	2
Was not aware of system	1
Don't know or no answer	0
Number of Contractor Bids (n = 26)	
One bid	7
Two to three bids	16
More than three bids	1

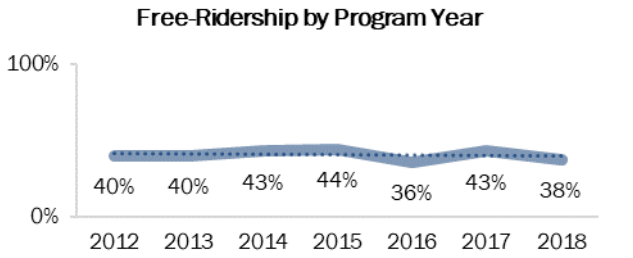
Participants most commonly paid for their insulation with cash or a credit card (Table 29). Free-ridership was 38%, consistent with previous years, and four participants reported spillover (Table 30).

Table 29. Payment Method (n = 26)

Method	Count
Cash	18
Credit card	6
Loan	0
On-bill financing	3
Vendor financing	0
Non-Energy Trust incentives	0
Other	0
Don't know or no answer	0

Table 30. Free-Ridership and Spillover[a]

Index	Rate (FR) or Count (SO)
Free-ridership	38%
Any spillover	4



[a] Note that dotted line in figure represents trend in free-ridership over time.

Of all items assessed, the participant's contractor had the greatest influence on their purchase decision (Table 31).

Table 31. Influence Ratings

Influence Level	Energy Trust Incentive (n = 24)	Information from Energy Trust (n = 24)	Contractor (n = 26)
High	12	13	17
Medium	2	4	3
Low	9	3	6
Don't know or no answer	0	0	0

Participants most commonly said that, without the program, they would have done exactly the same thing they did through the program (Table 32).

Table 32. Actions Would Have Taken without Program Support (n = 24)

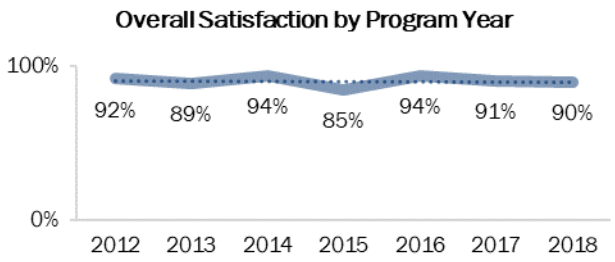
Action	Count
Would not have had the services or work performed	2
Would have postponed purchase and installation for a year or more	5
Would have purchased or installed a smaller amount or quantity	3
Would have made fewer energy efficient improvements	3
Would have done exactly the same thing	13

4.2.4 Floor Insulation

Floor insulation participants (*n* = 53) showed high levels of satisfaction with all facets of the experience except for the time it took to receive the incentive (Table 33), consistent with previous years.[13]

Table 33. Satisfaction with Program and Contractor Experience

Satisfaction Item	Percent
Program-related Experience	
Overall experience (n = 52)	90%
Comfort of home after measure (n = 52)	92%
Incentive application form (n = 42)	79%
Time it took to receive incentive (n = 42)	67%
Contractor-related Experience	
Overall Experience (n = 50)	89%
Quality of Installation (n = 50)	94%
Information on Energy Trust Incentive (n = 50)	72%
Communication (n = 49)	92%
Completion of Incentive Paperwork (n = 34)	89%



Note: Don't know and no response excluded from analysis. Note that dotted line in figure represents trend in overall satisfaction over time.

[13] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

Most (7 of 8) of the participants who received an instant incentive recalled receiving it. About two-thirds of participants (63%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

Most participants reported it was easy to find and select a contractor (Table 34).[14] Participants most commonly found their contractor through word of mouth. Most (65%) *did not* report considering Energy Trust's list of approved trade allies, in large measure because they were not aware of the list. Of those who *did* consider the list, about two-thirds (68%) considered the star rating system. About half (53%) of participants got two to three contractor bids to do the work, and most of the others got just one bid (33% of all participants). A large majority (79%) reported that the contractor did at least some of the application paperwork.

Table 34. Contractor Selection and Use

Response	Percent
Ease of Finding and Selecting Contractor (n = 51)	
Easy (4 or 5)	74%
Not easy or difficult (3)	10%
Difficult (1 or 2)	12%
Don't know or no answer	4%
How Participant Found Contractor (n = 51) (Multiple Responses Allowed)	
Word of mouth	33%
Energy Trust website or service	21%
Online (Yelp, Angie's List, etc.)	20%
Retailer or manufacturer	0%
Govt./non-profit event or referral	3%
Prior use or acquaintance	7%
Advertisement	6%
Utility	6%
Miscellaneous or don't know	4%

Response	Percent
Considered List of Approved Trade Allies (n = 51)	
Yes	35%
No	50%
Was not aware of list	15%
Don't know or no answer	1%
If Considered List: Considered Star Rating System (n = 16)	
Yes	68%
No	11%
Was not aware of system	20%
Don't know or no answer	0%
Number of Contractor Bids (n = 51)	
Got one contractor bid	33%
Got two to three bids	53%
Got more than three bids	10%
Contractor did application paperwork	79%

Participants most commonly paid for their floor insulation with cash or a credit card (Table 35). Free-ridership was 35%, consistent with previous years, and 21% of participants reported spillover (Table 36).

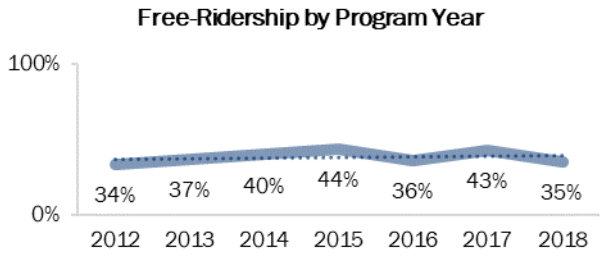
[14] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

Table 35. Payment Method (n = 53)

Method	Percent
Cash	55%
Credit card	36%
Loan	0%
On-bill financing	6%
Vendor financing	0%
Non-Energy Trust incentives	0%
Other	3%
Don't know or no answer	0%

Table 36. Free-Ridership and Spillover[a]

Index	Percent
Free-ridership	35%
Any spillover	21%



[a] Note that dotted line in figure represents trend in free-ridership over time.

Of all items assessed, the participant's contractor had the greatest influence on their purchase decision (Table 37).

Table 37. Influence Ratings

Influence Level	Energy Trust Incentive (n = 52)	Information from Energy Trust (n = 52)	Contractor (n = 52)
High	58%	42%	64%
Medium	27%	24%	11%
Low	14%	29%	18%
Don't know or no answer	0%	6%	7%

Participants most commonly said that, without the program, they would have done exactly the same thing they did with the program (Table 38).

Table 38. Actions Would Have Taken without Program Support (n = 52)

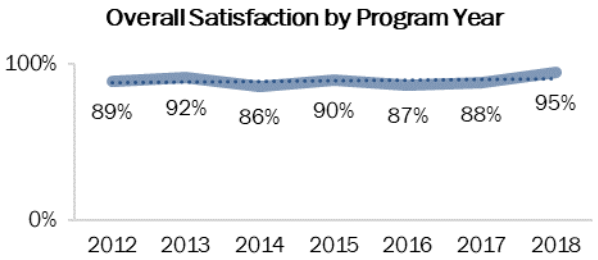
Action	Percent
Would not have had the services or work performed	7%
Would have postponed purchase and installation for a year or more	23%
Would have purchased or installed a smaller amount or quantity	10%
Would have made fewer energy efficient improvements	24%
Would have done exactly the same thing	43%

4.2.5 Ducted Heat Pump

Ducted heat pump participants (*n* = 229) showed high levels of satisfaction with all facets of the experience except for the time it took to reactive the incentive (Table 39), consistent with previous years.[15]

Table 39. Satisfaction with Program and Contractor Experience

Satisfaction Item	Percent
Program-related Experience	
Overall experience (n = 226)	95%
Comfort of home after measure (n = 224)	97%
Performance of new measure (n = 218)	95%
Incentive application form (n = 142)	96%
Time it took to receive incentive (n = 157)	79%
Information received (n = 76)	93%
Contractor-related Experience	
Overall Experience (n = 226)	91%
Ease of selecting a contractor (n = 217)	92%
Quality of Installation (n = 228)	88%
Information on Energy Trust Incentive (n = 223)	88%
Communication (n = 227)	90%
Completion of Incentive Paperwork (n = 153)	88%



Note: Don't know and no response excluded from analysis. Note that dotted line in figure represents trend in overall satisfaction over time.

Most (84%) of the participants who received an instant incentive recalled receiving it. About two-fifths of participants (40%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

About two-thirds (69%) of participants reported that their new heat pump replaced an operational heating system; 5% said the new heat pump did not replace any existing system (Table 31).

Table 40. Equipment Replaced by Ducted Heat Pump (n = 229)

Response	Percent, All Respondents	Percent, Those Who Replaced Old System
Replaced operational heating system	69%	73%
Replaced non-operational heating system	26%	27%
Did not replace another heating system	5%	n/a
Don't know or no answer	1%	n/a

Most participants reported it was easy to find and select a contractor (Table 41).[16] Participants most commonly found their contractor through prior use or acquaintance or word of mouth. Most (66%) *did not* report

[15] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).
[16] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

considering Energy Trust's list of approved trade allies, in large measure because they were not aware of the list. Of those who *did* consider the list, more than two-thirds (68%) considered the star rating system. About half (48%) of participants got two to three contractor bids to do the work, and most of the others got just one bid (37% of all participants). Nearly all (92%) reported that the contractor did at least some of the application paperwork.

Table 41. Contractor Selection and Use

Response	Percent
Ease of Finding and Selecting Contractor (n = 229)	
Easy (4 or 5)	83%
Not easy or difficult (3)	11%
Difficult (1 or 2)	2%
Don't know or no answer	4%
How Participant Found Contractor (n = 229) (Multiple Responses Allowed)	
Word of mouth	24%
Energy Trust website or service	11%
Online (Yelp, Angie's List, etc.)	13%
Retailer or manufacturer	5%
Govt./non-profit event or referral	2%
Prior use or acquaintance	27%
Advertisement	4%
Utility	4%
Miscellaneous or don't know	9%

Response	Percent
Considered List of Approved Trade Allies (n = 229)	
Yes	34%
No	41%
Was not aware of list	25%
Don't know or no answer	1%
If Considered List: Considered Star Rating System (n = 59)	
Yes	68%
No	9%
Was not aware of system	18%
Don't know or no answer	4%
Number of Contractor Bids (n = 221)	
One bid	37%
Two to three bids	48%
More than three bids	13%

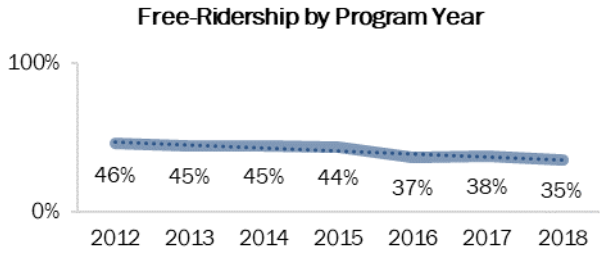
Participants most commonly paid for their ducted heart pump with cash or a credit card (Table 42). Free-ridership was 35%, consistent with previous years, and 12% of participants reported spillover (Table 43).

Table 42. Payment Method (n = 229)

Method	Percent
Cash	62%
Credit card	23%
Loan	0%
On-bill financing	6%
Vendor financing	5%
Non-Energy Trust incentives	4%
Other	5%
Don't know or no answer	0%

Table 43. Free-Ridership and Spillover[a]

Index	Percent
Free-ridership	35%
Any spillover	12%



[a] Note that dotted line in figure represents trend in free-ridership over time.

Of all items assessed, the contractor had the greatest influence on their purchase decision (Table 44).

Table 44. Influence Ratings

Influence Level	Energy Trust Incentive (n = 226)	Information from Energy Trust (n = 226)	Contractor (n = 228)
High	65%	43%	79%
Medium	18%	17%	10%
Low	17%	20%	9%
Don't know or no answer	0%	20%	2%

Participants most commonly said that, without the program, they would have done exactly the same thing as they did with the program support (Table 45).

Table 45. Actions Would Have Taken without Program Support (n = 221)

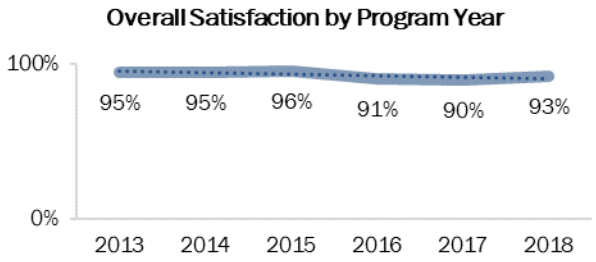
Action	Percent
Would not have purchased or installed the measure	8%
Would have postponed purchase and installation for a year or more	15%
Would have purchased or installed a less expensive alternative	28%
Would have purchased or installed a less energy efficient alternative	16%
Would have installed a different type of heating system	5%
Would have done exactly the same thing	44%

4.2.6 Ductless Heat Pump

Ductless heat pump participants (*n* = 386) showed high levels of satisfaction with all facets of the experience except for the time it took to receive the incentive (Table 46), consistent with previous years.[17]

Table 46. Satisfaction with Program and Contractor Experience

Satisfaction Item	Percent
Program-related Experience	
Overall experience (n = 383)	93%
Comfort of home after measure (n = 375)	96%
Performance of new measure (n = 378)	95%
Incentive application form (n = 253)	91%
Time it took to receive incentive (n = 263)	74%
Contractor-related Experience	
Overall Experience (n = 386)	93%
Quality of Installation (n = 386)	95%
Information on Energy Trust Incentive (n = 366)	88%
Communication (n = 384)	92%
Completion of Incentive Paperwork (n = 254)	91%



Note: Don't know and no response excluded from analysis. Note that dotted line in figure represents trend in overall satisfaction over time.

Most (90%) of the participants who received an instant incentive recalled receiving it. About two-fifths of participants (39%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

Most participants reported it was easy to find and select a contractor (Table 47).[18] Participants most commonly found their contractor through word of mouth. Most (76%) *did not* report considering Energy Trust's list of approved trade allies, in large measure because they were not aware of the list. Of those who *did* consider the list, over half (57%) considered the star rating system. About half (48%) of participants got two to three contractor bids to do the work, and most of the others got just one bid (42% of all participants). Nearly all (91%) reported that the contractor did at least some of the application paperwork.

