

Fast Feedback Results: 2017 Annual Report

Prepared for:



March, 2018



Executive Summary

Overview of Fast Feedback

- Fast Feedback is a short phone survey of a sample of recent program participants to assess satisfaction, understand customer decision making, and gather suggestions for program and process improvements. The survey is generally 10 questions or less, is customized for each program or measure of interest, and is designed to take no more than 5 minutes to complete.
- There are quarterly quotas for each program or measure group of interest with sample sizes based on the project volume expected in that quarter. We attempt to survey enough participants to achieve 90% confidence and 10% precision each quarter. Calls are made each month to randomly selected participants whose incentive check was processed in the previous one to two months and who have not been recently surveyed (within the past year and past 6 months for residential and non-residential participants, respectively). Satisfaction results are summarized and distributed quarterly to program staff. There is at least one opportunity in each survey for the respondent to give open-ended feedback that is recorded verbatim, and this feedback is provided with anonymity to program staff on a quarterly basis (not included in this report).
- Fast Feedback is divided into two separate surveys: 1) Commercial and Industrial and 2) Residential.
- A total of 2,546 participants (608 commercial and industrial, 1,938 residential) that completed projects between January and December 2017 were surveyed between March 2017 and February 2018. Customers were surveyed one to two months after they received their incentive check.
- There were no major changes to Fast Feedback surveys in 2017. The only changes were adding or deleting minor questions, making minor wording changes to existing questions, and changing which measures or programs were asked certain questions.
- Appendix A contains information about which measures are included and excluded from Fast Feedback surveys.
- Satisfaction and influence throughout this report are calculated as the percentage of respondents providing a rating of 4 or 5 out of 5, excluding “don’t know” responses.

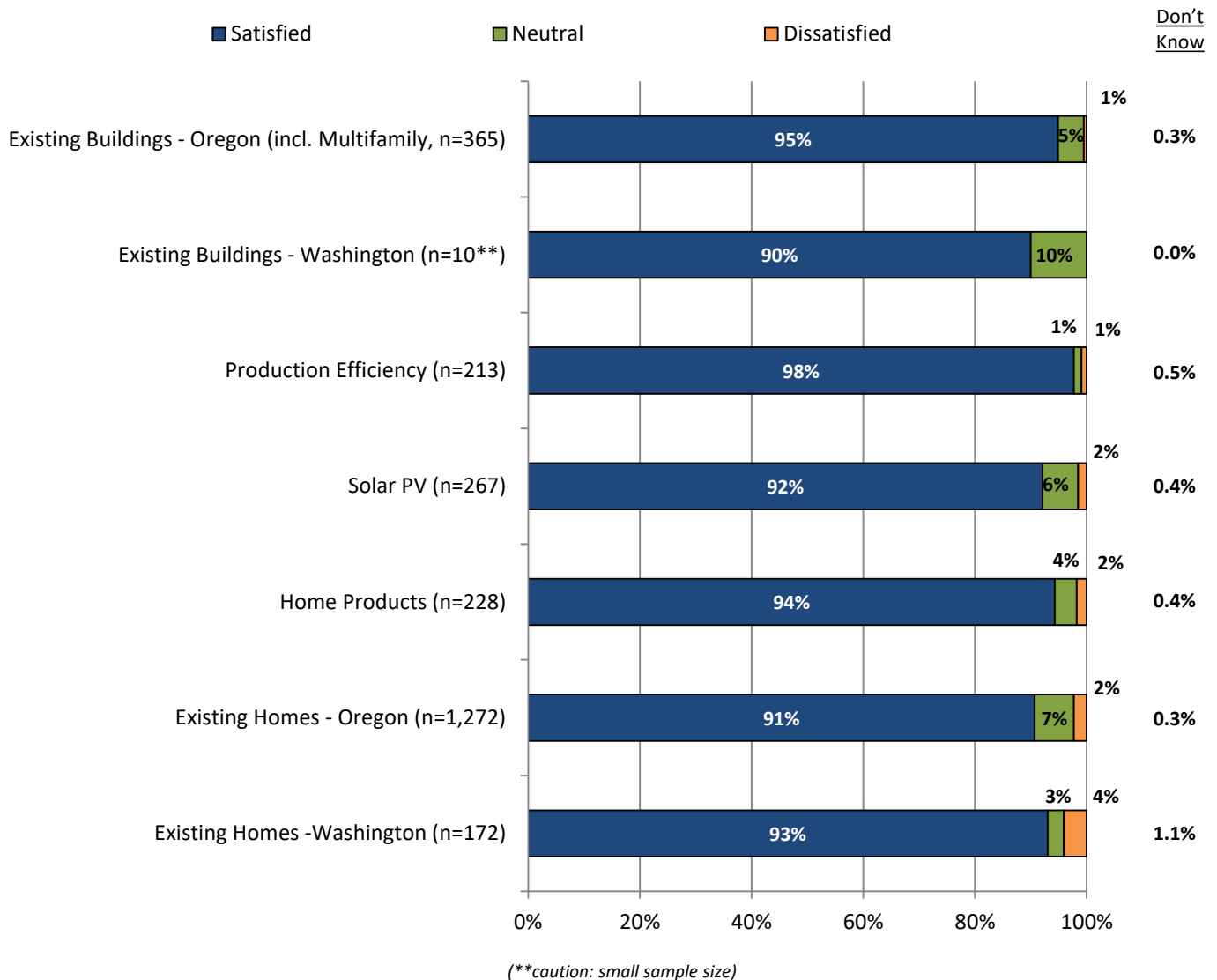
History of Fast Feedback

- Fast Feedback began as a pilot in mid-2009 for participants in the Existing Buildings and Production Efficiency programs, and was extended to most Energy Trust programs in the second quarter of 2010. A report on methods and results of the initial rollout is available on the Energy Trust website (https://energytrust.org/wp-content/uploads/2016/12/101231_Fast_Feedback_Rollout.pdf); Fast Feedback continues to follow the general methods cited in that report.
- From Q2 2011 to Q4 2012, survey calls were made by Gilmore Research Group. As of Q1 2013, Abt Associates has been making Fast Feedback survey calls.

Summary of Results

- For residential as well as commercial and industrial customers, satisfaction with overall program experience remained high. Results are shown below for each major program, with customer satisfaction ranging from 90 percent for Existing Buildings – Washington (small sample) to a high of 98 percent for Production Efficiency.

Overall Satisfaction by Program

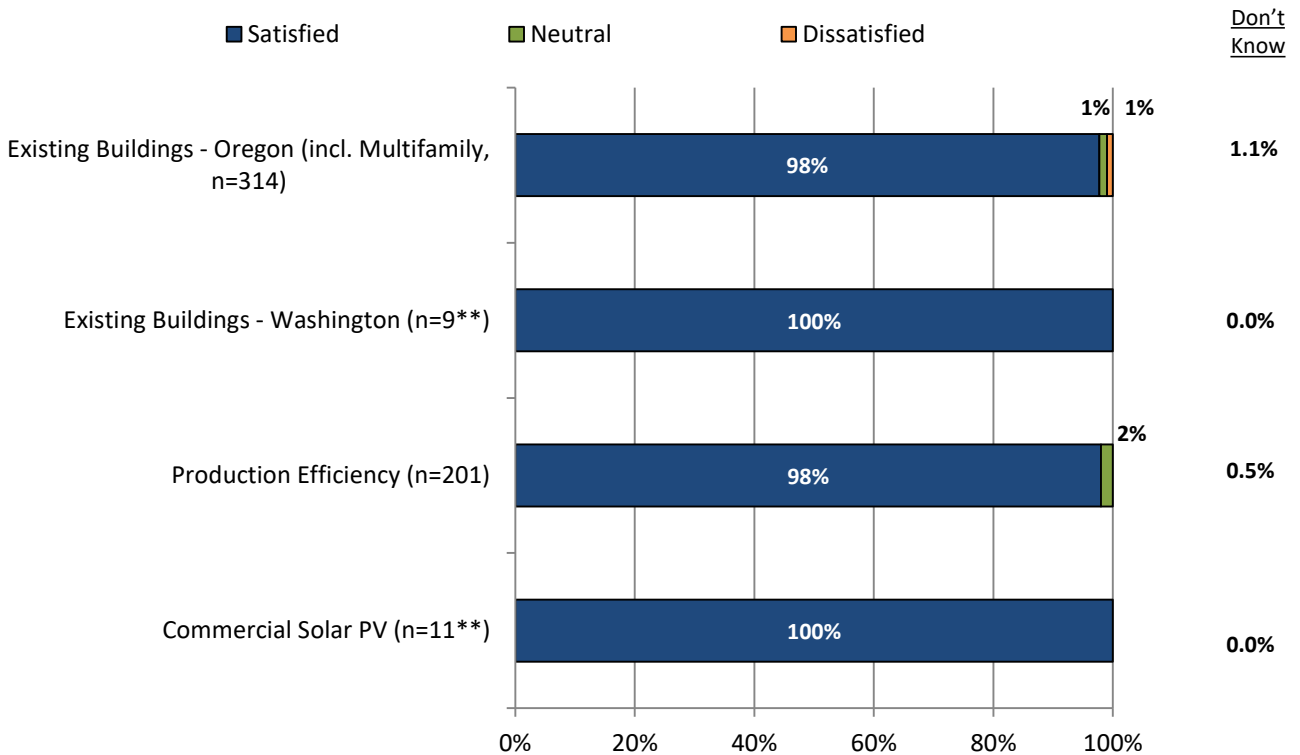


- Of the factors that influenced program participation (the Energy Trust Incentive, Information and Materials from Energy Trust, and the Contractor), the incentive was cited as the most influential factor for Existing Buildings, Multifamily, Production Efficiency, Residential Solar, and Home Products. The Contractor was the most influential for Commercial Solar and for Existing Homes in both Oregon and Washington.