[17] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).
[18] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

Table 47. Contractor Selection and Use

Response	Percent
Ease of Finding and Selecting Contractor (n = 386)	
Easy (4 or 5)	86%
Not easy or difficult (3)	7%
Difficult (1 or 2)	2%
Don't know or no answer	5%
How Participant Found Contractor (n = 386) (Multiple Responses Allowed)	
Word of mouth	36%
Energy Trust website or service	10%
Online (Yelp, Angie's List, etc.)	16%
Retailer or manufacturer	6%
Govt./non-profit event or referral	5%
Prior use or acquaintance	9%
Advertisement	10%
Utility	4%
Miscellaneous or don't know	3%

Response	Percent
Considered List of Approved Trade Allies (n = 386)	
Yes	24%
No	45%
Was not aware of list	28%
Don't know or no answer	3%
If Considered List: Considered Star Rating System (n =88)	
Yes	57%
No	22%
Was not aware of system	15%
Don't know or no answer	6%
Number of Contractor Bids (n = 373)	
One bid	42%
Two to three bids	48%
More than three bids	8%

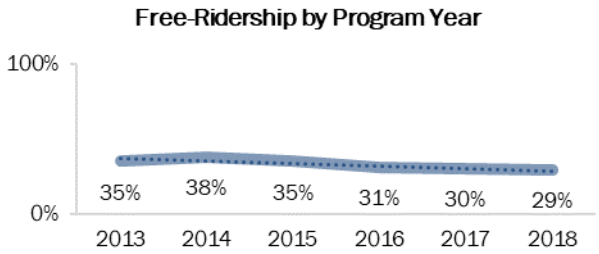
Participants most commonly paid for their ductless heat pump with cash or a credit card (Table 48). Free-ridership was 29%, consistent with previous years, and 6% of participants reported spillover (Table 49).

Table 48. Payment Method (n = 386)

Method	Percent
Cash	59%
Credit card	27%
Loan	0%
On-bill financing	5%
Vendor financing	5%
Non-Energy Trust incentives	4%
Other	4%
Don't know or no answer	1%

Table 49. Free-Ridership and Spillover[a]

Index	Percent
Free-ridership	29%
Any spillover	6%



[a] Note that dotted line in figure represents trend in free-ridership over time.

Of all items assessed, the Energy Trust Incentive had the greatest influence on their purchase decision (Table 50).

Table 50. Influence Ratings

Influence Level	Energy Trust Incentive (n = 379)	Information from Energy Trust (n = 379)	Contractor (n = 385)
High	75%	42%	74%
Medium	13%	19%	11%
Low	10%	20%	14%
Don't know or no answer	1%	19%	1%

Participants most commonly said that, without the program, they would have done exactly the same thing as they did through the program (Table 51).

Table 51. Actions Would Have Taken without Program Support (n = 376)

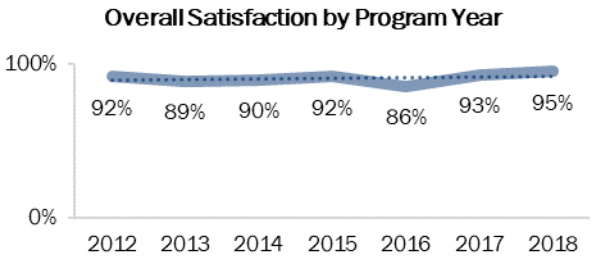
Action	Percent
Would not have purchased or installed the measure	18%
Would have postponed purchase and installation for a year or more	25%
Would have purchased or installed a less expensive alternative	15%
Would have purchased or installed a less energy efficient alternative	8%
Would have installed a different type of heating system	7%
Would have done exactly the same thing	35%

4.2.7 Gas Fireplace

Gas fireplace participants (*n* = 352) showed high levels of satisfaction with all facets of the experience except for the time it took to receive the incentive (Table 52), consistent with previous years.[19]

Table 52. Satisfaction with Program and Contractor Experience

Satisfaction Item	Percent
Program-related Experience	
Overall experience (n = 346)	95%
Comfort of home after measure (n = 340)	98%
Performance of new measure (n = 341)	97%
Ease of finding eligible products (n = 321)	93%
Incentive application form (n = 314)	84%
Time it took to receive incentive (n = 326)	72%
Information received (n = 118)	90%
Contractor-related Experience	
Overall Experience (n = 348)	91%
Ease of selecting a contractor (n = 340)	92%
Quality of Installation (n = 348)	94%
Information on Energy Trust Incentive (n = 306)	81%
Communication (n = 348)	89%
Completion of Incentive Paperwork (n = 256)	88%



Note: Don't know and no response excluded from analysis. Note that dotted line in figure represents trend in overall satisfaction over time.

Most (14 of 19) participants who received an instant incentive recalled receiving it. About one-third of participants (35%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

Two-thirds (65%) of participants reported that their gas fireplace replaced a wood burning fireplace or stove; 7% said it did not replace anything (Table 44).

Table 53. Equipment Replaced by Gas Fireplace (n = 352)

Response	Percent, All Respondents	Percent, Those Who Replaced Old System
Replaced wood burning fireplace or stove	65%	71%
Replaced old gas fireplace unit	24%	26%
Replaced old electric fireplace unit	2%	2%
Did not replace anything	7%	n/a
Other	2%	2%

[19] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

Most participants reported it was easy to find and select a contractor (Table 54).[20] Participants most commonly found their contractor through word of mouth or retailers/manufacturers. Most (70%) *did not* report considering Energy Trust's list of approved trade allies, in large measure because they were not aware of the list. Of those who *did* consider the list, about half (54%) considered the star rating system. About one-third (31%) of participants got two to three contractor bids to do the work, and most of the others got just one bid (61% of all participants). A large majority (79%) reported that the contractor did at least some of the application paperwork.

Table 54. Contractor Selection and Use

Response	Percent
Ease of Finding and Selecting Contractor (n = 352)	
Easy (4 or 5)	87%
Not easy or difficult (3)	6%
Difficult (1 or 2)	1%
Don't know or no answer	5%
How Participant Found Contractor (n = 352) (Multiple Responses Allowed)	
Word of mouth	20%
Energy Trust website or service	8%
Online (Yelp, Angie's List, etc.)	9%
Retailer or manufacturer	19%
Govt./non-profit event or referral	1%
Prior use or acquaintance	5%
Advertisement	15%
Utility	17%
Miscellaneous or don't know	6%

Response	Percent
Considered List of Approved Trade Allies (n = 352)	
Yes	30%
No	43%
Was not aware of list	25%
Don't know or no answer	2%
If Considered List: Considered Star Rating System (n = 98)	
Yes	54%
No	18%
Was not aware of system	25%
Don't know or no answer	2%
Number of Contractor Bids (n = 334)	
One bid	61%
Two to three bids	31%
More than three bids	4%

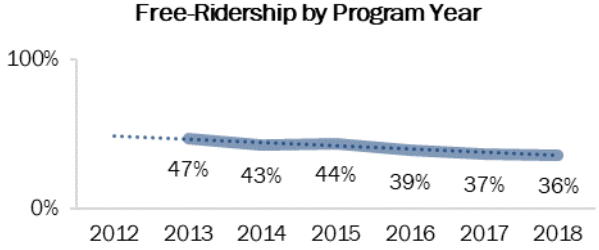
Participants most commonly paid for their gas fireplace with cash or a credit card (Table 55). Free-ridership was 35%, consistent with previous years, and 12% of participants reported spillover (Table 56).

Table 55. Payment Method (n = 352)

Method	Percent
Cash	38%
Credit card	59%
Loan	0%
On-bill financing	2%
Vendor financing	2%
Non-Energy Trust incentives	2%
Other	2%
Don't know or no answer	1%

Table 56. Free-Ridership and Spillover[a]

Index	Percent
Free-ridership	36%
Any spillover	9%



[a] Note that dotted line in figure represents trend in free-ridership over time.

[20] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

Of all items assessed, the energy efficiency rating of the fireplace had the greatest influence on their purchase decision (Table 57), higher even than the appearance of the fireplace.

Table 57. Influence Ratings

Influence Level	Energy Trust Incentive (n = 374)	Info. and Materials from Energy Trust (n = 348)	Retail Salesperson (n = 352)	Participant's Contractor (n = 352)	Appearance of Gas Fireplace (n = 352)	Energy Efficiency Rating of Fireplace (n = 352)
High	46%	27%	68%	44%	82%	86%
Medium	24%	22%	16%	13%	11%	9%
Low	30%	31%	13%	33%	5%	4%
Don't know or no answer	0%	21%	2%	10%	2%	1%

Participants most commonly said that, without the program, they would have done exactly the same thing they did through the program (Table 58).

Table 58. Actions Would Have Taken without Program Support (n = 374)

Action	Percent
Would not have purchased or installed the measure	7%
Would have postponed purchase and installation for a year or more	16%
Would have purchased or installed a less expensive alternative	14%
Would have purchased or installed a less energy efficient alternative	8%
Would have installed a different type of heating system	3%
Would have done exactly the same thing	56%

4.2.8 Gas Furnace

Gas furnace participants (*n* = 310) showed high levels of satisfaction with all facets of the experience except for the time it took to receive the incentive (Table 59).[21] Gas furnaces have not previously been assessed through Fast Feedback, so there are no past years of data to compare to.

Table 59. Satisfaction with Program and Contractor Experience

Satisfaction Item	Percent
Program-related Experience	
Overall experience (n = 307)	94%
Comfort of home after measure (n = 287)	96%
Performance of new measure (n = 285)	98%
Incentive application form (n = 158)	91%
Time it took to receive incentive (n = 159)	73%
Information received (n = 88)	88%
Contractor-related Experience	
Overall Experience (n = 307)	91%
Ease of selecting a contractor (n = 304)	90%
Quality of Installation (n = 308)	93%
Information on Energy Trust Incentive (n = 275)	83%
Communication (n = 307)	91%
Completion of Incentive Paperwork (n = 167)	91%

94% of Gas Furnace participants reported satisfaction with their overall experience.

Note: Don't know and no response excluded from analysis.

Most (75%) of the participants who received an instant incentive recalled receiving it. About one-third of participants (33%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

Three in five (59%) participants reported that their old heating system was still operating when they replaced it with the gas furnace; 2% said the new gas furnace did not replace any existing system (Table 60).

Table 60. Equipment Replaced by Gas Furnace (n = 310)

Response	Percent, All Respondents	Percent, Those Who Replaced Old System
Replaced operational heating system	59%	60%
Replaced non-operational heating system	39%	40%
Did not replace another heating system	2%	n/a
Don't know or no answer	1%	n/a

Most participants reported it was easy to find and select a contractor (Table 61).[22] Participants most commonly found their contractor through prior use or acquaintance of word of mouth. Most (75%) *did not* report

[21] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).
[22] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

considering Energy Trust's list of approved trade allies, in large measure because they were not aware of the list. Of those who *did* consider the list, over half (57%) considered the star rating system. About half (49%) of participants got two to three contractor bids to do the work, and most of the others got just one bid (37% of all participants). A large majority (86%) reported that the contractor did at least some of the application paperwork.

Table 61. Contractor Selection and Use

Response	Percent
Ease of Finding and Selecting Contractor (n = 310)	
Easy (4 or 5)	83%
Not easy or difficult (3)	11%
Difficult (1 or 2)	4%
Don't know or no answer	2%
How Participant Found Contractor (n = 310) (Multiple Responses Allowed)	
Word of mouth	24%
Energy Trust website or service	9%
Online (Yelp, Angie's List, etc.)	16%
Retailer or manufacturer	8%
Govt./non-profit event or referral	0%
Prior use or acquaintance	24%
Advertisement	5%
Utility	7%
Miscellaneous or don't know	6%

Response	Percent
Considered List of Approved Trade Allies (n = 310)	
Yes	25%
No	45%
Was not aware of list	27%
Don't know or no answer	2%
If Considered List: Considered Star Rating System (n = 63)	
Yes	57%
No	11%
Was not aware of system	28%
Don't know or no answer	4%
Number of Contractor Bids (n = 300)	
One bid	37%
Two to three bids	49%
More than three bids	12%

Participants most commonly paid for their gas furnace with cash or a credit card (Table 62). Free-ridership was 35%, and 12% of participants reported spillover (Table 63).

Table 62. Payment Method (n = 310)

Method	Percent
Cash	54%
Credit card	27%
Loan	0%
On-bill financing	7%
Vendor financing	5%
Non-Energy Trust incentives	6%
Other	4%
Don't know or no answer	1%

Table 63. Free-Ridership and Spillover

Index	Percent
Free-ridership	46%
Any spillover	9%

Of all items assessed, the participant's contractor had the greatest influence on their purchase decision (Table 64).

Table 64. Influence Ratings

Influence Level	Energy Trust Incentive (n = 287)	Information from Energy Trust (n = 287)	Contractor (n = 310)
High	51%	34%	68%
Medium	14%	13%	10%
Low	31%	32%	19%
Don't know or no answer	5%	21%	3%

Participants most commonly said that, without the program, they would have done exactly the same thing as they did through the program (Table 65).

Table 65. Actions Would Have Taken without Program Support (n = 281)

Action	Percent
Would not have purchased or installed the measure	3%
Would have postponed purchase and installation for a year or more	9%
Would have purchased or installed a less expensive alternative	22%
Would have purchased or installed a less energy efficient alternative	17%
Would have installed a different type of heating system	2%
Would have done exactly the same thing	55%

4.2.9 Boiler

Boiler participants (*n* = 14) showed high levels of satisfaction with all facets of the experience (Table 66).[23] Gas boilers have not previously been assessed through Fast Feedback, so there are no past years of data to compare to.

Table 66. Satisfaction with Program and Contractor Experience

Program Element	Count
Program-related Experience	
Overall experience (n = 14)	13
Comfort of home after measure (n = 14)	13
Performance of new measure (n = 14)	13
Ease of finding eligible products (n = 11)	8
Incentive application form (n = 12)	9
Time it took to receive incentive (n = 14)	12
Information received (n = 2)	1
Contractor-related Experience	
Overall Experience (n = 14)	12
Ease of selecting a contractor (n = 12)	9
Information on Energy Trust Incentive (n = 12)	11
Communication (n = 14)	12
Completion of Incentive Paperwork (n = 10)	9

13 of 14 Boiler participants reported satisfaction with their overall experience.

Note: Don't know and no response excluded from analysis.

Two of the 14 boiler participants reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

Half (7 of 14) of the participants reported that their old heating system was still operating when they replaced it with the new boiler; all new boilers replaced an existing system (Table 58).

Table 67. Equipment Replaced by Boiler (n = 14)

Response	Count
Replaced operational heating system	7
Replaced non-operational heating system	7
Did not replace another heating system	0
Don't know or no answer	0

Most participants reported it was easy to find and select a contractor (Table 68).[24] Participants most commonly found their contractor through prior use or acquaintance, online, or word of mouth. Most (9 of 14) *did not* report considering Energy Trust's list of approved trade allies, in large measure because they were not aware

[23] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).
[24] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

of the list. Of the four who *did* consider the list, three considered the star rating system. More than two-thirds (10 of 14) reported that the contractor did at least some of the application paperwork.

Table 68. Contractor Selection and Use

Response	Count
Ease of Finding and Selecting Contractor (n = 14)	
Easy (4 or 5)	9
Not easy or difficult (3)	4
Difficult (1 or 2)	0
Don't know or no answer	0
How Participant Found Contractor (n = 14) (Multiple Responses Allowed)	
Word of mouth	3
Energy Trust website or service	1
Online (Yelp, Angie's List, etc.)	3
Retailer or manufacturer	0
Govt./non-profit event or referral	0
Prior use or acquaintance	4
Advertisement	2
Utility	1
Miscellaneous or don't know	0

Response	Count
Considered List of Approved Trade Allies (n = 14)	
Yes	4
No	8
Was not aware of list	1
Don't know or no answer	0
If Considered List: Considered Star Rating System (n = 4)	
Yes	3
No	1
Was not aware of system	0
Don't know or no answer	0
Number of Contractor Bids	
Boiler participants were not asked the number of contractors they received bids from.	

Participants most commonly paid for their boiler with cash or a credit card (Table 69). Free-ridership was 66% and no participants reported spillover (Table 70).

Table 69. Payment Method (n = 14)

Method	Count
Cash	10
Credit card	3
Loan	0
On-bill financing	1
Vendor financing	0
Non-Energy Trust incentives	0
Other	0
Don't know or no answer	0

Table 70. Free-Ridership and Spillover

Index	Rate (FR) or Count (SO)
Free-ridership	66%
Any spillover	0

Of all items assessed, the participant's contractor had the greatest influence on their purchase decision (Table 71).

Table 71. Influence Ratings

Influence Level	Energy Trust Incentive (n = 14)	Information from Energy Trust (n = 14)	Contractor (n = 14)
High	2	1	9
Medium	3	2	0
Low	9	9	5
Don't know or no answer	0	0	0

Participants most commonly said that, without the program, they would have done exactly the same thing they did through the program (Table 72).

Table 72. Actions Would Have Taken without Program Support (n = 14)

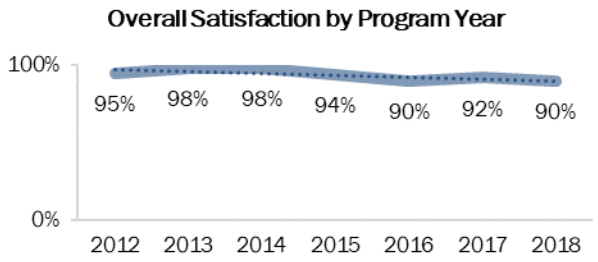
Action	Count
Would not have purchased or installed the measure	0
Would have postponed purchase and installation for a year or more	0
Would have purchased or installed a less expensive alternative	1
Would have purchased or installed a less energy efficient alternative	1
Would have installed a different type of heating system	0
Would have done exactly the same thing	13

4.2.10 Residential Solar PV

Residential solar participants (*n* = 469) showed high levels of satisfaction with all facets of the experience (Table 73), consistent with previous years.[25]

Table 73. Satisfaction with Program and Contractor Experience

Satisfaction Item	Percent
Program-related Experience	
Overall experience (n = 465)	90%
Performance of new measure (n = 447)	95%
Energy Trust's inspection (n = 426)	91%
Contractor-related Experience	
Overall Experience (n = 464)	90%
Quality of Installation (n = 464)	92%
Information on Energy Trust Incentive (n = 453)	89%
Communication (n = 464)	86%



Note: Don't know and no response excluded from analysis. Note that dotted line in figure represents trend in overall satisfaction over time.

[25] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

About two-fifths of participants (44%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

Most participants reported it was easy to find and select a contractor (Table 74).[26] Participants most commonly found their contractor through word of mouth. Most (65%) *did not* report considering Energy Trust's list of approved trade allies, in large measure because they were not aware of the list. Of those who *did* consider the list, about half (53%) considered the star rating system. About two-fifths (40%) of participants got two to three contractor bids to do the work, and most of the others got just one bid (46% of all participants).

Table 74. Contractor Selection and Use

Response	Percent
Ease of Finding and Selecting Contractor (n = 469)	
Easy (4 or 5)	81%
Not easy or difficult (3)	12%
Difficult (1 or 2)	4%
Don't know or no answer	3%
How Participant Found Contractor (n = 469) (Multiple Responses Allowed)	
Word of mouth	25%
Energy Trust website or service	16%
Online (Yelp, Angie's List, etc.)	16%
Retailer or manufacturer	8%
Govt./non-profit event or referral	10%
Prior use or acquaintance	5%
Advertisement	5%
Utility	3%
Miscellaneous or don't know	12%

Response	Percent
Considered List of Approved Trade Allies (n = 469)	
Yes	35%
No	36%
Was not aware of list	26%
Don't know or no answer	3%
If Considered List: Considered Star Rating System (n = 170)	
Yes	53%
No	20%
Was not aware of system	21%
Don't know or no answer	6%
Number of Contractor Bids (n = 457)	
Got one contractor bid	46%
Got two to three bids	40%
Got more than three bids	11%

Participants most commonly paid for their solar PV system with cash or a credit card (Table 75). Free-ridership was 19% and 12% of participants reported spillover (Table 76). Energy Trust does not consider free riders in its renewable energy programs, so free-ridership has not been calculated in past years.

Table 75. Payment Method (n = 469)

Method	Percent
Cash	51%
Credit card	10%
Loan	0%
On-bill financing	30%
Vendor financing	3%
Non-Energy Trust incentives	13%
Other	4%
Don't know or no answer	0%

Table 76. Free-Ridership and Spillover

Index	Percent
Free-ridership	19%
Any spillover	12%

[26] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

Of all items assessed, the Energy Trust incentive had the greatest influence on their purchase decision (Table 77).

Table 77. Influence Ratings

Influence Level	Energy Trust Incentive (n = 469)	Information and Materials from Energy Trust (n = 469)	Contractor (n = 469)	Information from a Solar Workshop (n = 469)
High	79%	41%	74%	11%
Medium	15%	19%	11%	4%
Low	6%	23%	13%	19%
Don't know or no answer	1%	16%	2%	66%

Participants most commonly said that, without the program, they would not have purchased or installed the system (Table 78).

Table 78. Actions Would Have Taken without Program Support (n = 467)

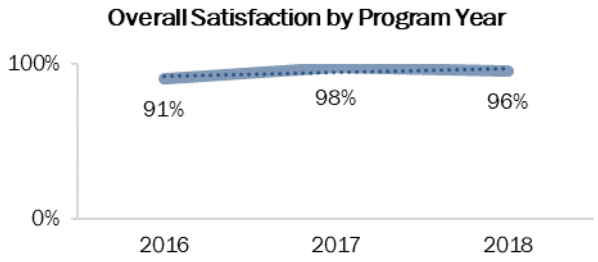
Action	Percent
Would not have purchased or installed the system	40%
Would have postponed purchase and installation for a year or more	24%
Would have purchased or installed a smaller amount or quantity	12%
Would have done exactly the same thing	20%

4.2.11 Smart Thermostat

Smart Thermostat participants (*n* = 963) showed high levels of satisfaction with most facets of the experience (Table 79), consistent with previous years.[27]

Table 79. Satisfaction with Program and Contractor Experience

Satisfaction Item	Percent/Count
Program-related Experience	
Overall experience (n = 957)	96%
Comfort of home after measure (n = 950)	96%
Performance of new measure (n = 954)	96%
Ease of finding eligible products (n = 925)	92%
Incentive application form (n = 932)	92%
Time it took to receive incentive (n = 927)	84%
Information received (n = 440)	94%
Contractor-related Experience	
Overall Experience (n = 10)	10
Ease of selecting a contractor (n = 13)	12
Quality of Installation (n = 12)	12
Information on Energy Trust Incentive (n = 13)	11
Communication (n = 9)	8
Completion of Incentive Paperwork (n = 1) [b]	0



Note: Don't know and no response excluded from analysis. Note that dotted line in figure represents trend in overall satisfaction over time.

[b] Only one thermostat participant reported on satisfaction with this item.

About half of participants (48%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

All participants reported that their smart thermostat was still installed.

Most participants that used a contractor to install their smart thermostat reported it was easy to find and select a contractor (Table 80).[28] Participants most commonly found their contractor through miscellaneous sources or did not recall the source. Nearly all (93%) *did not* report considering Energy Trust's list of approved trade allies, in large measure because they were not aware of the list. Of those who *did* consider the list, all considered the star rating system. One of the 27 participants who used a contractor reported that the contractor did at least some of the application paperwork.

[27] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).
[28] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

Table 80. Contractor Selection and Use

Response	Count
Ease of Finding and Selecting Contractor (n = 27)	
Easy (4 or 5)	9
Not easy or difficult (3)	1
Difficult (1 or 2)	0
Don't know or no answer	17
How Participant Found Contractor (n = 27) (Multiple Responses Allowed)	
Word of mouth	5
Energy Trust website or service	0
Online (Yelp, Angie's List, etc.)	2
Retailer or manufacturer	0
Govt./non-profit event or referral	0
Prior use or acquaintance	2
Advertisement	0
Utility	1
Miscellaneous or don't know	14

Response	Count
Considered List of Approved Trade Allies (n = 27)	
Yes	2
No	15
Was not aware of list	9
Don't know or no answer	1
If Considered List: Considered Star Rating System (n = 2)	
Yes	2
No	0
Was not aware of system	0
Don't know or no answer	0
Number of Contractor Bids	
None of the surveyed thermostat participants reported the number of contractors they received bids from.	

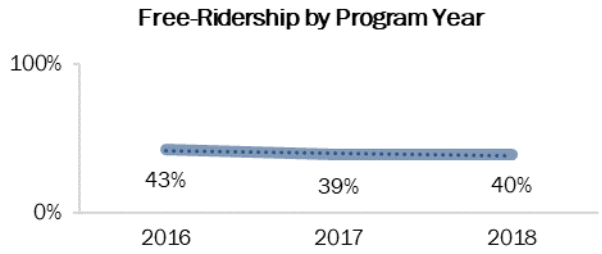
Participants most commonly paid for their thermostat with cash or a credit card (Table 81). Free-ridership was 40%, consistent with previous years, and 8% of participants reported spillover (Table 82).

Table 81. Payment Method (n = 963)

Method	Percent
Cash	21%
Credit card	77%
Loan	0%
On-bill financing	0%
Vendor financing	0%
Non-Energy Trust incentives	0%
Other	1%
Don't know or no answer	1%

Table 82. Free-Ridership and Spillover [a]

Index	Percent
Free-ridership	40%
Any spillover	8%



[a] Note that dotted line in figure represents trend in free-ridership over time.

Of all items assessed, the Energy Trust incentive had the greatest influence on their purchase decision (Table 83).

Table 83. Influence Ratings

Influence Level	Energy Trust Incentive (n = 963)	Information from Energy Trust (n = 963)	Retail Salesperson (n = 962)	Contractor (n = 27)
High	63%	38%	12%	12%
Medium	17%	21%	6%	6%
Low	20%	31%	56%	56%
Don't know or no answer	1%	10%	26%	26%

Participants most commonly said that, without the program, they would have done exactly the same thing they did through the program (Table 84).

Table 84. Actions Would Have Taken without Program Support (n = 956)

Action	Count
Would not have purchased or installed the measure	15%
Would have postponed purchase and installation for a year or more	24%
Would have purchased or installed a less expensive alternative	15%
Would have purchased or installed a less energy efficient alternative	5%
Would have done exactly the same thing	42%

4.2.12 Smart Thermostat - Rebate

Smart thermostat participants (*n* = 805) that applied for a standard rebate after purchasing a thermostat showed high levels of satisfaction with most facets of the experience, similar to smart thermostats overall (Table 85).[29]

Table 85. Satisfaction with Program and Contractor Experience

Satisfaction Item	Percent/Count
Program-related Experience	
Overall experience (n = 802)	96%
Comfort of home after measure (n = 797)	96%
Performance of new measure (n = 797)	96%
Ease of finding eligible products (n = 774)	91%
Incentive application form (n = 791)	91%
Time it took to receive incentive (n = 785)	95%
Information received (n = 369)	93%
Contractor-related Experience	
Overall Experience (n = 9)	9
Ease of selecting a contractor (n = 12)	11
Quality of Installation (n = 11)	11
Information on Energy Trust Incentive (n = 11)	9
Communication (n = 8)	7
Completion of Incentive Paperwork (n = 1) [a]	0

Note: Don't know and no response excluded from analysis.

[a] Only one thermostat participant reported on satisfaction with this item.

About half of participants (46%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

All participants reported that their smart thermostat was still installed.

Most participants that used a contractor to install their smart thermostat reported it was easy to find and select a contractor (Table 86).[30] Participants most commonly found their contractor through miscellaneous sources or did not recall the source. Nearly all (92%) *did not* report considering Energy Trust's list of approved trade allies, in large measure because they were not aware of the list. Of those who *did* consider the list, all considered the star rating system. One of the 24 participants who used a contractor reported that the contractor did at least some of the application paperwork.

[29] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).
[30] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

Table 86. Contractor Selection and Use

Response	Count
Ease of Finding and Selecting Contractor (n = 24)	
Easy (4 or 5)	8
Not easy or difficult (3)	1
Difficult (1 or 2)	0
Don't know or no answer	15
How Participant Found Contractor (n = 24) (Multiple Responses Allowed)	
Word of mouth	4
Energy Trust website or service	0
Online (Yelp, Angie's List, etc.)	2
Retailer or manufacturer	0
Govt./non-profit event or referral	0
Prior use or acquaintance	5
Advertisement	0
Utility	1
Miscellaneous or don't know	12

Response	Count
Considered List of Approved Trade Allies (n = 24)	
Yes	2
No	13
Was not aware of list	8
Don't know or no answer	1
If Considered List: Considered Star Rating System (n = 2)	
Yes	2
No	0
Was not aware of system	0
Don't know or no answer	0
Number of Contractor Bids	
None of the surveyed thermostat participants reported the number of contractors they received bids from.	

Smart thermostat rebate participants most commonly paid for their thermostat with cash or a credit card (Table 87). Free-ridership was 39%, and 8% of participants reported spillover, similar to smart thermostats overall (Table 88).

Table 87. Payment Method (n = 805)

Method	Percent
Cash	21%
Credit card	77%
Loan	0%
On-bill financing	<1%
Vendor financing	<1%
Non-Energy Trust incentives	<1%
Other	1%
Don't know or no answer	1%

Table 88. Free-Ridership and Spillover

Index	Percent
Free-ridership	39%
Any spillover	8%

Of all items assessed, the Energy Trust incentive had the greatest influence on their purchase decision (Table 89).

Table 89. Influence Ratings

Influence Level	Energy Trust Incentive (n = 805)	Information from Energy Trust (n = 805)	Retail Salesperson (n = 804)	Contractor (n = 24)
High	63%	39%	13%	4
Medium	17%	22%	6%	1
Low	19%	32%	56%	7
Don't know or no answer	1%	10%	0%	0

Participants most commonly said that, without the program, they would have done exactly the same thing they did through the program (Table 90).

Table 90. Actions Would Have Taken without Program Support (n = 802)

Action	Count
Would not have purchased or installed the measure	15%
Would have postponed purchase and installation for a year or more	23%
Would have purchased or installed a less expensive alternative	15%
Would have purchased or installed a less energy efficient alternative	5%
Would have done exactly the same thing	42%

4.2.13 Smart Thermostat – Instant Coupon

Smart thermostat participants (*n* = 65) that purchased a thermostat after receiving a redeemable coupon from Energy Trust showed high levels of satisfaction with most facets of the experience, similar to smart thermostats overall (Table 91).[31]

Table 91. Satisfaction with Program Experience

Satisfaction Item	Percent
Overall experience (n = 63	94%
Comfort of home after measure (n = 64)	92%
Performance of new measure (n = 65)	90%
Ease of finding eligible products (n = 60)	97%
Incentive application form (n = 55)	96%
Time it took to receive incentive (n = 55)	93%
Information received (n = 31)	97%

Note: Don't know and no response excluded from analysis.