Summary of Results

- Satisfaction with program representatives is only asked of commercial and industrial customers. Satisfaction (“Very Satisfied” and “Satisfied”) was 100 percent for the Existing Buildings - Washington and Commercial Solar PV programs.

Satisfaction with Program Representative by Program



(**caution: small sample size)

Summary of Results

Program	Respondents	Percent Satisfied	Free Ridership	
Commercial and Industrial				
			Electric	Gas
Existing Buildings - Oregon	226	95%	9% ^{1,2}	24% ^{1,2}
Existing Buildings - Custom	31	97%	9% ²	17% ²
Existing Buildings - Lighting	119	94%	9%	--
Existing Buildings - Standard	76	96%	9%	31%
Existing Buildings - Washington	10	90%	†	†
Production Efficiency	214	98%	12% ¹	18% ²
Production Efficiency - Custom	49	98%	11%	--
Production Efficiency - Lighting	82	98%	9%	--
Production Efficiency - Standard	83	98%	22%	--
Multifamily	142	94%	24%	13% ²
Solar				
Commercial Solar PV	16	94%		†
Residential Solar PV	253	92%		†
Home Products				
Home Products – Clothes Washers	229	94%		48%
Existing Homes				
Existing Homes - Oregon	1,280	91%		--
Ceiling Insulation	155	89%		42%
Other Insulation (floor, wall)	109	88%		43%
Heat Pumps (incl. DHPs)	273	91%		33%
Gas Tank Water Heaters	41	93%		36%
Heat Pump Water Heaters*	20	90%		21%
Windows	231	85%		43%
Gas Fireplaces	228	89%		37%
Smart Thermostats	223	96%		39%
Existing Homes - Washington	176	93%		†

NOTE: Please see Appendix B for more information about how free ridership numbers are calculated from survey responses. 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 sample.

* Small sample size. Interpret results with caution.

† Free ridership is not computed for WA participants or for solar PV projects, so they are excluded here.

1 These program level free ridership rates are computed as the savings-weighted averages of the track level results.

2 Multiple years of survey data were aggregated together to compute free ridership for these non-residential programs and tracks because at least one sub-quota within the program had a sample size below 30. Additional years of data were added until 30 or more survey responses were achieved in each sub-quota.

Summary of Results

- Existing Homes and Residential Solar participants were asked about satisfaction with their contractors; 92 percent of both Existing Homes Oregon and Solar PV respondents were satisfied with their contractor overall, followed by 91 percent for Existing Homes Washington respondents. Satisfaction with the quality of installation work was also very high at 94, 94, and 90 percent for Existing Homes Oregon, Solar PV, and Existing Homes Washington respondents, respectively. Roughly 32 percent of Existing Homes participants considered Energy Trust’s list of approved trade allies when selecting their contractor; 27 percent of Existing Homes Washington respondents had considered the list.

Measure	Percent satisfied with contractor	Percent satisfied with quality of installation work	Percent who considered trade ally list
Existing Homes - Oregon	92%	94%	32%
Ceiling Insulation	94%	95%	38%
Floor Insulation	89%	95%	31%
Wall Insulation	96%	93%	32%
Heat Pumps (excluding DHPs)	89%	94%	28%
Ductless Heat Pumps	94%	93%	29%
Gas Tank Water Heaters	98%	100%	27%
Heat Pump Water Heaters	72%	78%	53%
Windows	93%	96%	25%
Gas Fireplaces	91%	92%	36%
Smart Thermostats	100%	100%	N/A
Existing Homes - Washington	91%	90%	27%
Residential Solar PV	92%	94%	N/A

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Commercial and Industrial Summary

- Satisfaction with overall program experience ranged from 90 to 98 percent for commercial and industrial respondents.
- Satisfaction with program representatives was high across programs. All nine Existing Buildings Washington respondents rated their satisfaction a 4 or 5 out a five. 98 percent of Existing Buildings – Oregon and Production Efficiency respondents were satisfied with the program representative, along with 97 percent of Multifamily respondents.

Program	Completed Surveys	Percent Satisfied with Overall Experience	Percent Satisfied with Program Representative	Free Ridership (savings weighted)	
				Electric	Gas
Existing Buildings - Oregon	226	95%	98%	9% ^{1,2}	24% ^{1,2}
Existing Buildings - Washington	10	90%	100%	†	†
Production Efficiency	214	98%	98%	12% ¹	18% ²
Multifamily	142	94%	97%	24%	13% ²

NOTE: Please see Appendix A for more information about how free ridership numbers are calculated from survey responses. 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 sample.

† Free ridership is not computed for WA participants, so they are excluded here.

1 These program level free ridership rates are computed as the savings-weighted averages of the track level results.

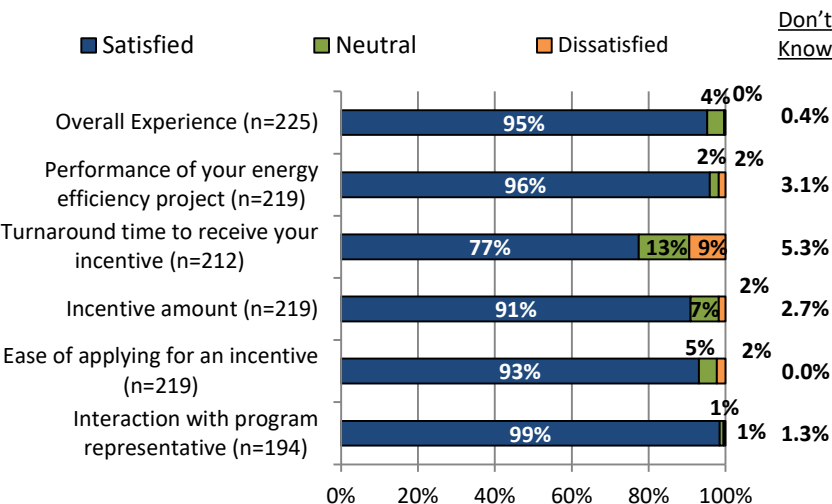
2 Multiple years of survey data were aggregated together to compute free ridership for these non-residential programs because at least one sub-quota within the program had a sample size below 30. Additional years of data were added until 30 or more survey responses were achieved in every sub-quota.

Existing Buildings – Oregon

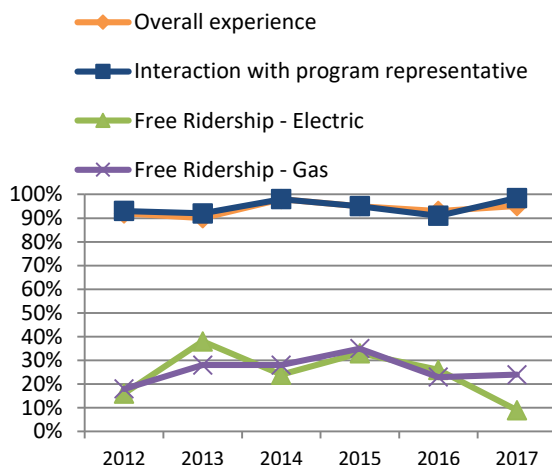
- Ninety-five percent of Existing Buildings Oregon respondents rated their overall satisfaction with Energy Trust a 4 or 5 out of 5. Satisfaction was lowest for the turnaround time to receive the incentive (77 percent). The Existing Buildings Standard, Lighting, and Custom tracks each received overall satisfaction ratings of 97 percent, 94 percent, and 96 percent respectively.
- Twenty-nine percent of respondents said they received Energy Trust funded technical services. Ninety-seven percent of those respondents were satisfied with the services, rating them 4 or 5 out of 5.
- Electric free ridership was nine percent, down significantly, while gas free ridership was steady at 24 percent.
- Forty-nine percent of respondents would have postponed the project one year or more if Energy Trust incentives and services were not available; 28 percent stated that they would have done exactly the same project, although only 71 percent of those would have covered the entire cost of the project.
- Energy Trust funded technical services had the greatest influence on incorporating energy efficient features into a project (88 percent rating 4 or 5 out of 5), followed by incentives (85 percent rating 4 or 5 out of 5).