About half of participants (49%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

All participants reported that their smart thermostat was still installed.

There were no instant coupon participants that used a contractor to install their thermostat.

[31] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

Participants most commonly paid for their thermostat with a credit card or cash (Table 92). Free-ridership was 35%, only slightly lower than smart thermostats overall, and 10% of participants reported spillover (Table 93).

Table 92. Payment Method (n = 65)

Method	Percent
Cash	18%
Credit card	80%
Loan	0%
On-bill financing	0%
Vendor financing	0%
Non-Energy Trust incentives	0%
Other	1%
Don't know or no answer	1%

Table 93. Free-Ridership and Spillover

Index	Percent
Free-ridership	35%
Any spillover	10%

Of all items assessed, the Energy Trust incentive had the greatest influence on their purchase decision (Table 94).

Table 94. Influence Ratings

Influence Level	Energy Trust Incentive (n = 65)	Information from Energy Trust (n = 65)	Retail Salesperson (n = 65)
High	72%	38%	20%
Medium	12%	31%	5%
Low	14%	19%	45%
Don't know or no answer	1%	12%	30%

Participants most commonly said that, without the program, they would have done exactly the same thing they did through the program (Table 95).

Table 95. Actions Would Have Taken without Program Support (n = 65)

Action	Count
Would not have purchased or installed the measure	14%
Would have postponed purchase and installation for a year or more	31%
Would have purchased or installed a less expensive alternative	9%
Would have purchased or installed a less energy efficient alternative	2%
Would have done exactly the same thing	49%

4.2.14 Spa Cover

Spa cover participants (*n* = 136) showed high levels of satisfaction with all facets of the experience except the time it took to receive the incentive (Table 96).[32] Spa covers have not previously been assessed through Fast Feedback, so there are no past years of data to compare to.

Table 96. Satisfaction with Program and Contractor Experience

Satisfaction Item	Percent/Count
Program-related Experience	
Overall experience (n = 135)	92%
Performance of new measure (n = 134)	96%
Ease of finding eligible products (n = 44)	88%
Incentive application form (n = 133)	89%
Time it took to receive incentive (n = 130)	76%
Information received (n = 30)	93%
Contractor-related Experience	
Overall Experience (n = 1)	1
Ease of selecting a contractor (n = 2)	2
Quality of Installation (n = 1)	1
Information on Energy Trust Incentive (n = 1)	1
Communication (n = 1)	1
Completion of Incentive Paperwork (n = 1)	1

92% of Spa Cover participants reported satisfaction with their overall experience.

Note: Don't know and no response excluded from analysis.

About one-third of participants (28%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

One of two participants that used a contractor reported it was easy to find and select a contractor (Table 97).[33] One participant found their contractor through prior use or acquaintance. None reported considering Energy Trust's list of approved trade allies. One of the two participants reported that the contractor did at least some of the application paperwork.

[32] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).
[33] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

Table 97. Contractor Selection and Use

Response	Count
Ease of Finding and Selecting Contractor (n= 2)	
Easy (4 or 5)	1
Not easy or difficult (3)	0
Difficult (1 or 2)	0
Don't know or no answer	1
How Participant Found Contractor (n = 2) (Multiple Responses Allowed)	
Word of mouth	0
Energy Trust website or service	0
Online (Yelp, Angie's List, etc.)	0
Retailer or manufacturer	0
Govt./non-profit event or referral	0
Prior use or acquaintance	1
Advertisement	0
Utility	0
Miscellaneous or don't know	1

Response	Count
Considered List of Approved Trade Allies (n = 2)	
Yes	0
No	2
Was not aware of list	0
Don't know or no answer	0
If Considered List: Considered Star Rating System	
Not applicable – None of the surveyed spa cover participants considered the list of approved trade allies.	
Number of Contractor Bids	
None of the surveyed spa cover participants reported the number of contractors they received bids from.	

Participants most commonly paid for their spa cover with cash or a credit card (Table 98). Free-ridership was 34% and 13% of participants reported spillover (Table 99).

Table 98. Payment Method (n = 136)

Method	Percent
Cash	32%
Credit card	64%
Loan	0%
On-bill financing	0%
Vendor financing	0%
Non-Energy Trust incentives	0%
Other	3%
Don't know or no answer	1%

Table 99. Free-Ridership and Spillover

Index	Percent
Free-ridership	34%
Any spillover	13%

Of all items assessed, the participant's contractor had the greatest influence on their purchase decision (Table 100).

Table 100. Influence Ratings

Influence Level	Energy Trust Incentive (n = 136)	Information and Materials from Energy Trust (n = 136)	Retail Salesperson (n = 136)	Contractor (n = 2)
High	70%	49%	78%	83%
Medium	20%	16%	10%	0%
Low	8%	24%	9%	0%
Don't know or no answer	1%	11%	3%	17%

Participants most commonly said that, without the program, they would have purchased or installed a less expensive alternative spa cover (Table 101).

Table 101. Actions Would Have Taken without Program Support (n = 136)

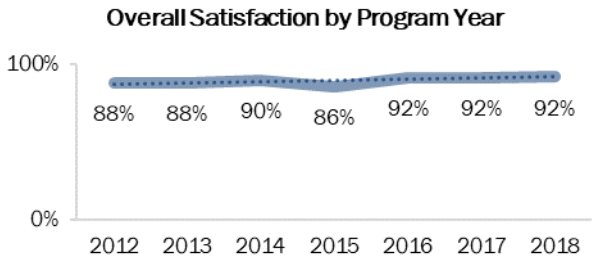
Action	Count
Would not have purchased or installed the measure	5%
Would have postponed purchase and installation for a year or more	4%
Would have purchased or installed a less expensive alternative	43%
Would have purchased or installed a less energy efficient alternative	24%
Would have done exactly the same thing	28%

4.2.15 Windows

Windows participants (*n* = 703) showed high levels of satisfaction with all facets of the experience except for the time it to receive the incentive (Table 102), consistent with previous years.[34]

Table 102. Satisfaction with Program and Contractor Experience

Satisfaction Item	Percent
Program-related Experience	
Overall experience (n = 699)	92%
Comfort of home after measure (n = 683)	97%
Incentive application form (n = 585)	88%
Time it took to receive incentive (n = 645)	79%
Information received (n = 226)	87%
Contractor-related Experience	
Overall Experience (n = 696)	90%
Ease of selecting a contractor (n = 630)	89%
Quality of Installation (n = 698)	94%
Information on Energy Trust Incentive (n = 656)	82%
Communication (n = 693)	89%
Completion of Incentive Paperwork (n = 558)	91%



Note: Don't know and no response excluded from analysis. Note that dotted line in figure represents trend in overall satisfaction over time.

Most (92%) of the participants who received an instant incentive recalled receiving it. About one-third of participants (30%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

Most participants reported it was easy to find and select a contractor (Table 103).[35] Participants most commonly found their contractor through word of mouth. Most (84%) *did not* report considering Energy Trust's list of approved trade allies, in large measure because they were not aware of the list. Of those who *did* consider the list, about three-fifths (61%) considered the star rating system. About half (50%) of participants

[34] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).
[35] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

got two to three contractor bids to do the work, and most of the others got just one bid (39% of all participants). A large majority (85%) reported that the contractor did at least some of the application paperwork.

Table 103. Contractor Selection and Use

Response	Percent
Ease of Finding and Selecting Contractor (n = 699)	
Easy (4 or 5)	82%
Not easy or difficult (3)	10%
Difficult (1 or 2)	5%
Don't know or no answer	4%
How Participant Found Contractor (n = 700) (Multiple Responses Allowed)	
Word of mouth	27%
Energy Trust website or service	3%
Online (Yelp, Angie's List, etc.)	20%
Retailer or manufacturer	5%
Govt./non-profit event or referral	7%
Prior use or acquaintance	13%
Advertisement	19%
Utility	2%
Miscellaneous or don't know	5%

Response	Percent
Considered List of Approved Trade Allies (n = 700)	
Yes	16%
No	55%
Was not aware of list	28%
Don't know or no answer	4%
If Considered List: Considered Star Rating System (n = 121)	
Yes	61%
No	12%
Was not aware of system	21%
Don't know or no answer	5%
Number of Contractor Bids	
One bid	39%
Two to three bids	50%
More than three bids	8%

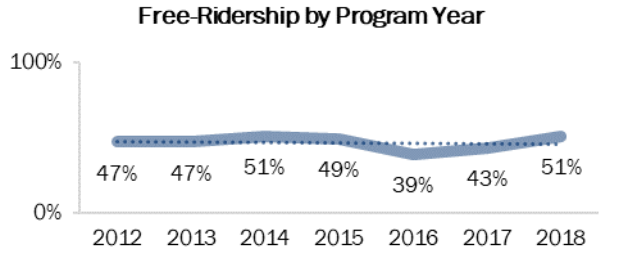
Participants most commonly paid for their windows with cash or a credit card (Table 104). Free-ridership was 51%, consistent with previous years, and 9% of participants reported spillover (Table 105).

Table 104. Payment Method (n = 703)

Method	Percent
Cash	60%
Credit card	23%
Loan	0%
On-bill financing	6%
Vendor financing	4%
Non-Energy Trust incentives	8%
Other	3%
Don't know or no answer	1%

Table 105. Free-Ridership and Spillover [a]

Index	Percent
Free-ridership	51%
Any spillover	9%



[a] Note that dotted line in figure represents trend in free-ridership over time.

Of all items assessed, the participant's contractor had the greatest influence on their purchase decision (Table 106).

Table 106. Influence Ratings

Influence Level	Energy Trust Incentive (n = 701)	Information and Materials from Energy Trust (n = 701)	Contractor (n = 700)
High	39%	27%	63%
Medium	20%	16%	10%
Low	40%	38%	24%
Don't know or no answer	2%	20%	3%

Participants most commonly said that, without the program, they would have done exactly the same thing they did through the program (Table 107).

Table 107. Actions Would Have Taken without Program Support (n = 700)

Action	Count
Would not have had the services or work performed	2%
Would have postponed purchase and installation for a year or more	11%
Would have purchased or installed a less expensive alternative	13%
Would have purchased or installed a smaller amount or quantity	6%
Would have purchased or installed a less energy efficient alternative	8%
Would have made fewer energy efficient improvements	8%
Would have done exactly the same thing	62%

4.2.16 Residential Washington

Residential Washington participants (*n* = 233) installed a variety of gas measures (Table 109) and showed high levels of satisfaction with all facets of the program experience (Table 108), consistent with previous years.[36]

Table 108. Satisfaction with Program and Contractor Experience

Satisfaction Item	Percent
Program-related Experience	
Overall experience (n = 231)	94%
Comfort of home after measure (n = 224)	98%
Performance of new measure (n = 181)	97%
Ease of finding eligible products (n = 106)	97%
Incentive application form (n = 174)	93%
Time it took to receive incentive (n = 195)	77%
Information received (n = 80)	88%
Contractor-related Experience	
Overall Experience (n = 141)	91%
Ease of selecting a contractor (n = 137)	85%
Quality of Installation (n = 141)	95%
Information on Energy Trust Incentive (n = 126)	75%
Communication (n = 141)	91%
Completion of Incentive Paperwork (n = 100)	90%

Note: Don't know and no response excluded from analysis.

94% of Residential Washington participants reported satisfaction with their overall experience.

Table 109. Measures Installed by Residential Washington Participants (n = 233)

Measure	Count	Percent
Ceiling Insulation	2	1%
Gas Fireplace	18	8%
Gas Furnace	75	32%
Thermostat	93	40%
Wall Insulation	2	1%
Windows	43	18%
Residential Washington Total	233	100%

Most (13 of 21) of the Residential Washington participants who received an instant incentive (all for a gas fireplace) recalled receiving it. About two-fifths of participants (39%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

Of the 75 participants who installed a gas furnace, more than two-thirds (70%) said the furnace replaced an operational heating system (Table 110).

Table 110. Equipment Replaced by Gas Furnace (n = 75)

Response	Percent
Replaced operational heating system	70%
Replaced non-operational heating system	30%
Did not replace another heating system	0%
Don't know or no answer	0%

[36] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

Of the 18 participants who installed a gas fireplace, two-thirds said they replace a wood burning fireplace or stove and most of the rest said they replaced an old gas fireplace unit (Table 111).

Table 111. Equipment Replaced by Gas Fireplace (n = 18)

Response	Count
Replaced wood burning fireplace or stove	12
Replaced old gas fireplace unit	5
Replaced old electric fireplace unit	0
Did not replace anything	1
Other	0

Most participants reported it was easy to find and select a contractor (79%).[37] Participants most commonly found their contractor through word of mouth. Most (78%) *did not* report considering Energy Trust's list of approved trade allies, in large measure because they were not aware of the list. Of those who *did* consider the list, about three-fifths (61%) considered the star rating system. About two-fifths (42%) of participants got two to three contractor bids to do the work, and most of the others got just one bid (45% of all participants). A large majority (90%) reported that the contractor did at least some of the application paperwork (Table 112).

Table 112. Contractor Selection and Use

Response	Percent
Ease of Finding and Selecting Contractor (n = 143)	
Easy (4 or 5)	79%
Not easy or difficult (3)	11%
Difficult (1 or 2)	8%
Don't know or no answer	3%
How Participant Found Contractor (n = 143) (Multiple Responses Allowed)	
Word of mouth	23%
Energy Trust website or service	8%
Online (Yelp, Angie's List, etc.)	14%
Retailer or manufacturer	8%
Govt./non-profit event or referral	3%
Prior use or acquaintance	18%
Advertisement	17%
Utility	3%
Miscellaneous or don't know	6%

Response	Percent
Considered List of Approved Trade Allies (n = 143)	
Yes	22%
No	56%
Was not aware of list	21%
Don't know or no answer	1%
If Considered List: Considered Star Rating System (n = 26)	
Yes	61%
No	5%
Was not aware of system	27%
Don't know or no answer	7%
Number of Contractor Bids (n = 136)	
One bid	45%
Two to three bids	42%
More than three bids	12%

[37] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

Participants most commonly paid for their equipment with cash or a credit card (Table 113). Free-ridership was 48% and 6% of participants reported spillover (Table 114).

Table 113. Payment Method (n = 233)

Method	Percent
Cash	43%
Credit card	46%
Loan	0%
On-bill financing	3%
Vendor financing	2%
Non-Energy Trust incentives	6%
Other	3%
Don't know or no answer	1%

Table 114. Free-Ridership and Spillover

Index	Percent
Free-ridership	48%
Any spillover	6%

Of all items assessed, the appearance and energy efficiency rating of their fireplace had the greatest influence on their purchase decision (Table 115).

Table 115. Influence Ratings

Influence Level	Energy Trust Incentive (n = 226)	Information and Materials from Energy Trust (n = 226)	Retail Salesperson (n = 111)	Contractor (n = 143)	Appearance of Gas Fireplace (n = 18)	Energy Efficiency Rating of Fireplace (n = 18)
High	46%	28%	14%	51%	80%	73%
Medium	20%	14%	6%	12%	14%	6%
Low	34%	40%	55%	33%	6%	21%
Don't know or no answer	1%	18%	25%	3%	0%	0%

Participants most commonly said that, without the program, they would have done exactly the same thing they did through the program (Table 116).

Table 116. Actions Would Have Taken without Program Support (n = 221)

Action	Count
Would not have purchased or installed the measure	7%
Would not have had the services or work performed	0%
Would have postponed purchase and installation for a year or more	17%
Would have purchased or installed a less expensive alternative	14%
Would have purchased or installed a smaller amount or quantity	2%
Would have purchased or installed a less energy efficient alternative	8%
Would have made fewer energy efficient improvements	1%
Would have installed a different type of heating system	1%
Would have done exactly the same thing	54%

4.2.17 Moderate Income Track

Moderate income track participants (*n* = 190) installed a variety of measures (Table 118) and showed high levels of satisfaction with all facets of the experience except for the time it took to receive the incentive (Table 117).[38] The moderate income track has not previously been assessed through Fast Feedback, so there are no past years of data to compare to.

Table 117. Satisfaction with Program and Contractor Experience

Satisfaction Item	Percent
Program-related Experience	
Overall experience (n = 188)	96%
Comfort of home after measure (n = 184)	97%
Performance of new measure (n = 160)	98%
Incentive application form (n = 141)	98%
Time it took to receive incentive (n = 127)	80%
Information received (n = 76)	96%
Contractor-related Experience	
Overall Experience (n = 189)	93%
Ease of selecting a contractor (n = 183)	95%
Quality of Installation (n = 188)	93%
Information on Energy Trust Incentive (n = 172)	93%
Communication (n = 188)	90%
Completion of Incentive Paperwork (n = 163)	94%
Ease of selecting a contractor (n = 183)	96%

Note: Don't know and no response excluded from analysis.

96% of Moderate Income participants reported satisfaction with their overall experience.

Table 118. Measures Installed by Moderate Income Track Participants (n = 233)

Measure	Count	Percent
Ceiling Insulation	17	9%
Ductless Heat Pump	60	32%
Floor Insulation	1	1%
Gas Furnace	89	47%
Heat Pump	21	11%
Wall Insulation	2	1%
All Measures	190	100%

Two-thirds of the participants who installed a gas furnace and three-quarters of those who installed a heat pump said the new heating system replaced an operational one (Table 119).

Table 119. Equipment Replaced by Gas Fireplace and Heat Pump

Response	Percent, Gas Furnace (n = 89)	Count, Heat Pump (n = 21)
Replaced operational heating system	66%	16
Replaced non-operational heating system	33%	5
Did not replace another heating system	0%	0
Don't know or no answer	2%	0

[38] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

Somewhat fewer than half of participants (45%) reported having obtained some sort of information from Energy Trust before taking the incented energy efficiency action.

Most participants reported it was easy to find and select a contractor (Table 120).[39] Participants most commonly found their contractor through word of mouth. Most (70%) *did not* report considering Energy Trust's list of approved trade allies, in large measure because they were not aware of the list. Of those who *did* consider the list, about two-thirds (65%) considered the star rating system. About two-fifths (44%) of participants got two to three contractor bids to do the work, and most of the others got just one bid (43% of all participants). A large majority (91%) reported that the contractor did at least some of the application paperwork.

Table 120. Contractor Selection and Use

Response	Percent
Ease of Finding and Selecting Contractor (n = 190)	
Easy (4 or 5)	88%
Not easy or difficult (3)	6%
Difficult (1 or 2)	0%
Don't know or no answer	6%
How Participant Found Contractor (n = 190) (Multiple Responses Allowed)	
Word of mouth	25%
Energy Trust website or service	13%
Online (Yelp, Angie's List, etc.)	14%
Retailer or manufacturer	8%
Govt./non-profit event or referral	1%
Prior use or acquaintance	17%
Advertisement	5%
Utility	8%
Miscellaneous or don't know	8%

Response	Percent
Considered List of Approved Trade Allies (n = 190)	
Yes	30%
No	43%
Was not aware of list	24%
Don't know or no answer	3%
If Considered List: Considered Star Rating System (n = 48)	
Yes	65%
No	8%
Was not aware of system	26%
Don't know or no answer	1%
Number of Contractor Bids (n = 187)	
One bid	43%
Two to three bids	44%
More than three bids	10%

Participants most commonly paid for their equipment with cash or a credit card, although financing was more common than in other residential groups (Table 121). Free-ridership was 33% and 8% of participants reported spillover (Table 122).

[39] Easy was defined as a rating of 4 or 5 on a scale from 1 (very difficult) to 5 (very easy).

Table 121. Payment Method (n = 190)

Method	Percent
Cash	51%
Credit card	23%
Loan	0%
On-bill financing	7%
Vendor financing	13%
Non-Energy Trust incentives	1%
Other	7%
Don't know or no answer	1%

Table 122. Free-Ridership and Spillover

Index	Percent
Free-ridership	33%
Any spillover	8%

Of all items assessed, a retail salesperson had the greatest influence on their purchase decision (Table 123). The influence of the Energy Trust incentive was also relatively high.

Table 123. Influence Ratings

Influence Level	Energy Trust Incentive (n = 190)	Information and Materials from Energy Trust (n = 190)	Retail Salesperson (n = 190)
High	72%	46%	74%
Medium	8%	10%	6%
Low	16%	20%	18%
Don't know or no answer	4%	24%	2%

Participants most commonly said that, without the program, they would have done exactly the same thing they did through the program (Table 124).

Table 124. Actions Would Have Taken without Program Support (n = 190)

Action	Count
Would not have purchased or installed the measure	13%
Would not have had the services or work performed	1%
Would have postponed purchase and installation for a year or more	20%
Would have purchased or installed a less expensive alternative	15%
Would have purchased or installed a smaller amount or quantity	1%
Would have purchased or installed a less energy efficient alternative	13%
Would have made fewer energy efficient improvements	4%
Would have installed a different type of heating system	5%
Would have done exactly the same thing	34%

5. Nonresidential Combined Survey Results

Analysis of the survey results revealed details about participants' experiences. Some key high-level findings are:

- The Energy Trust incentive was the most consistently highly rated influencer, followed by information received from Energy Trust.
- Nonresidential respondents generally showed high levels of satisfaction with their program experience, including their experience with the program representative, with levels generally consistent with those observed in prior years. Satisfaction levels varied somewhat among quota groups.
- Overall, 3% of nonresidential respondents reported spillover.

The following subsections show responses by quota group. Any reported difference between quota groups implies the difference was statistically significant by chi-square, at $p \leq .05$.[40]

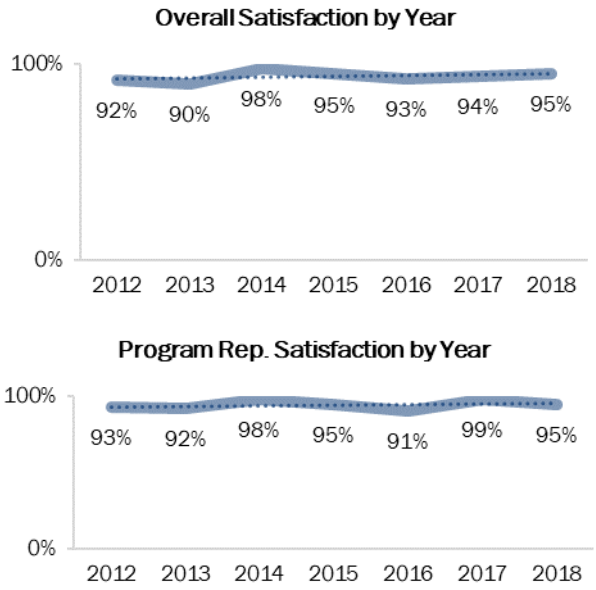
[40] The research team does not report on differences involving measure group samples of less than 15 because of low precision in those cases.

5.1 Existing Buildings - Oregon

Existing Buildings participants (*n* = 331) showed high levels of satisfaction with all facets of the experience except for the time it took to receive the incentive (Table 125), consistent with previous years.[41]

Table 125. Satisfaction by Program Element

Program Element	Pct. [a]
Program Level Satisfaction, By Program Element	
Overall experience (n = 316)	95%
Performance of new measure (n = 293)	97%
Interaction with program rep. (n = 290)	95%
Ease of applying for the incentive (n = 238)	89%
Incentive amount (n = 248)	90%
Time to receive incentive (n = 241)	78%
The scheduling process for services (n = 63)	95%
Technical services (n = 51)	90%
Overall Experience, by Program Track	
Custom (n = 10)	8 of 10
Lighting (n = 131)	93%
Standard (n = 113)	98%
Direct Install (n = 62)	97%
Interaction with Program Rep., by Program Track	
Custom (n = 10)	10 of 10
Lighting (n = 116)	94%
Standard (n = 101)	96%
Direct Install (n = 63)	95%



Note: "Don't know" and "no response" excluded from analysis. Dotted line in figure represents trend in overall satisfaction over time.

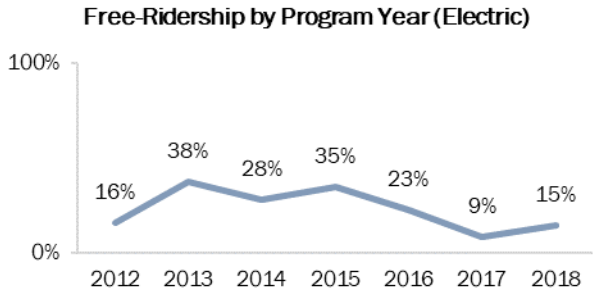
[a] For overall experience in the Custom track, count is shown rather than percentage because total is less than 30.

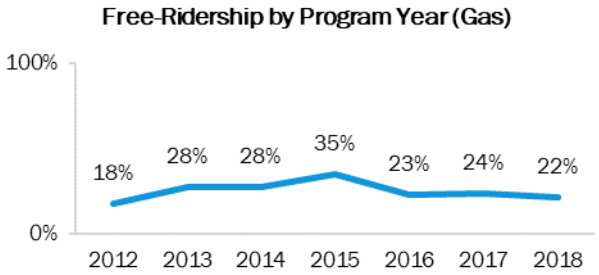
[41] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

The savings-weighted free-ridership rate was 15% for electric measures and 22% for gas measures, similar to previous years; 13 respondents reported spillover (Table 126).

Table 126. Free-Ridership and Spillover

Free-Ridership			
Program Track	Low	Mid	High
Free-Ridership - Electric			
Custom	7%	11%	15%
Lighting	13%	15%	18%
Standard	15%	17%	19%
Direct Install	12%	13%	15%
Combined	13%	15%	17%
Free-Ridership – Gas			
Custom	13%	15%	17%
Standard	28%	30%	31%
Combined	21%	22%	24%
Spillover (Count)			
		Count	Pct.
Any spillover		13	4%





A large majority (97%) of respondents indicated they received some type of information or materials from Energy Trust. Fewer (16%) received technical services, such as a technical study. Of all items assessed, the Energy Trust incentive had the greatest influence on their equipment upgrade decision (Table 127).

Table 127. Influence Ratings

Influence Level	Energy Trust Incentive (n = 256)	No-cost / Low-cost Services (n = 64)	Installation Contractor (n = 256)	Energy Trust Rep. (n = 320)	Technical Services (n = 53)	Information and materials from Energy Trust (n = 320)
High	80%	99%	44%	57%	65%	65%
Medium	9%	1%	19%	16%	20%	14%
Low	9%	0%	25%	16%	4%	15%
Don't know or no answer	1%	0%	12%	11%	10%	6%

Half the participants said that, without the program, they would have postponed the project for a year or more or would not have made any energy efficiency improvements, most commonly the latter; the same number said they would have taken some action that saved less energy, most commonly making fewer energy efficient improvements (Table 128).

Table 128. Actions Would Have Taken without Program Support (n = 321)

Action	Pct.
Would not have taken energy saving action	46%
Would have postponed project for a year or more	34%
Would not have made any energy efficiency improvements	22%
Would have taken action that saved less energy	43%
Would have made fewer energy efficient improvements	35%
Would have made improvements that were less energy efficient	17%
Would have done exactly the same project and firm would have paid the full cost[a]	18%

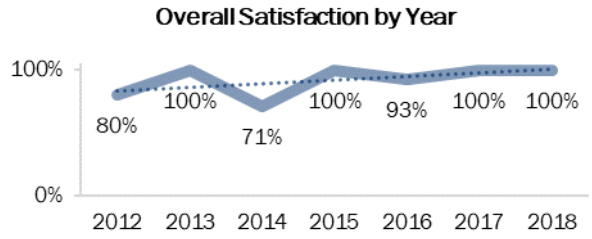
[a] Percentage is based on those who affirmed that their firm would have made the funds available.

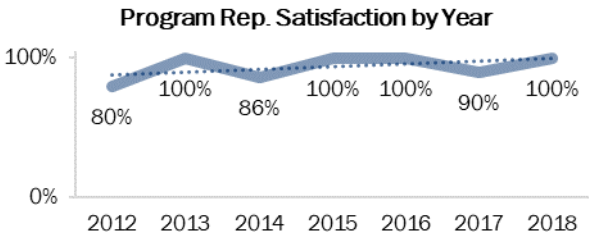
5.2 Existing Buildings - Washington

Existing Buildings Washington participants (*n* = 11) showed high levels of satisfaction with all facets of the experience (Table 129), consistent with previous years.[42]

Table 129. Satisfaction by Program Element

Program Element	Count
Overall experience (n = 11)	11
Performance of new measure (n = 10)	10
Interaction with program rep. (n = 8)	8
Ease of applying for the incentive (n = 10)	9
Incentive amount (n = 10)	10
Time to receive incentive (n = 9)	8
Technical services (n = 2)	2





Energy Trust does not quantify or track free ridership for Existing Buildings Washington.

All 11 respondents indicated they received some type of information or materials from Energy Trust. Two received technical services, such as a technical study. Of all items assessed, the Energy Trust incentive had the greatest influence on their equipment upgrade decision (Table 130).

[42] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

Table 130. Influence Ratings

Influence Level	Energy Trust Incentive (n = 11)	Installation Contractor (n = 11)	Energy Trust Representative (n = 11)	Technical Services (n = 2)	Information and materials from Energy Trust (n = 11)
High	5	3	5	1	4
Medium	3	1	0	0	2
Low	1	4	3	0	3
Don't know or no answer	2	3	3	1	2

Participants most commonly said that, without the program, they either would have done exactly the same project and their firm would have made additional funds available, or they would not have taken any energy saving action (Table 131).