Participant Satisfaction

Satisfaction with Program Elements



Satisfaction Over Time (Annual)

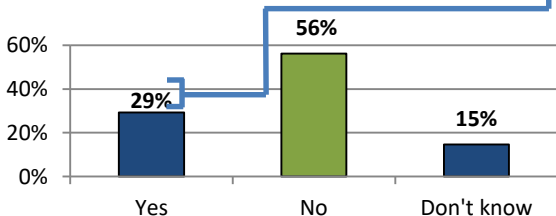


Survey question:

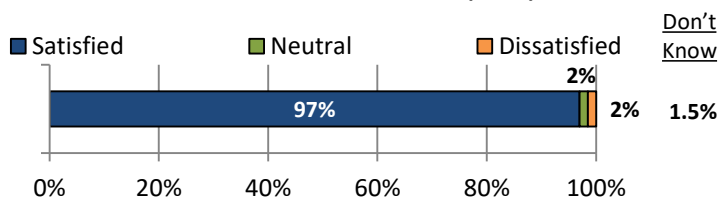
- Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied.

Energy Trust-funded Technical Services

Did you receive Energy Trust-funded technical services? (n=226)



Satisfaction with technical services (n=65)



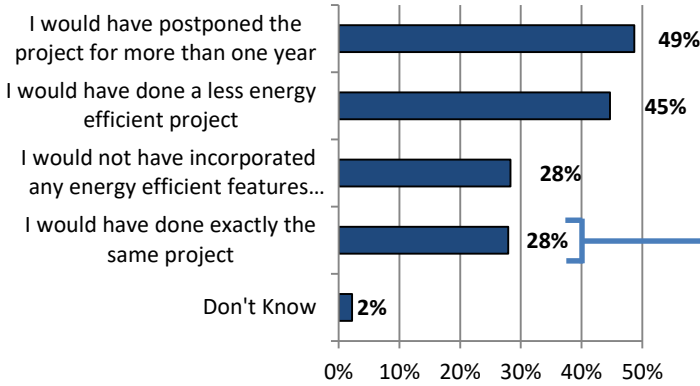
Survey questions:

- Q2E. Did you receive Energy Trust-funded technical services?
- Q2F. Please rate your satisfaction with the quality of the technical services on a scale of 1 to 5, where 1 means not at all satisfied and 5 means very satisfied.

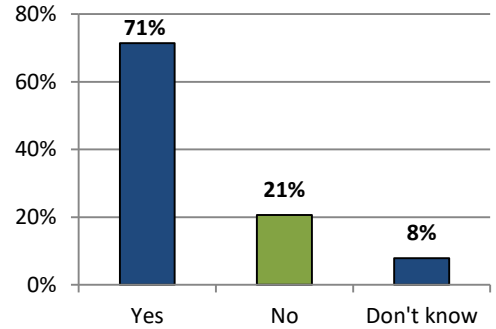
Existing Buildings – Oregon

Impact of Incentives and Information

Actions Would Have Taken Without Incentive or Information (n=226)



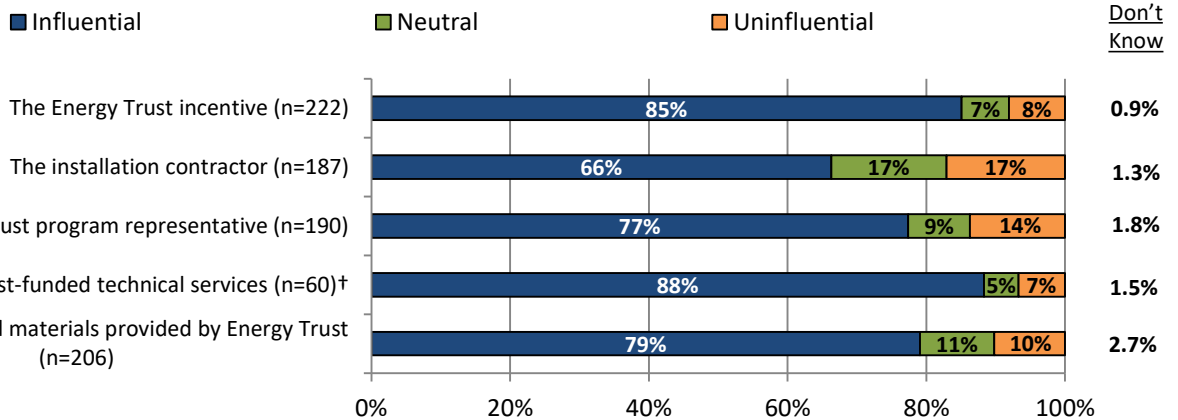
Would firm have made funds available in the absence of the Energy Trust incentive? (n=63)



Survey questions:

- Q3. Which of the following statements describe the actions you would have taken had the Energy Trust incentive and information not been available? *(Multiple responses possible)*
- Q4. In the absence of the Energy Trust incentive, would your firm have made funds available to cover the entire cost of the Energy Efficient features of the project?

Influences on Decision to Incorporate Energy Efficient Features in Project



Survey questions:

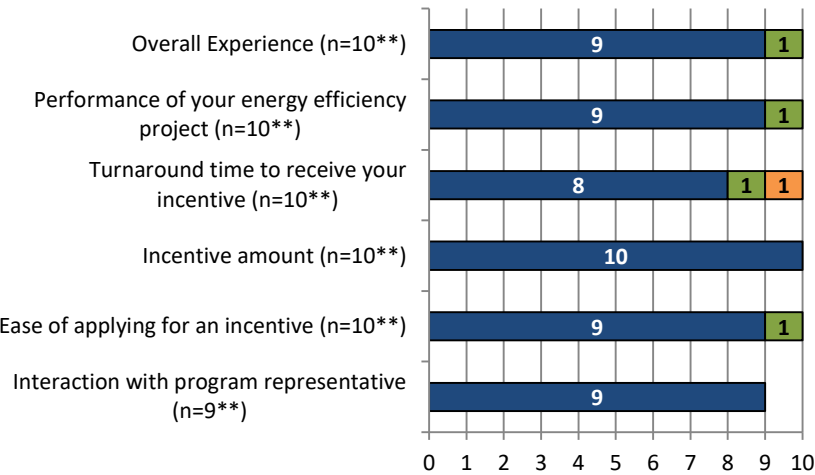
- Q5. How influential were the following elements on your decision to incorporate energy efficient features in your project? *(† Only asked of those that reported receiving technical services)*

Existing Buildings – Washington

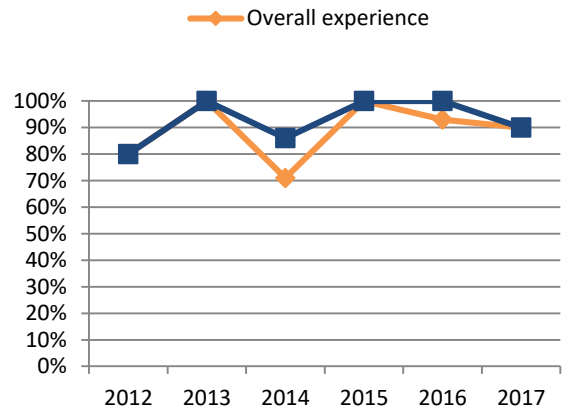
- Nine out of ten Existing Buildings Washington respondents rated their overall satisfaction with Energy Trust a 4 or 5 out of 5. Satisfaction with performance of the project and ease of applying for incentives was consistent (nine of ten respondents).
- Two respondents said they received Energy Trust-funded technical services. Both respondents were satisfied with the services, rating it a 5 out of 5.
- Four of ten respondents would have done exactly the same project if Energy Trust incentives and services were not available, although only three of those would have covered the entire cost of the project; five respondents would not have incorporated any energy efficient features into their project.
- The program representative had the greatest influence on incorporating energy efficient features into a project (all rating it 4 or 5 out of 5). The two respondents who received technical services said it was influential.

Participant Satisfaction

■ Satisfied ■ Neutral ■ Dissatisfied



Satisfaction Over Time (Annual)



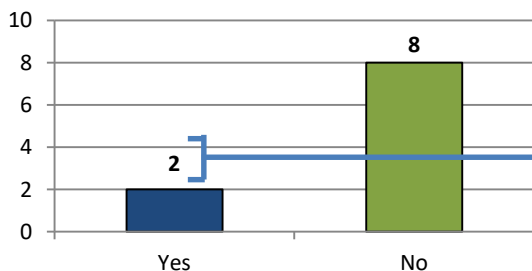
Note, only one qualified respondent in Q3, 2016. That respondent replied with "Not Applicable".