Table 131. Actions Would Have Taken without Program Support (n = 11)

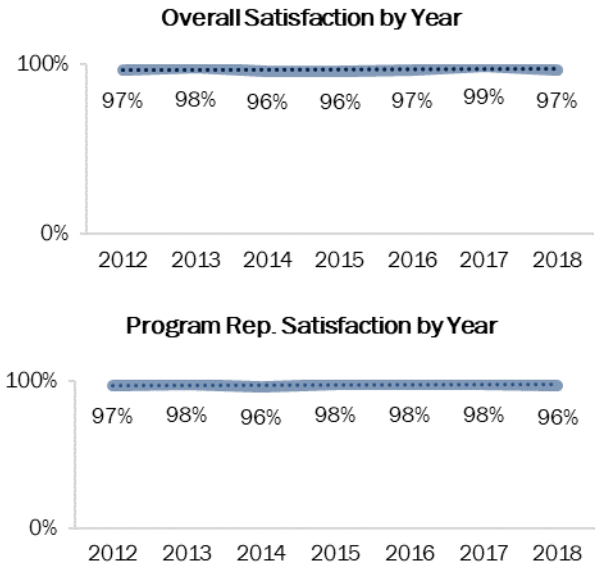
Action	Count
Would not have taken energy saving action	4
Would have postponed project for a year or more	2
Would not have made any energy efficiency improvements	3
Would have taken action that saved less energy	2
Would have made fewer energy efficient improvements	2
Would have made improvements that were less energy efficient	2
Would have done exactly the same project and firm would have paid the full cost	4

5.3 Production Efficiency

Production Efficiency participants (*n* = 223) showed high levels of satisfaction with all facets of the experience (Table 132), consistent with previous years.[43]

Table 132. Satisfaction by Program Element

Program Element	Pct. [a]
Program Level Satisfaction, By Program Element	
Overall experience (n = 221)	97%
Performance of new measure (n = 202)	97%
Interaction with program rep. (n = 202)	96%
Ease of applying for the incentive (n = 214)	94%
Incentive amount (n = 217)	94%
Time to receive incentive (n = 212)	89%
Technical services (n = 82)	94%
Overall Experience, by Program Track	
Custom (n = 21)	21 of 21
Lighting (n = 90)	96%
Standard (n = 110)	97%
Interaction with Program Rep., by Program Track	
Custom (n = 21)	21 of 21
Lighting (n = 85)	94%
Standard (n = 96)	98%



Note: Don't know" and "no response" excluded from analysis. Dotted line in figure represents trend in overall satisfaction over time.

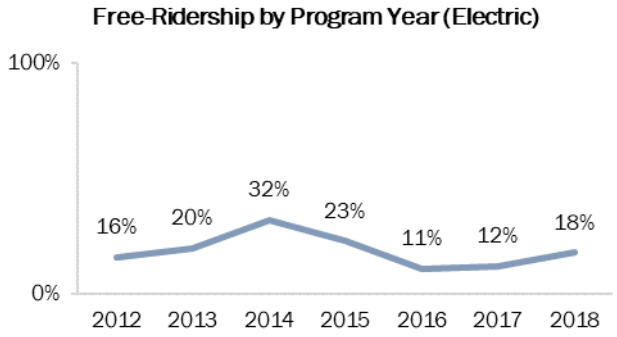
[a] For interaction with program representative in Custom track, count is shown rather than percentage because total is less than 30.

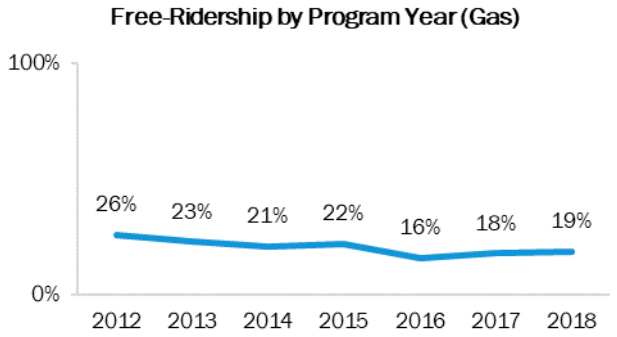
[43] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

The savings-weighted free-ridership rate was 18% for electric measures and 19% for gas measures; four respondents reported spillover (Table 133).

Table 133. Free-Ridership and Spillover

Free-Ridership			
Program Track	Low	Mid	High
Free-Ridership - Electric			
Custom	15%	16%	17%
Lighting	16%	16%	16%
Standard	26%	27%	28%
Standard + Lighting	18%	19%	19%
Combined	17%	18%	18%
Free-Ridership – Gas			
Combined	16%	19%	22%
Spillover (Count)			
		Count	Pct.
Any spillover		4	2%





All respondents indicated they received some type of information or materials from Energy Trust. Fewer (39%) received technical services, such as a technical study. Of all items assessed, the Energy Trust incentive had the greatest influence on their equipment upgrade decision, followed closely by technical services (Table 134).

Table 134. Influence Ratings

Influence Level	Energy Trust Incentive (n = 223)	Installation Contractor (n = 223)	Energy Trust Representative (n = 223)	Technical Services (n = 86)	Information and materials from Energy Trust (n = 223)
High	75%	34%	51%	71%	59%
Medium	16%	24%	14%	15%	17%
Low	7%	22%	19%	9%	14%
Don't know or no answer	2%	20%	16%	5%	10%

Half the participants said that, without the program, they would have postponed the project for a year or more or would not have made any energy efficiency improvements, most commonly the latter; the same number

said they would have taken some action that saved less energy, most commonly making fewer energy efficient improvements (Table 135).

Table 135. Actions Would Have Taken without Program Support (n = 223)

Action	Pct.
Would not have taken energy saving action	40%
Would have postponed project for a year or more	33%
Would not have made any energy efficiency improvements	19%
Would have taken action that saved less energy	47%
Would have made fewer energy efficient improvements	40%
Would have made improvements that were less energy efficient	21%
Would have done exactly the same project and firm would have paid the full cost [a]	22%

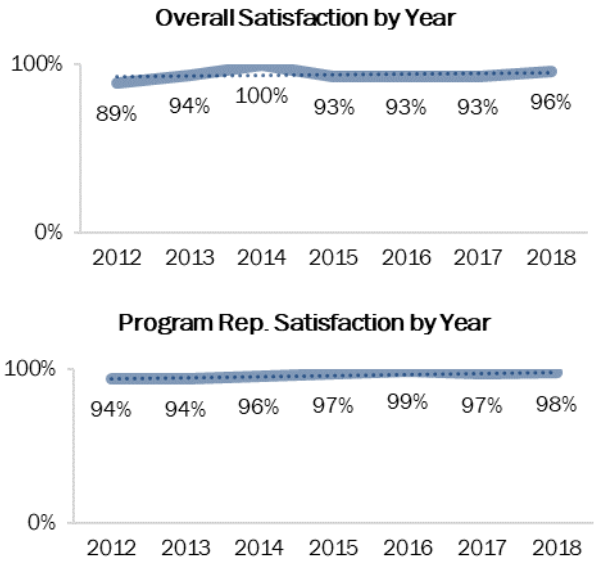
[a] Percentage is based on those who affirmed that their firm would have made the funds available.

5.4 Existing Multifamily

Existing Multifamily participants (*n* = 202) showed high levels of satisfaction with all facets of the experience (Table 136), consistent with previous years.[44]

Table 136. Satisfaction by Program Element [a]

Program Element	Pct. [a]
Program Level Satisfaction, By Program Element	
Overall experience (n = 198)	96%
Performance of new measure (n = 172)	96%
Interaction with program rep. (n = 179)	98%
Ease of applying for the incentive (n = 139)	95%
Incentive amount (n = 143)	86%
Time to receive incentive (n = 137)	89%
The scheduling process for services (n = 52)	93%
Tenant responses (n = 147)	89%
Walk-through survey (n = 81)	97%
Technical services (n = 19)	19 of 19
Overall Experience, by Program Track	
Incentives (n = 145)	97%
Direct Install (n = 53)	94%
Interaction with Program Rep., by Program Track	
Incentives (n = 126)	99%
Direct Install (n = 53)	96%



Note: "Don't know" and "no response" excluded from analysis. Dotted line in figure represents trend in overall satisfaction over time.

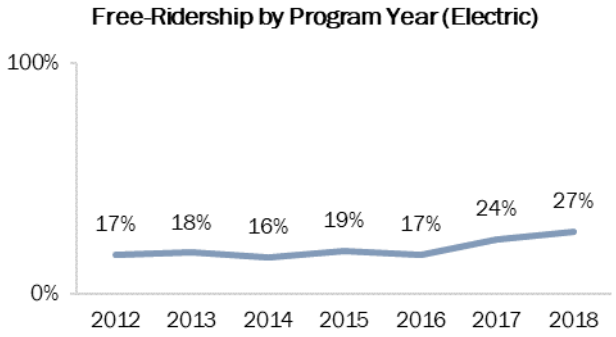
[a] For technical services, count is shown rather than percentage because total is less than 30.

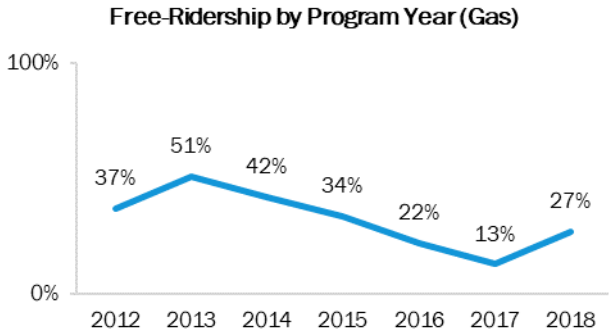
[44] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

The savings-weighted free-ridership rate was 27% both for electric and gas measures; four respondents reported spillover (Table 137).

Table 137. Free-Ridership and Spillover

Free-Ridership			
Program Track	Low	Mid	High
Free-Ridership - Electric			
Incentives	23%	25%	27%
Direct install	32%	34%	35%
Combined	26%	27%	29%
Free-Ridership – Gas			
Combined	13%	27%	41%
Spillover (Count)			
		Count	Pct.
Any spillover		4	2%





All respondents indicated they received some type of information or materials from Energy Trust. A small minority (9%) received technical services, such as a technical study. Of all items assessed, the Energy Trust incentive had the greatest influence on their equipment upgrade decision (Table 138).

Table 138. Influence Ratings

Influence Level	Energy Trust Incentive (n = 148)	No-cost / Low-cost Services (n = 54)	Energy Trust Represent-ative (n = 201)	Walk-through Survey (n = 85)	Technical Services (n = 19)	Information and materials from Energy Trust (n = 202)
High	72%	94%	57%	67%	70%	63%
Medium	15%	3%	11%	17%	13%	11%
Low	11%	2%	20%	10%	6%	18%
Don't know or no answer	1%	2%	13%	7%	11%	7%

A third of participants said that, without the program, they would have postponed the project for a year or more or would not have made any energy efficiency improvements, most commonly the latter; two-fifths said they

would have taken some action that saved less energy, most commonly making fewer energy efficient improvements (Table 139).

Table 139. Actions Would Have Taken without Program Support (n = 202)

Action	Pct.
Would not have taken energy saving action	31%
Would have postponed project for a year or more	22%
Would not have made any energy efficiency improvements	15%
Would have taken action that saved less energy	43%
Would have made fewer energy efficient improvements	38%
Would have made improvements that were less energy efficient	21%
Would have done exactly the same project and firm would have paid the full cost [a]	23%

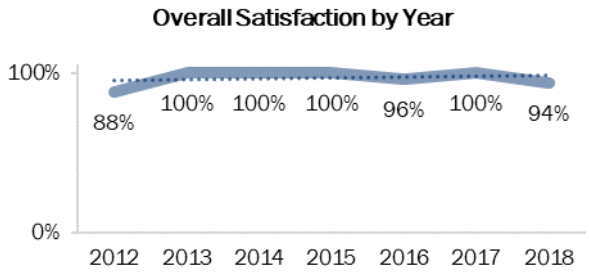
[a] Percentage is based on those who affirmed that their firm would have made the funds available.

5.5 Commercial Solar

Commercial Solar participants (*n* = 16) showed high levels of satisfaction with all facets of the experience (Table 140), consistent with previous years.[45]

Table 140. Satisfaction by Program Element

Program Element	Count
Overall experience (n = 16)	15
Performance of new measure (n = 16)	16
Interaction with program rep. (n = 10)	10
Ease of applying for the incentive (n = 12)	12
Incentive amount (n = 14)	14
Time to receive incentive (n = 13)	10
Energy Trust's inspection (n = 10)	10



Energy Trust does not quantify or track free ridership for Commercial Solar.

Of all items assessed, the Energy Trust incentive had the greatest influence on their equipment upgrade (Table 141).

Table 141. Influence Ratings

Influence Level	Energy Trust Incentive (n = 13)	Installation Contractor (n = 15)	Energy Trust Representative (n = 14)	Information and materials from Energy Trust (n = 15)
High	12	9	9	10
Medium	1	6	1	0
Low	0	0	0	3
Don't know or no answer	3	1	6	3

[45] Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

Participants most commonly said that, without the program, they would not have taken any energy saving action, most frequently reporting they would not have installed a solar PV system; nearly as many said they would have installed a smaller solar PV system (Table 142).

Table 142. Actions Would Have Taken without Program Support (n = 16)

Action	Count
Would not have taken energy saving action	10
Would not have installed the system	9
Would have postponed project for a year or more	5
Would have installed a smaller system	6
Would have installed exactly the same system and firm would have paid the full cost [a]	0

[a] And who affirmed that their firm would have made the funds available.

Of the 16 surveyed Commercial Solar participants, eight reported they had applied for the Federal Tax Credit and three reported they had used financing to purchase their system. Ten had received bids from a single contractor, five had received bids from two to four contractors, and one received bids from eight contractors.

6. Effects of Experimental Conditions

Calculated with weighted data, overall *residential* web and phone RRs are about equal, while the *nonresidential* phone survey delivers more than twice the RR than the web survey. This difference has an impact on the relative difference between web and phone CPIs in the two sectors. In the residential sector, the CPI for phone surveys is about 60% *greater* than the overall CPI for web surveys calculated across all recruitment and incentive conditions, while in the nonresidential sector the phone CPI is about 34% *less* than the web CPI. The cost advantage of web over phone recruitment in the residential sector is greater when recruitment and incentive condition are taken into consideration. (The number of nonresidential records with was too small to provide reliable calculation of CPI by condition.)

While residential web and phone respondents were similarly representative of the state population on most demographic factors, some differences suggest that the web survey may select for customers more inclined to use online resources. Further, web respondents reported lower free-ridership and more spillover than phone respondents. In both the residential and nonresidential surveys, web respondents tended to report more program influence on equipment purchase decisions. Finally, nonresidential web respondents reported greater satisfaction with various aspects of program participation.

Among web survey respondents, satisfaction ratings do not appear to be affected by incentive condition.

6.1 Response Rate (RR) and Cost Per Interview (CPI)

Table 143 and Table 144 shows both unweighted and weighted response rates (RR) and unweighted costs per interview (CPI) by mode, web recruitment condition, and web incentive condition. The CPI calculation does not vary by measure or quota group, so there is no weighted CPI. The weighted RRs were, by and large, similar to the unweighted ones.

While the residential web and phone RRs are about equal, the nonresidential phone survey delivers more than twice the RR than the web survey.

The overall CPI for phone surveys is somewhat greater than the overall CPI for web surveys, but the difference between phone and web CPI varies by sector.[46] The phone survey is more economical for the nonresidential sector, but the web survey is more economical for the residential sector.

Further, the web survey CPI varies greatly by recruitment and incentive condition, with Email Only by far the most economical recruitment condition. Given that it delivers about the same RR as Mailer & Email recruitment, its significantly lower cost seems to make it a clearly preferable web recruitment method. Across all incentive conditions, no incentive has a lower CPI than either the fixed incentive or the lottery incentive.

[46] The CPIs include the labor costs for preparing the samples, call lists, Qualtrics panels, incentives, and mailers and completing the phone survey, the Qualtrics transaction cost ($1 per completion), and the cost of web survey incentives and mailers.