Survey Question:

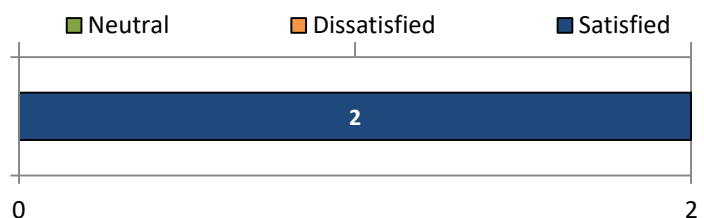
- Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied. (**caution: small sample size)

Energy Trust-funded Technical Services

Did you receive Energy Trust-funded technical services? (n=10)**



Satisfaction with technical services (n=2)**



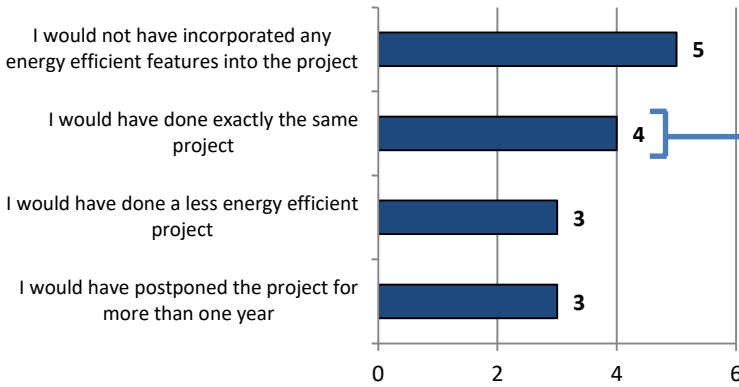
Survey questions:

- Q2E. Did you receive Energy Trust-funded technical services? (**caution: small sample size)
- Q2F. Please rate your satisfaction with the quality of the technical services on a scale of 1 to 5, where 1 means not at all satisfied and 5 means very satisfied. (**caution: small sample size)

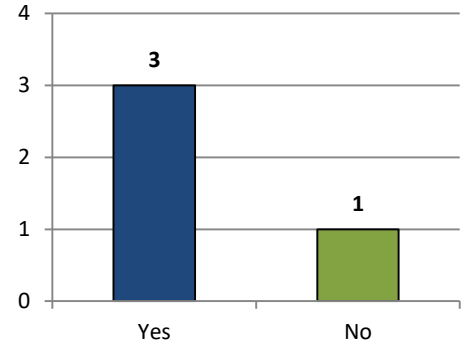
Existing Buildings – Washington

Impact of Incentives and Information

Actions Would Have Taken Without Incentive or Information (n=10)**



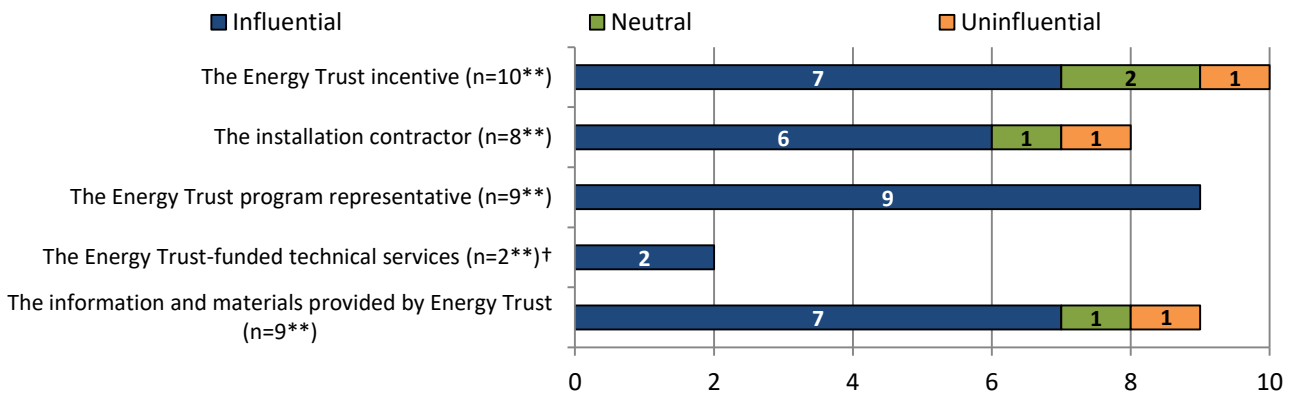
Would firm have made funds available in the absence of the Energy Trust incentive? (n=4)**



Survey questions:

- Q3. Which of the following statements describe the actions you would have taken had the Energy Trust incentive and information not been available? (**caution: small sample size) (Multiple responses possible)
- Q4. In the absence of the Energy Trust incentive, would your firm have made funds available to cover the entire cost of the Energy Efficient features of the project? (**caution: small sample size)

Influences on Decision to Incorporate Energy Efficient Features in Project



Survey question:

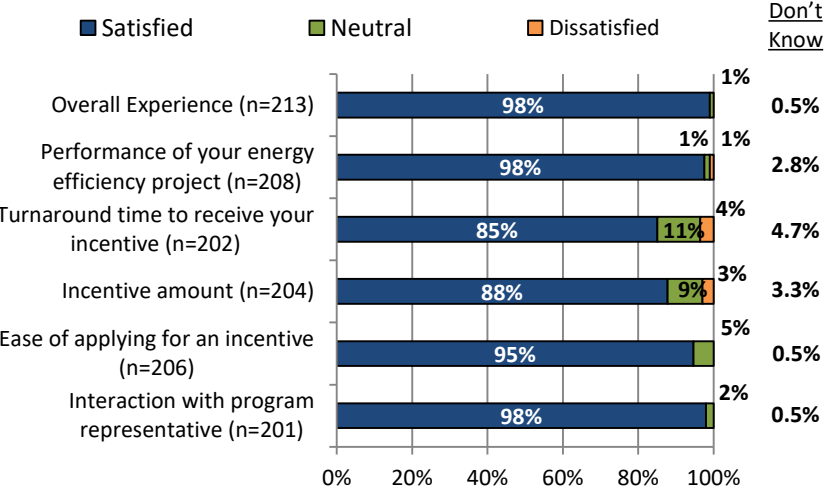
- Q5. How influential were the following elements on your decision to incorporate energy efficient features in your project? (**caution: small sample size) († Only asked of those that reported receiving technical services)

Production Efficiency

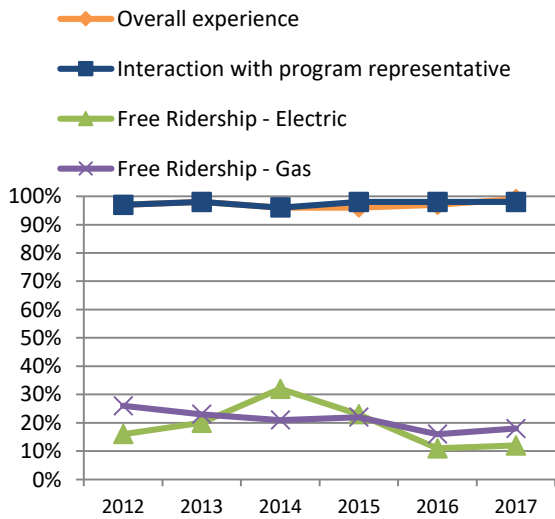
- Ninety-eight percent of Production Efficiency respondents rated their overall satisfaction with Energy Trust a 4 or 5 out of 5. Satisfaction was lowest for the turnaround time (85 percent). The Production Efficiency Standard, Lighting, and Custom tracks all received overall satisfaction ratings of 98 percent respectively.
- Forty percent of respondents said they received Energy Trust funded technical services. Ninety-five percent of them were satisfied with the services, rating them 4 or 5 out of 5.
- Electric and gas free ridership held relatively steady at 12 percent and 18 percent, respectively.
- Fifty-two percent of respondents would have postponed the project for a year or more if Energy Trust incentives or information were not available; 29 percent would have done exactly the same project, although only 82 percent of those would have covered the entire cost of the project.
- The Energy Trust incentive and program representative both had a large influence on the decision to incorporate energy efficient features into projects (81 percent rating 4 or 5 out of 5).

Participant Satisfaction

Satisfaction with Program Elements

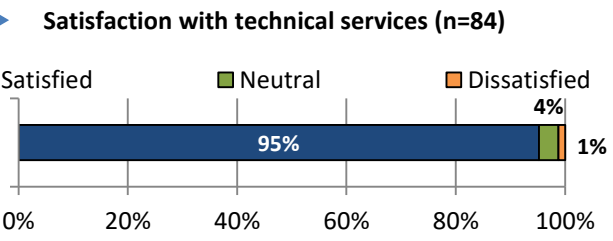
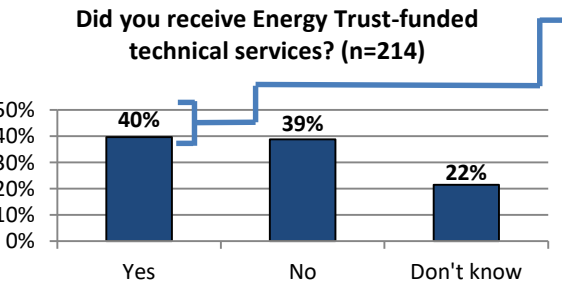


Satisfaction Over Time (Annual)



Survey question:
 • Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied.