Table 143. Response Rates (RR) and Cost per Interview (CPI) by Mode, Recruitment Condition, Incentive Condition, and Sector

Sector	Mode							
	Phone	Web						
		Web, Overall	Web Recruitment Condition			Web Incentive Condition		
			Email Only	Mailer & Email	Mailer Only	Fixed	Lottery	None
Unweighted Response Rate (RR)								
Overall	29%	23%	25%	29%	4%	33%	22%	22%
Residential	26%	24%	26%	30%	4%	35%	23%	23%
Nonresidential	43%	17%	18%	11%	2%	19%	15%	17%
Weighted Response Rate (RR)								
Overall	26%	22%	25%	27%	3%	30%	19%	22%
Residential	23%	24%	26%	28%	3%	32%	20%	22%
Nonresidential	40%	17%	18%	12%	5%	18%	11%	17%
Unweighted Cost Per Interview (CPI)								
Overall	$13.29	$8.30	$6.14	$11.33	$85.42	$15.29	$15.93	$5.55
Residential[a]	$13.01	$8.19	$4.96	$8.72	$66.57	$13.98	$13.35	$4.03
Nonresidential[a]	$8.08	$10.86	Too few records for reliable calculation					

[a] The research team does not track the implementation costs separately for the residential and nonresidential phone surveys. However, the team calculated the separate residential and nonresidential phone CPIs by allocating a disproportionately higher share of the phone costs to the residential survey based on the lower RR in that survey. For the web survey, the higher nonresidential CPI resulted largely from the fact that the same fixed cost for the lottery incentive was shared over fewer survey completions, relative to the residential survey. Also, there were too few records for reliable calculation of CPI for the "Mailer & Email" and "Mailer Only" conditions; for that reason, the calculations of CPI for the various incentive conditions also excluded "Mailer & Email" and "Mailer Only" records.

Table 144. Web Response Rates (RR) and Cost per Interview (CPI): Recruitment Condition by Incentive Condition, for Each Sector and Overall

	Web Incentive Condition					
	Response Rate			Cost Per Interview		
Web Recruitment Condition	Fixed	Lottery	None	Fixed	Lottery	None
Overall						
Email Only	33%	25%	24%	$11.50	$9.99	$3.20
Mailer & Email	51%	27%	25%	$14.13	$16.87	$5.67
Mailer Only	12%	4%	3%	$79.75	$101.23	$51.47
Residential						
Email Only	35%	25%	25%	$11.50	$9.99	$3.20
Mailer & Email	54%	30%	26%	$14.13	$16.87	$5.67
Mailer Only	11%	4%	3%	$79.75	$101.23	$51.47
Nonresidential						
Email Only	20%	18%	18%	$23.65	$36.35	$14.28
Mailer & Email	11%	10%	11%	$188.56	$74.33	$87.61
Mailer Only	17%	n/a[a]	n/a[a]	$94.28	n/a[a]	n/a[a]

[a] No respondents were in these subgroups.

Together, these findings suggest that offering no incentive in an Email Only recruitment approach seems to be the most cost-effective web survey method.

6.2 Satisfaction by Incentive Condition

Among residential web respondents, satisfaction generally was similar across survey incentive conditions (Table 145).

Table 145. Residential Satisfaction by Web Survey Incentive Condition

Program Element	Fixed Incentive		Lottery Incentive		No Incentive	
	n	Percent Satisfied	n	Percent Satisfied	n	Percent Satisfied
Overall	460	94%	232	94%	2,213	93%
Ease of finding incentive-eligible products	221	92%	105	92%	920	92%
Incentive application	371	91%	186	89%	1,706	89%
Performance of incented equipment	351	96%	192	98%	1,665	96%
Comfort of home after installing equipment	329	96%	177	98%	1,617	97%
Time taken to receive incentive	382	80%	189	73%	1,782	78%
Ease of selecting a contractor	254	90%	145	90%	1,309	91%
Energy Trust's inspection of solar PV system	42	92%	24	97%	211	92%
Information received from Energy Trust	193	93%	99	89%	927	90%

Note: Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

Among nonresidential respondents, there appears to be no consistent trend of differing satisfaction levels between incentive conditions (Table 146). Note that the sample sizes were small for the fixed and lottery incentive conditions. When the research team collapsed those groups together and compared the combined group with the no incentive condition, it was still the case that no differences were statistically significant.

Table 146. Nonresidential Satisfaction by Web Survey Incentive Condition

Program Element	Fixed Incentive		Lottery Incentive		No Incentive	
	n	Percent Satisfied	n	Percent Satisfied	n	Percent Satisfied
Overall experience	35	94%	17	100%	236	96%
Interaction with Program Representative	33	96%	15	95%	217	95%
Ease of applying for incentives	30	93%	17	95%	190	93%
The scheduling process to receive services	5	100%	0		38	93%
Incentive amount	30	92%	15	82%	195	86%
Turnaround time to receive your incentive	30	93%	15	86%	193	85%
Performance of the measure	34	96%	15	100%	221	97%
Tenant responses to the EE improvements	12	77%	1	100%	52	92%
Energy Trust's inspection of your system	0		0		6	100%
Quality of walk-through survey	4	100%	1	100%	30	100%

Note: Satisfaction was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

In general, the above findings suggest that decisions about whether to offer an incentive for web survey completion, or which type of incentive to use, do not have an effect on participant satisfaction ratings .

6.3 Differences Between Residential Web and Phone Responses

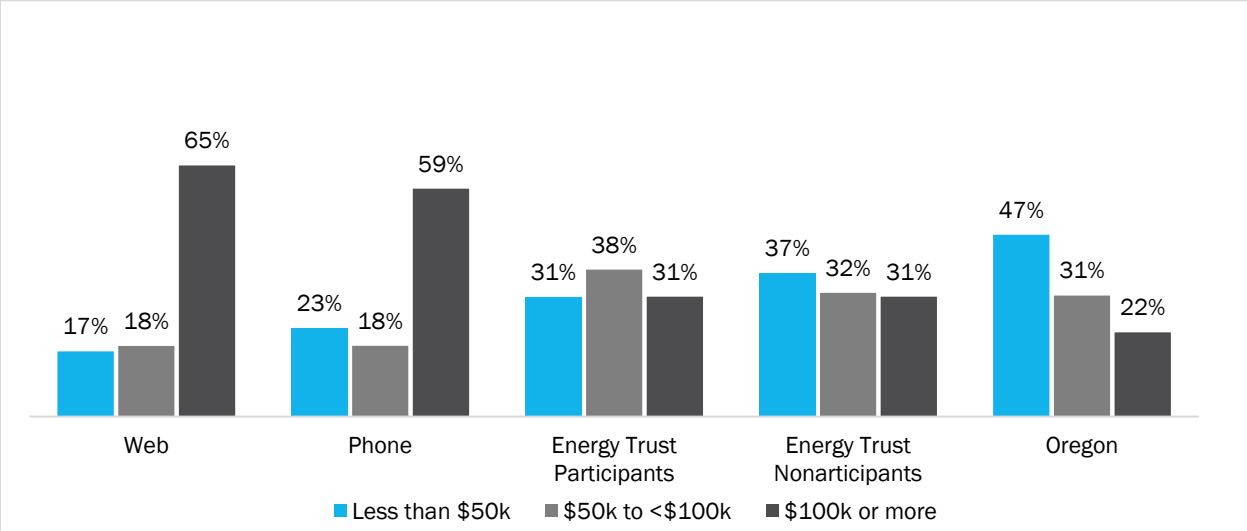
The analyses reported below all are based on weighted data. The comparisons of demographic data used data weighted on measure type, while the comparisons of other survey topics used data weighted on measure and demographic characteristics.

The research team used a variety of statistical tests to test the significance of differences between web and phone survey responses. For nominal categorical variables, we used the chi-square test. For ordinal variables (e.g., satisfaction or influence ratings), we used the Mann-Whitney test. For continuous variables, we used the *t*-test. For each statistical test, we used an alpha of .05 as the criterion for statistical significance.

6.3.1 Demographic Differences

Web and phone respondents had very similar household income profiles, although both groups of respondents tended to have higher income levels than the overall Energy Trust participant population and state population (Figure 1).[47] Similarly, web and phone respondents had very similar household sizes (Figure 2).[48] The Census data do not show percentages of households of various sizes, and so Census data are not shown in the figure. The mean Oregon household size as reported in the U.S. Census is 2.5 individuals, compared to a mean of 2.6 for both the web and phone surveys.

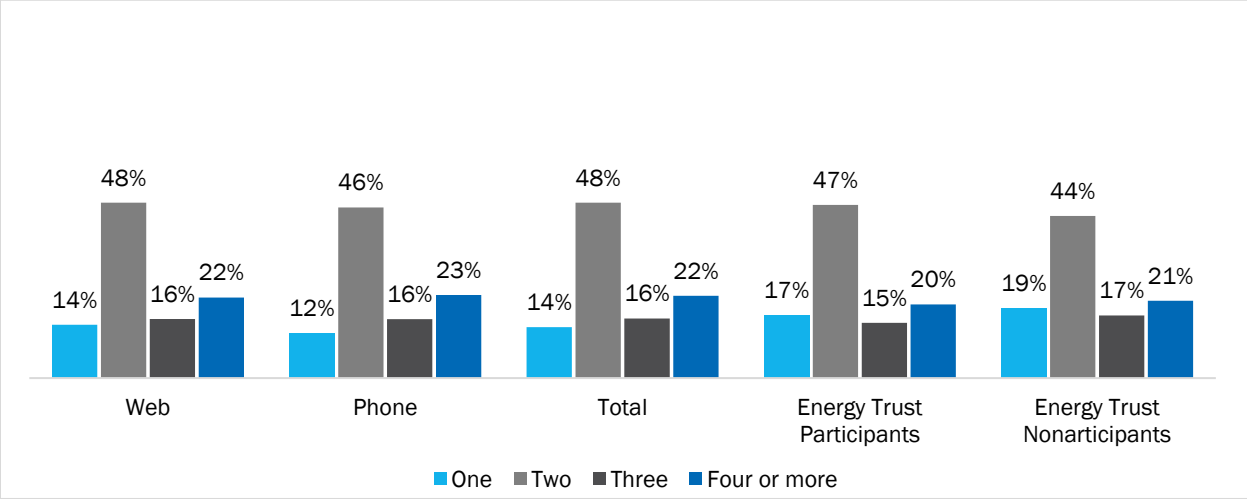
Figure 1. Household Income of Residential Respondents ≥$100,000 (*n* = 3,665), Compared to Energy Trust and Oregon Population



[47] Energy Trust participant population figures come from, Final Report: 2018 Energy Trust Customer Insights Survey. Prepared by Research Into Action for Energy Trust of Oregon, April 2, 2018. The Oregon income, household size, and ethnicity population data come from the U.S. Census Bureau (https://www.census.gov/quickfacts/or; https://statisticalatlas.com/state/Oregon/Household-Income).
[48] The 95% confidence interval for the phone mean (+/- 0.10) just included the Oregon population mean, while that for the web mean (+/- 0.06) excluded the Oregon population mean. However, the difference between the phone and web means was not statistically significant by the Mann-Whitney test (selected because of the highly skewed distribution of the data), Z = -0.459, *p* = 0.646.

Note: The source for information on "Energy Trust Participants" and "Energy Trust Nonparticipants" was the Energy Trust 2018 Customer Insights Survey. The source for Oregon demographics was U.S. Census data (2010 census and 2012-2016 American Community Survey) presented on the Statistical Atlas website (https://statisticalatlas.com/state/Oregon/Household-Income).

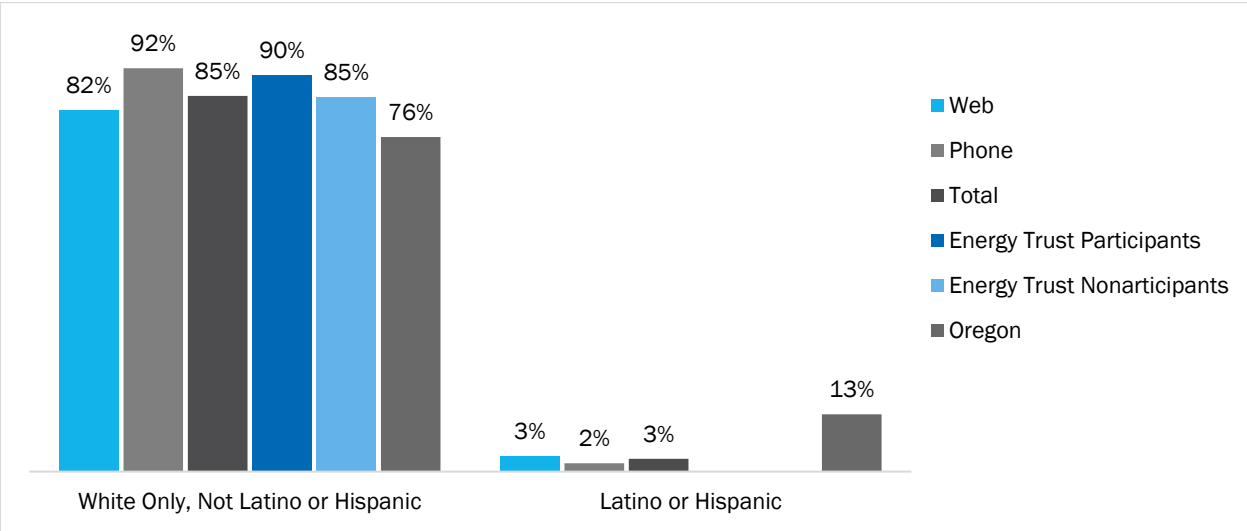
Figure 2. Number of Individuals in Household of Residential Respondents (*n* = 4,202), Compared to Oregon Population



Note: The source for information on "Energy Trust Participants" and "Energy Trust Nonparticipants" was the Energy Trust 2018 Customer Insights Survey. The source for Oregon demographics was the U.S. Census Quick Facts website (https://www.census.gov/quickfacts/or#qf-headnote-b).

The percentage of phone respondents who identified only as white or Caucasian was similar to that percentage in the overall Energy Trust participant population and state population. The percentage of web respondents who identified as white was lower than the population as a whole (Figure 3). Thus, the web survey respondents were slightly more likely to identify as a non-white race or ethnicity. The percentage of respondents in either group who identified as Latino or Hispanic was somewhat lower than in the overall Energy Trust participant population and much lower than in the state population.