Energy Trust-funded Technical Services

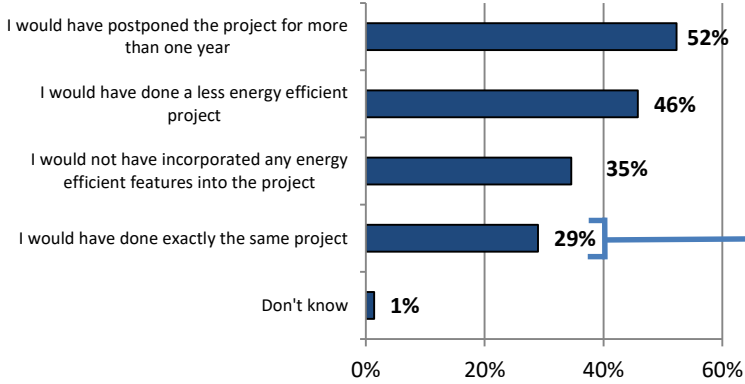


Survey questions:
 • Q2E. Did you receive Energy Trust-funded technical services?
 • Q2F. Please rate your satisfaction with the quality of the technical services on a scale of 1 to 5, where 1 means not at all satisfied and 5 means very satisfied.

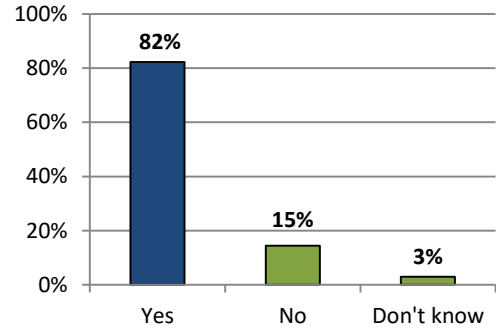
Production Efficiency

Impact of Incentives and Information

Actions Would Have Taken Without Incentive or Information (n=214)



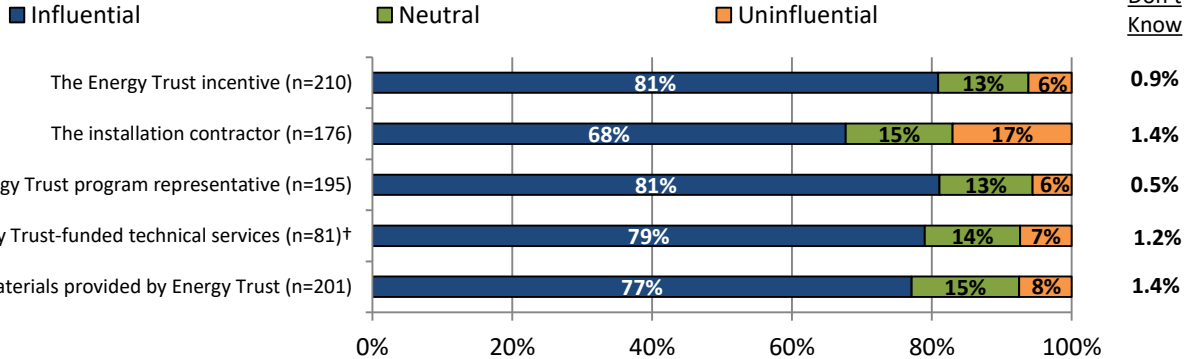
Would firm have made funds available in the absence of the Energy Trust incentive? (n=62)



Survey questions:

- Q3. Which of the following statements describe the actions you would have taken had the Energy Trust incentive and information not been available? *(Multiple responses possible)*
- Q4. In the absence of the Energy Trust incentive, would your firm have made funds available to cover the entire cost of the Energy Efficient features of the project?

Influences on Decision to Incorporate Energy Efficient Features in Project



Survey questions:

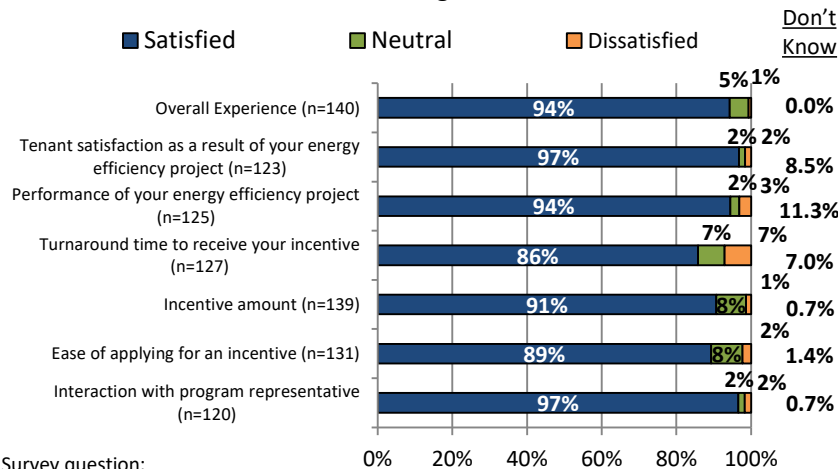
- Q5. How influential were the following elements on your decision to incorporate energy efficient features in your project? *([†] Only asked of those that reported receiving technical services)*

Multifamily

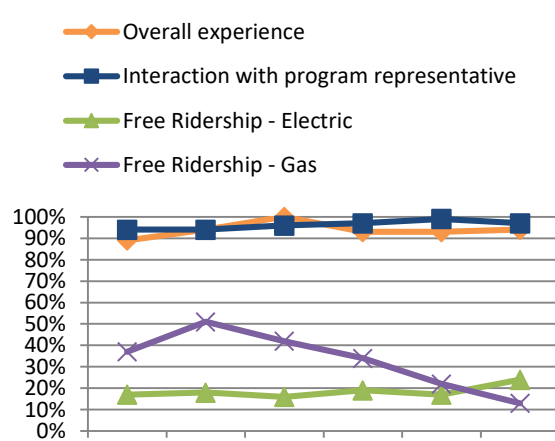
- Ninety-four percent of Multifamily respondents rated their overall satisfaction with Energy Trust a 4 or 5 out of 5. Satisfaction was lowest for the turnaround time to receive the incentive (86 percent).
- Fifty-one percent of respondents said they received an Energy trust walk-through survey of their property, 96 percent of those respondents rated their overall satisfaction a 4 or 5 out of 5.
- Thirty percent of respondents reported receiving Energy Trust-funded technical services, 93 percent of those respondents rated their satisfaction with the survey a 4 or 5 out of 5.
- Electric free ridership increased to 24 percent and gas free ridership dropped significantly to 13 percent.
- Forty-nine percent of respondents would have done a less energy efficient project if Energy Trust incentives or information were not available; 20 percent would not have incorporated any energy efficient features into their project; 33 percent would have done exactly the same project, although 87 percent of those would have covered the entire cost of the project.
- The Energy-trust funded technical services had the greatest influence on the decision to incorporate energy efficient features into the project (82 percent rating 4 or 5 out of 5), followed by the walk-through survey and the incentive (81 and 80 percent rating 4 or 5 out of 5, respectively).

Participant Satisfaction

Satisfaction with Program Elements



Satisfaction Over Time (Annual)

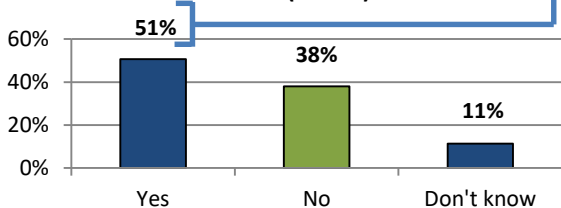


Survey question:

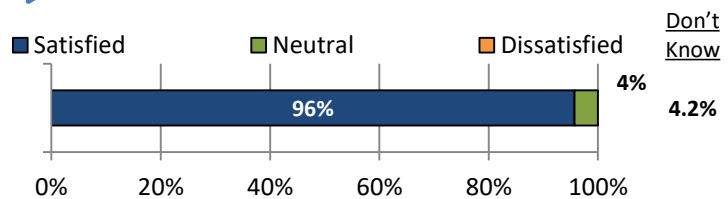
- Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied.

Energy Trust Walk Through Survey

Did you receive a walk-through survey of your property performed by Energy Trust? (n=142)



Satisfaction with walk-through survey (n=72)

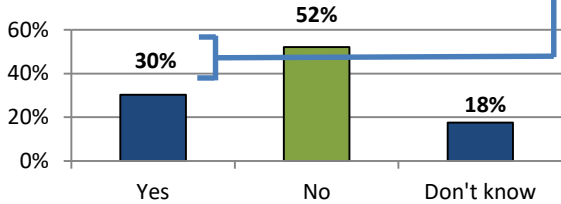


Survey questions:

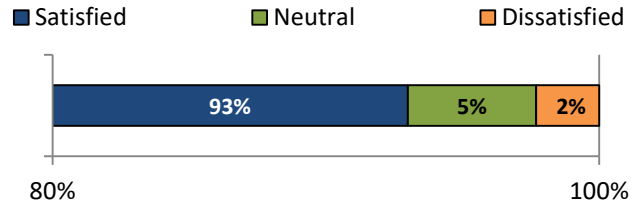
- Q2B. Did you receive a walk-through survey of your property performed by Energy Trust?
- Q2D. Please rate your satisfaction with the quality of the walk-through survey on a scale of 1 to 5, where 1 means not at all satisfied and 5 means very satisfied.

Energy Trust-funded Technical Services

Did you receive Energy Trust-funded technical services? (n=142)



Satisfaction with technical services (n=43)

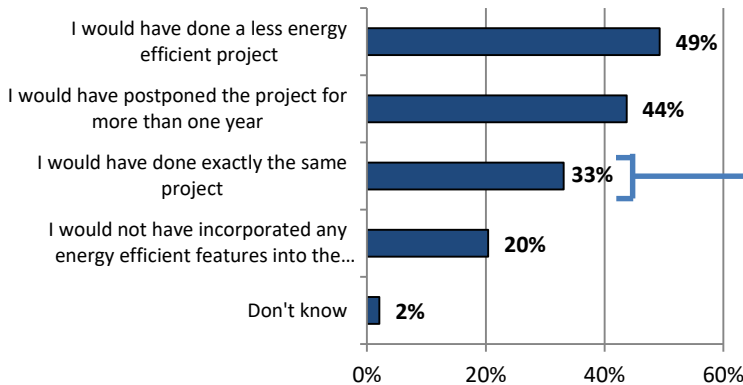


Survey questions:

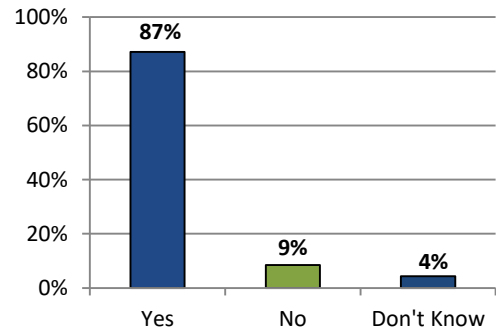
- Q2E. Did you receive Energy Trust-funded technical services?
- Q2F. Please rate your satisfaction with the quality of the technical services on a scale of 1 to 5, where 1 means not at all satisfied and 5 means very satisfied.

Impact of Incentives and Information

Actions Would Have Taken Without Incentive or Information (n=142)



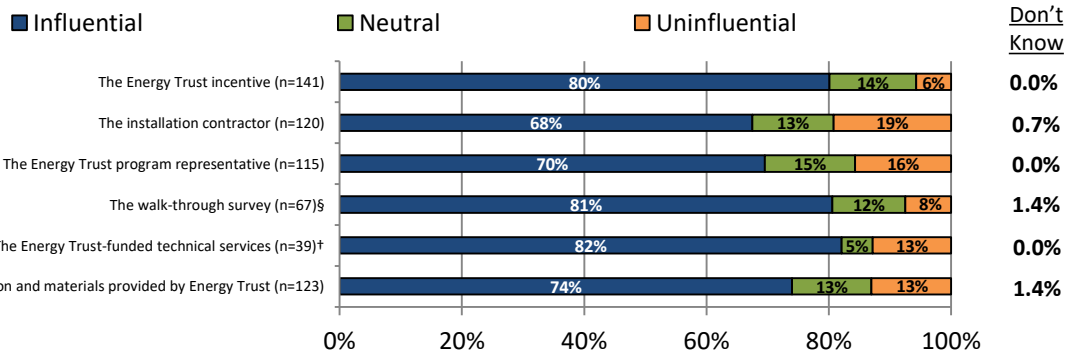
Would firm have made funds available in the absence of the Energy Trust incentive? (n=47)



Survey questions:

- Q3. Which of the following statements describe the actions you would have taken had the Energy Trust incentive and information not been available? (Multiple responses possible)
- Q4. In the absence of the Energy Trust incentive, would your firm have made funds available to cover the entire cost of the Energy Efficient features of the project?

Influences on Decision to Incorporate Energy Efficient Features in Project



Survey questions:

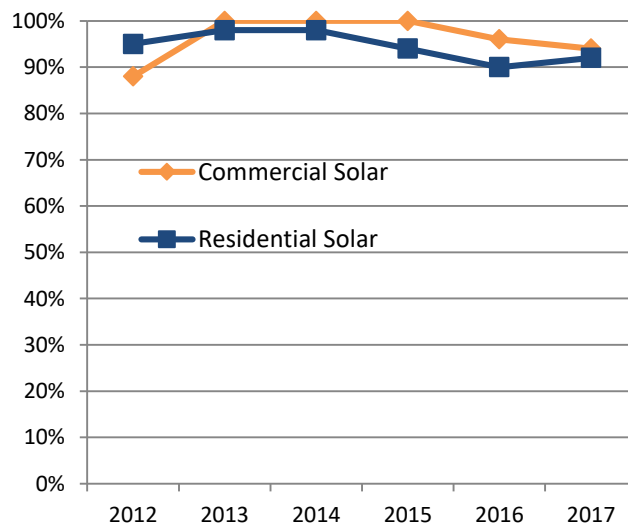
- Q5. How influential were the following elements on your decision to incorporate energy efficient features in your project? († Only asked of those that reported receiving technical services) (§ Only asked of those who received a walk through survey)

Solar PV Summary

- Satisfaction of Commercial Solar PV respondents is 94 percent.
- On the residential side, 92 percent of Solar PV respondents were satisfied.
- All eleven of the Commercial Solar PV respondents were satisfied with the program representative.

Program	Completed Surveys	Percent Satisfied
Commercial Solar PV	16	94%
Residential Solar PV	253	92%

**Solar PV Satisfaction Over Time
(Annual)**

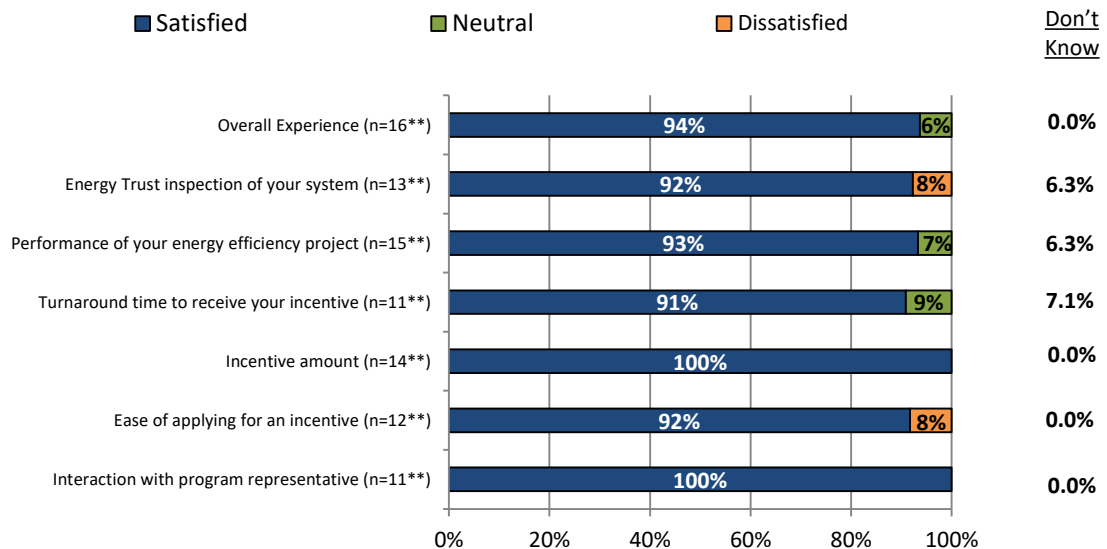


Commercial Solar PV

- Ninety-four percent Commercial Solar PV respondents rated their overall satisfaction with Energy Trust a 4 or 5 out of 5. All respondents were satisfied with their interactions with the program representatives.
- Sixty-seven percent of respondents would have postponed the project for more than a year if Energy Trust incentives or information were not available; 20 percent would have installed exactly the same system, and two out of three of them would not have covered the entire cost of the system.
- The installation contractor had the greatest influence on the decision to install a solar PV system (81 percent rating 4 or 5 out of 5), followed by the incentive (80 percent rating 4 or 5 out of 5).