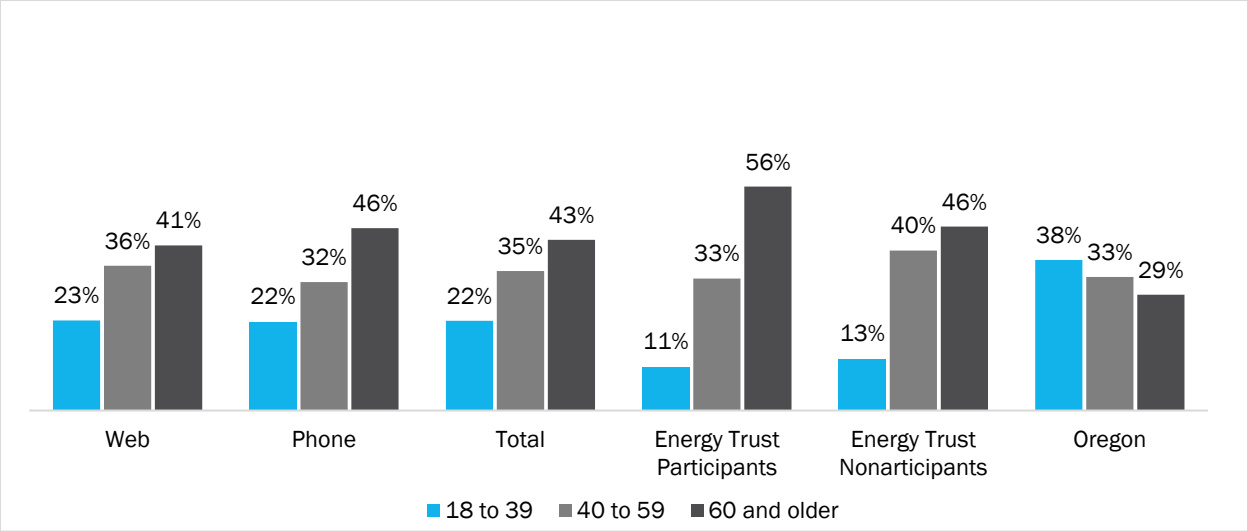
Figure 3. Ethnicity of Residential Respondents (*n* = 4,202), Compared to Energy Trust and Oregon Population



Note: The source for information on "Energy Trust Participants" and "Energy Trust Nonparticipants" was the Energy Trust 2018 Customer Insights Survey. The source for Oregon demographics was the U.S. Census Quick Facts website (https://www.census.gov/quickfacts/or#qf-headnote-b). "White Only, not Latino or Hispanic" excludes anyone who reported two or more ethnicities. "Latino or Hispanic" includes anyone who identified as such, regardless of any other race or ethnicity they identified. Percentage Latino or Hispanic are not shown for Energy Trust participants and nonparticipants because the Customer Insights Survey presents only the percentage who are Latino or Hispanic *only* and do not identify also as either Caucasian/white or black.

Finally, while both phone and web respondents tended to be slightly older that the state population, the phone respondents were somewhat closer than the web respondents to the population (Figure 4).[49]

Figure 4. Age of Residential Respondents (*n* = 4,157), Compared to Oregon Adult Population



Note: The source for information on "Energy Trust Participants" and "Energy Trust Nonparticipants" was the Energy Trust 2018 Customer Insights Survey. The source for Oregon demographics was U.S. Census data (2010 census and 2012-2016 American Community Survey) presented on the Statistical Atlas website (https://statisticalatlas.com/state/Oregon/Age-and-Sex).

The above findings show that some demographic differences exist between web and phone respondents even when differences in measure mix are controlled for. The following findings are from analyses that used data weighted on both measure mix and demographic characteristics.

6.3.2 Differences in Program Experience

Residential web and phone respondents differed to some degree in how they responded to about half the survey items (Table 147), after controlling for differences in measure type and demographics. Phone respondents reported higher satisfaction overall and with their incentive application, information they received from Energy Trust, and information they received from contractors about incentives.

[49] The state population data come from the U.S. Census, reported in https://statisticalatlas.com/state/Oregon/Age-and-Sex. Note that the Census data report data on the entire range of ages. This is not directly comparable to the survey data, which typically comprises heads of households. To make the Census data more comparable to the survey data, the research team recalculated the percentages of Oregon residents within each of the age ranges shown in the figure, using the count of residents at least 21 years of age as the denominator. The Energy Trust Customer Insights Survey did not use the same age categories as the Faster Feedback survey. That survey found that 22% of Energy Trust 2016 participants and 18% of 2017 participants were 65 years old or older.

Table 147. Survey Items Showing Statistically Significant Differences between Web and Phone Responses

Survey Item	Web	Phone
Demographics		
White only, not Latino or Hispanic	83.0%	89.7%
Age 20s to 30s	20.9%	27.2%
Age 40s to 50s	35.5%	32.3%
Age 60s and above	43.6%	40.3%
Received Information		
Visited Energy Trust website, talked or emailed representative, etc.	42.3%	31.3%
Satisfaction		
Overall experience	92.9%	94.6%
Satisfied with incentive application	89.4%	91.6%
Information from Energy Trust	90.3%	93.7%
Information from contractor about incentives	84.2%	87.2%
Influence		
Energy Trust incentive	63.3%	49.2%
Information and materials from Energy Trust	43.8%	38.9%
Salesperson or retailer	38.1%	47.2%
Contractor	75.7%	55.2%
Contractor		
Considered approved Energy Trust contractor list	32.2%	14.4%
Considered approved contractor list (excluding respondents unaware of list)	52.1%	14.7%
Found contractor through Energy Trust	11.2%	6.4%
Found contractor through online source	17.8%	14.8%
Found contractor through utility	6.9%	2.3%
Easy to find and select contractor (rating of 4 or 5 on 1-5 scale)	83.2%	93.3%
Payment		
Cash	39.5%	50.2%
Credit card	48.3%	37.9%
Loan	6.5%	4.8%
Dealer/contractor financing	4.8%	3.4%
Incentives other than Energy Trust	2.8%	0.1%
Other	3.1%	1.3%
Action Would Have Taken Without the Program		
Would not have purchased/installed	17.3%	12.8%
Would have done less expensive alternative	21.3%	17.1%
Would have done smaller amount	11.8%	7.4%
Would have done less efficient	13.9%	3.9%
Would have made fewer improvements	15.1%	2.0%
Would have done exactly same thing	47.4%	59.8%

Some of the differences suggest that the web survey may select for customers more inclined to use online resources in general. First, web respondents were more likely than phone respondents to report visiting the program website, talk or email with an Energy Trust representative, or receive printed materials before taking the incented action. Consistent with that difference, web respondents were more likely to report learning about their contractor from Energy Trust and to report they considered the Energy Trust online list of approved trade allies when selecting their contractor. This latter difference was even greater when just those respondents who were aware of the list were considered. Web respondents were also more likely than phone respondents to report learning about their contractor from an online source.

Finally, web and phone respondents differed in how they reported paying for their energy efficient equipment, with phone respondents more likely to report having paid cash and web respondents more likely to report having used some form of credit or financing. Part of the difference between phone and web respondents on this item could reflect method effects: the question was asked "open ended" of phone respondents (i.e., the response options were not read to those respondents) but the web respondents were able to see the options. It is possible that some phone respondents might have answered "cash" when they used a credit card if they consider those methods equivalent because they do not carry large balances on credit cards. However, that reasoning does not likely apply to responses indicating different types of financing, which did differ between groups: 11.3% of web respondents and 8.2% of phone respondents indicated they used a loan or financing from a dealer or contractor, and that difference was statistically significant.

6.3.3 Program Influence, Change, and Free-Ridership

Web respondents tended to report that they were more influenced by the program incentive and information and by their contractors on equipment purchase decisions (Table 146). They also were more likely to say that, without the Energy Trust support, they would not have made the purchase or would have done something that resulted in less energy savings. These resulted in lower mean free-ridership among web respondents (37%) than among phone respondents (45%).

6.3.4 Spillover

As described above, the research team identified two groups of possible spillover measures.[50] The first were high-efficiency measures listed as response options in the survey instrument. The second group were measures recorded as open-ended "other" responses. A higher percentage of web than phone survey respondents (11% vs. 2%) reported spillover in the first group of measures, but the web and phone respondents did not differ in percentage reporting spillover in the second group. Note that web survey respondents see the list of response options, while phone respondents do not see or hear the list. Thus, the web survey responses are "prompted" while the phone ones are not.

6.4 Differences Between Nonresidential Web and Phone Responses

The analyses of nonresidential survey results reported below used data weighted to adjust for differences in the distribution of quota groups between web and phone respondents. The research team used a variety of statistical tests to test the significance of differences between web and phone survey responses. For nominal categorical variables, we used the chi-square test. For ordinal variables (e.g., satisfaction or influence ratings), we used the Mann-Whitney test. For continuous variables, we used the *t*-test. For each statistical test, we used an alpha of .05 as the criterion for statistical significance.

[50] See *Residential Combined Survey Results* Section.

6.4.1 Differences in Program Experience

Results from nonresidential respondents indicate web and phone respondents both tended to have similar levels of satisfaction with various aspects of program participation. The only difference between the two groups was that phone respondents were more likely to report being satisfied with their incentive amount.[51]

No other differences in program experience between web and phone respondents were statistically significant.

6.4.2 Program Influence, Change, and Free-Ridership

Web respondents were more likely than phone respondents to report that their contractor was influential in their upgrade decision and were less likely to say that information received from Energy Trust was influential (Table 148).[52] Phone respondents were more likely than web respondents to report that, without Energy Trust support, they would have postponed their project or done something that would have saved less energy. On the other hand, phone respondents were also more likely to say they would have done exactly the same project. This contradictory set of findings is possible because the question about what they would have done without Energy Trust support allowed multiple responses – and a much higher percentage of phone respondents (47.4%) than web respondents (8.7%) gave multiple "change" responses.

Table 148. Survey Items Showing Statistically Significant Differences between Web and Phone Responses

Survey Item	Web	Phone
Influence		
Contractor	56.0%	43.2%
Information and materials from Energy Trust	63.5%	70.6%
Free Ridership "Change" Response		
Would have postponed project	13.8%	40.8%
Would have done less energy efficient project	13.0%	23.7%
Would have done exactly same project	20.1%	27.5%

Mean free-ridership was almost identical for web respondents (26%) and phone respondents (25%).[53]

6.4.3 Spillover

Twenty-one nonresidential survey respondents reported any spillover. Of those, 16 were web survey respondents, representing a 5% spillover rate; the other five were phone survey respondents, representing a 1% spillover rate.

[51] Satisfied was defined as a rating of 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).
[52] High influence was defined as a rating of 4 or 5 on a scale from 1 (did not have any influence) to 5 (had a great influence).
[53] This comparison did not use savings-weighted free-ridership.

7. Summary and Conclusions

Overall, both residential and nonresidential respondents showed high levels of satisfaction with their program experience, with levels generally consistent with those observed in prior years. Satisfaction varied somewhat among both residential and nonresidential measures and programs. Satisfaction ratings do not appear to be affected by web survey incentive condition.

Residential web and phone respondents were very similar on demographic characteristics and generally comparably representative of the Energy Trust participant population. This was particularly the case regarding household income and size. On average, the phone respondents were slightly closer to the population on ethnicity and age. Thus, all other things held equal, the phone survey would be a slightly better approach to get a representative sample of the Energy Trust population. On the other hand, the web survey yielded higher response rates from minority race groups.

The slight disadvantage of the web survey in representativeness of the Energy Trust population could be offset by weighting the survey data. However, there are two potentially greater concerns regarding the residential web survey. First, some differences suggest that the residential web survey may select for customers more inclined to use online resources: web respondents were more likely than phone respondents to report visiting the program website, considering the program administrator's online list of approved trade allies, and learning about their contractor from an online source. This seems like a clear method bias: customers who are more inclined to use online resources are also more inclined to take an online survey – and so, those who take the online survey disproportionately report using online resources.

Second, residential web respondents tended to report that they were more influenced by the program and by their contractors on equipment purchase decisions. Nonresidential web respondents also were more likely than phone respondents to report that their equipment purchase decisions were influenced by program staff. It is not immediately clear what underlying mechanism might create a bias both toward participation in a web survey and recognition of program influence on equipment decisions.

Nonresidential web respondents also were more satisfied than phone respondents with various aspects of program participation, although this was not seen in the residential survey.

Considering the above together with the RR and CPI calculations, the results of the Fast Feedback experiment so far suggest that combining phone and web modes may be the best approach, with the web component delivered by email only with a fixed incentive. This would allow the survey to be implemented at a lower cost than entirely by phone, while allowing Energy Trust to continue to compare and control for mode differences.

The question, then, is whether to continue with the current approach, randomly allocating all participants to either phone or web conditions. The alternative is to combine web and phone modes with each participant – first sending an email (to those with email addresses), with one or two reminders, and then following up with a phone call.

In the residential sector, the web-then-phone approach, using the email-only web recruitment, would have the advantage of starting with a mode shown to have the best RR at the lowest CPI. As noted above, the web approach may tend to bias the sample toward respondents who are inclined to use online resources. However, the following phone contacts would then be made from the remaining population, which then would be slightly biased in the opposite direction (since those biased toward online resources will have been disproportionately removed in the web survey). Theoretically, the combined sample then could be weighted to mitigate or remove the bias.

To make the above web-then-phone method maximally cost-effective, it would be necessary to estimate the number of participants with each measure to be included in the sample so that the web and phone recruitments together deliver the survey completion quotas. To simplify the calculation, we assume equal numbers of phone and web respondents for each measure. This has the added advantage of providing maximum statistical power for detecting group differences and should help avoid assigning extreme weights.

We can probably assume the 35% web RR we found in this study. But we probably should not assume that the overall phone RR of 26% will apply to those who do not respond to the web survey. This is because the 26% RR applies to a randomly selected sample that are not being recruited to the survey by any other mode – a "pristine" sample. By contrast, the participants who have opted not to respond to the web survey are already somewhat biased toward individuals who would not respond to any survey, regardless of mode. To be conservative, let us assume a 13% phone RR for that group – half the RR found in the "pristine" sample.

Based on the above, the total RR for the web-then-phone method would be:

*35% + ((100% - 34%) * 13%) = 35% + ~8% = ~43%.*

To achieve a 12-month quota of 140 respondents for a given measure, we would need to draw a sample of 326. Of those, we would complete the web survey with about 114 and the phone survey with about 28. Based on the calculated CPIs of $13.01 for the residential phone survey and $11.50 for the fixed incentive, email only web condition, the above would work out to a mean CPI of $11.80.[54]

We can use a similar approach to estimate the combined RR for the nonresidential survey. In this case, the fixed incentive web condition yields an 19% RR, leaving 81% of the initial sample to be reached by phone. In this case, we do not assume the phone RR will be half what it is in the randomly allocated sample. Given the relatively high phone RR, we assume that other factors affect the web survey nonresponse besides general lack of willingness to be surveyed. In this case, we assume that 30% of the web non-respondents will complete the phone survey. Thus, the combined RR would be:

*19% + ((100% - 19%) * 30%) = 19% + ~20% = ~39%.*

This is slightly lower than that for the residential sample (again, based on some assumptions). This would mean that achieving a quota of 140 would require an initial sample of 364. In this case, about 69 would complete the web survey and about 89 of the remaining 295 would complete the phone survey. Based on the calculated CPIs of $8.08 for the nonresidential phone survey and $23.65 for the fixed incentive, no email web condition, the above would work out to a mean CPI of $14.88.

[54] Without the conservative assumption of a 13% phone RR, the overall RR would be ~52%, which would require starting with a sample of 270, of whom 94 (35%) would complete the web survey and 44 (26%) would complete the phone survey, at a mean CPI of 11.98.

For more information, please contact:

Zac Hathaway
Senior Consultant

503-943-2371 tel
zhathaway@opiniondynamics.com

3934 NE Martin Luther King, Jr. Blvd. Suite 300
Portland, OR 97212