Participant Satisfaction

Satisfaction with Program Elements

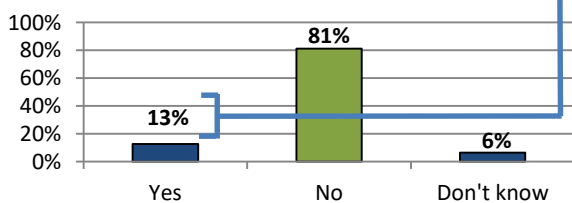


Survey Question:

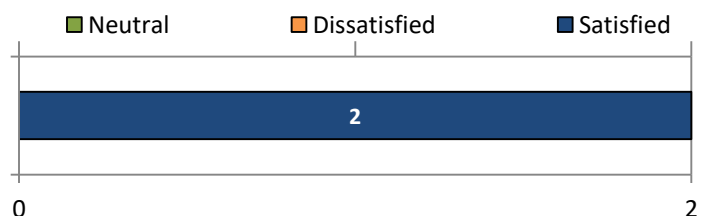
- Q1. Thinking of your new solar PV system, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied. (**caution: small sample size)

Energy Trust-funded Technical Services and Tax Credit

Did you receive Energy Trust-funded technical services? (n=16**)



Satisfaction with technical services (n=2**)



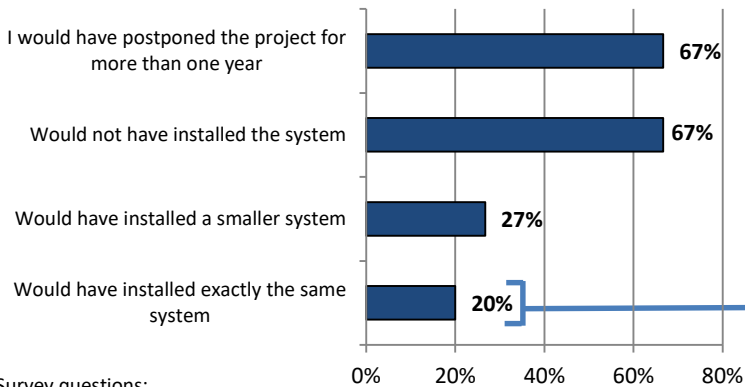
Survey questions:

- Q2E. Did you receive Energy Trust-funded technical services? (**caution: small sample size)
- Q2F. Please rate your satisfaction with the quality of the technical services on a scale of 1 to 5, where 1 means not at all satisfied and 5 means very satisfied. (**caution: small sample size)

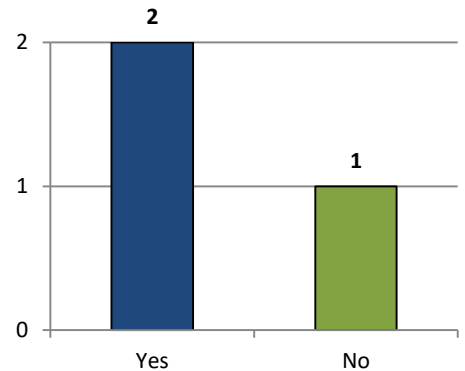
Commercial Solar PV

Impact of Incentives and Information

Actions Would Have Taken Without Incentive or Information (n=15)**



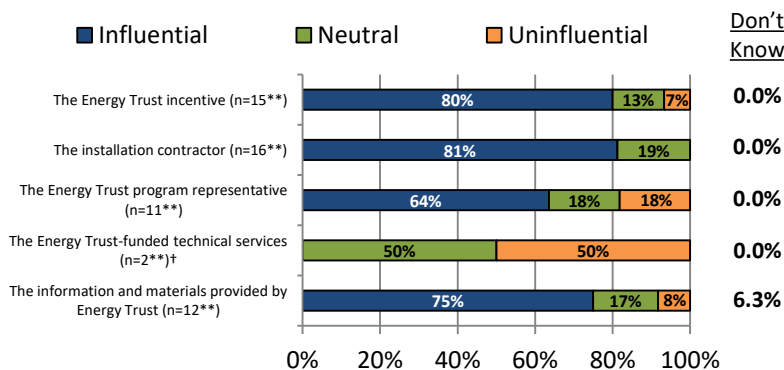
Would firm have made funds available in the absence of the Energy Trust incentive? (n=3)**



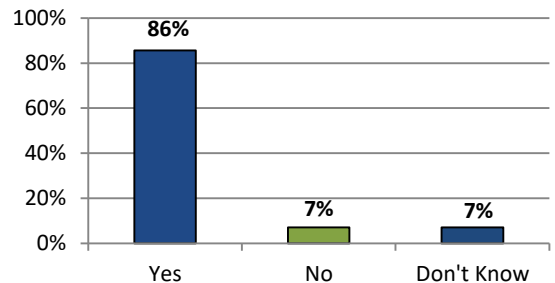
Survey questions:

- Q3. Which of the following statements describe the actions you would have taken had the Energy Trust incentive and information not been available? (**caution: small sample size) (Multiple responses possible)
- Q4. In the absence of the Energy Trust incentive, would your firm have made funds available to cover the entire cost of the Energy Efficient features of the system? (**caution: small sample size)

Influences on Decision to Install Solar PV System



Have you applied or will you apply for a federal tax credit? (n=14)**

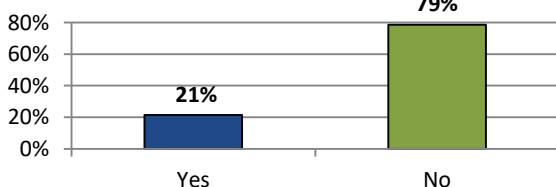


Survey questions:

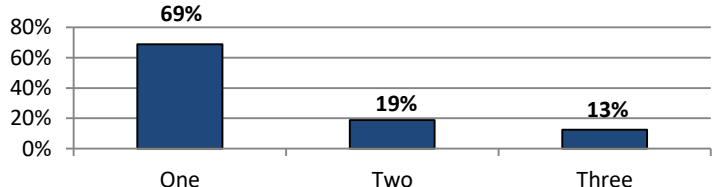
- Q5. How influential were the following elements on your decision to install solar? (**caution: small sample size)
- Q6. Have you applied or will you apply for a federal tax credit for the system you installed? (**caution: small sample size)

Financing and Number of Bids

Financing to help pay for solar PV system (n=14)**



Number of contractors that provided bids (n=16)**



Survey questions:

- Q11A. Did you use a loan or any type of financing to help pay for your solar system? (**caution: small sample size)
- Q11E. How many contractors did you get a bid from before deciding to move forward with your project? (**caution: small sample size)

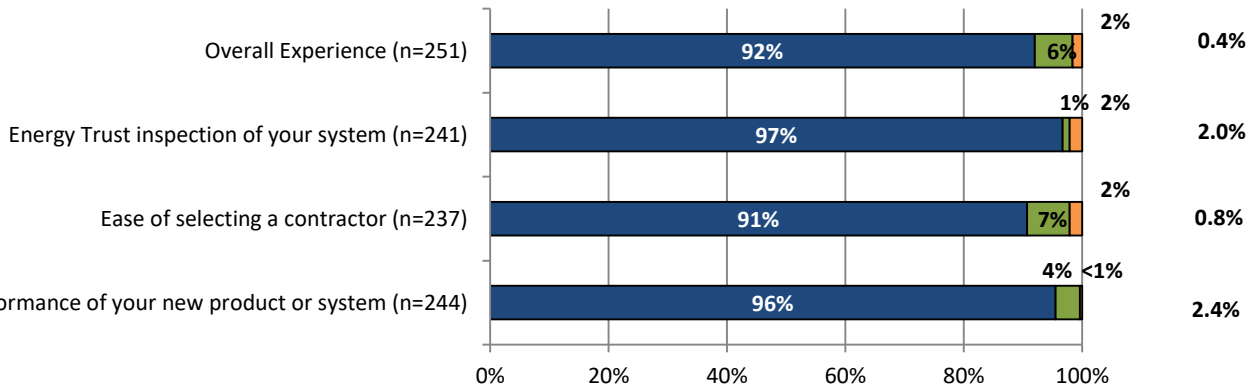
Residential Solar PV

- Ninety-two percent of Residential Solar PV respondents rated their overall satisfaction a 4 or 5 out of 5, 95 percent were satisfied with the performance of the system, and 97 percent were satisfied with the Energy Trust inspection of the system.
- Just under half of respondents (43 percent) had visited the Energy Trust website, talked or emailed with a representative, or received printed materials before having their system installed.
- Forty-seven percent of respondents would not have installed the solar PV system without Energy Trust incentives and information and another 47 percent would have postponed installation; 36 percent would have installed the same system, and 16 percent would have installed a smaller system.
- The Energy-trust incentive was the most influential element on the decision to install the system followed by the contractor (85 percent and 84 percent rating a 4 or 5 out of 5 respectively).
- Ninety-four percent of respondents rated their satisfaction with the installation work a 4 or 5 out of 5 and 92 percent were satisfied with their contractor overall.
- Fifty-one percent of respondents paid for their system with cash, while 30 percent used a loan.

Participant Satisfaction

■ Satisfied ■ Neutral ■ Dissatisfied

Don't Know

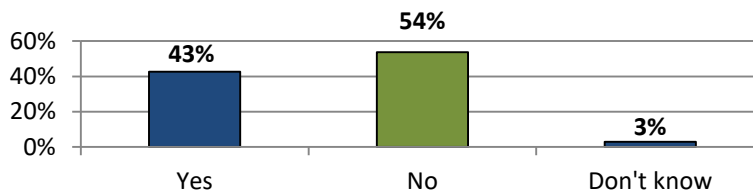


Survey Question:

- Q1. Thinking of your new solar PV system, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied.

Interactions With Energy Trust Prior to Purchase of System

Visited the Energy Trust Website, talked or emailed with a representative, or received printed materials prior to purchase of system (n=253)



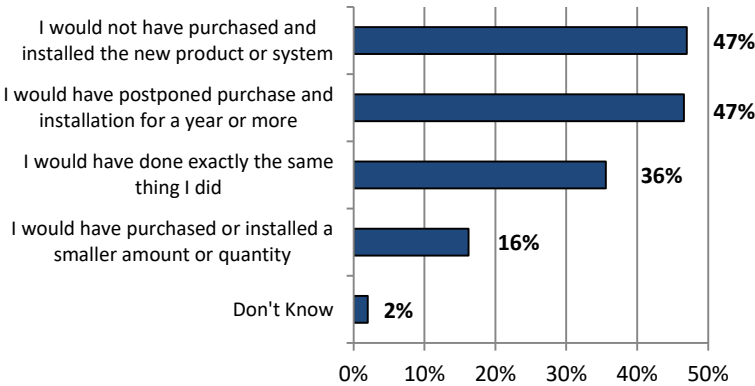
Survey Question:

- Q2. Did you or anyone in your household visit the Energy Trust website, talk or e-mail with an Energy Trust representative, or receive any printed materials before you purchased your system?

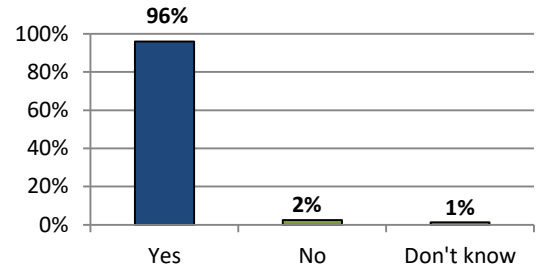
Residential Solar PV

Impact of Incentives and Information

Actions Would Have Taken Without Incentive or Information (n=253)



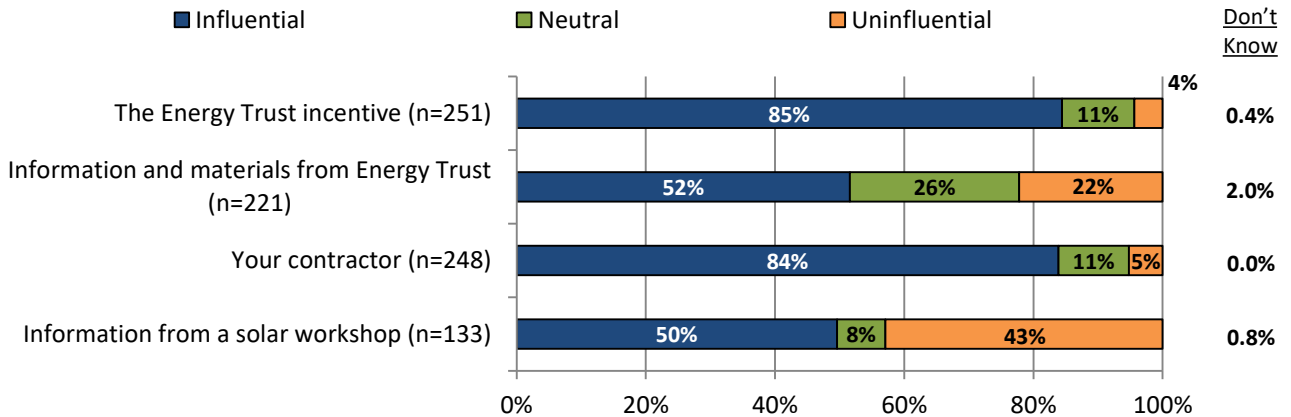
Have you applied or will you apply for the applicable Oregon state residential energy tax credit? (n=247)



Survey questions:

- Q3. Which of the following statements describe the actions you would have taken had the Energy Trust incentive and information not been available? (Multiple responses possible)
- Q6. Have you applied or will you apply for the applicable Oregon state residential energy tax credit?

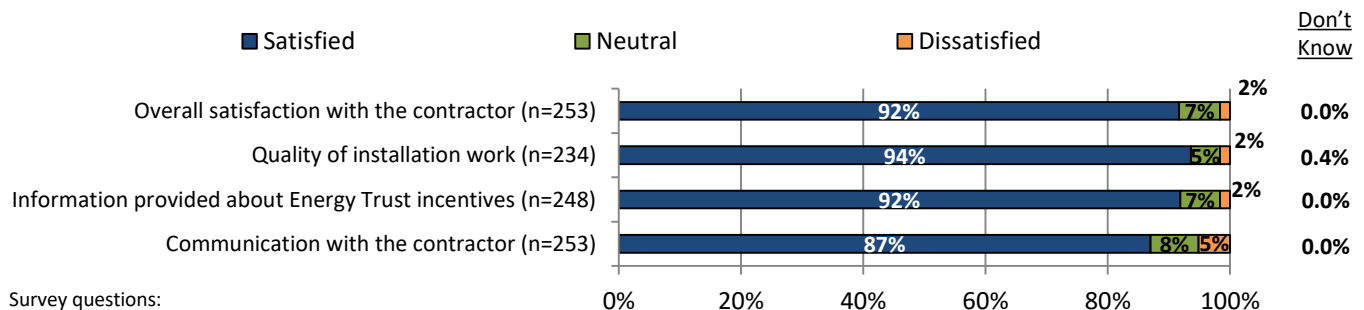
Influences on Decision to Install Solar PV System



Survey questions:

- Q4A. How influential were the following elements on your decision to purchase your system?

Satisfaction with Contractor



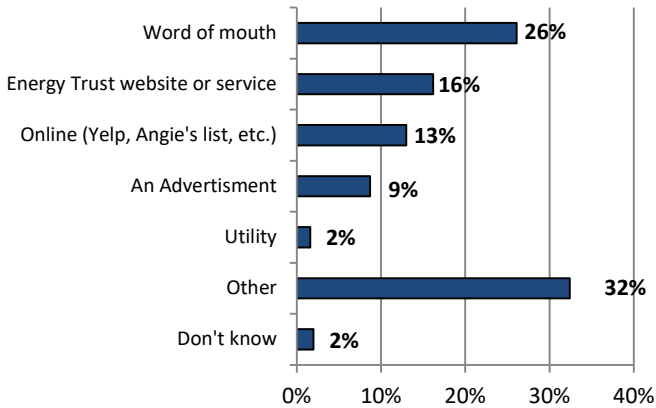
Survey questions:

- Q8. Thinking of your experience with your contractor, please indicate the number that corresponds to your satisfaction with the following service elements, with 1 indicating not at all satisfied and 5 indicating very satisfied. (Only asked of respondents who used a contractor to have work performed)

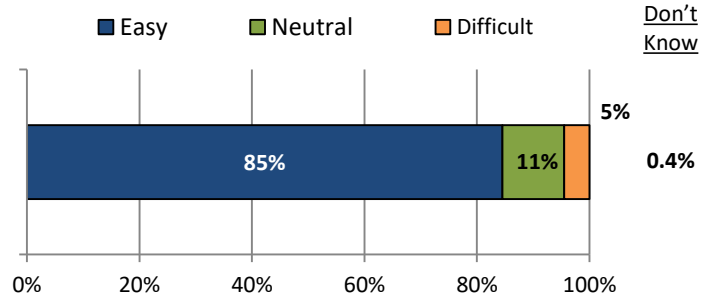
Residential Solar PV

Finding a Contractor

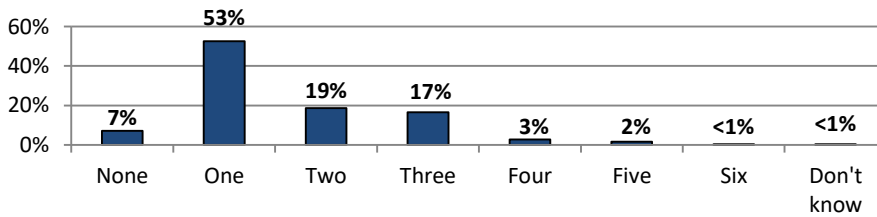
How did you find your contractor? (n=253)



Difficulty of finding and selecting contractor (n=246)



Number of contractors that provided bids (n=253)

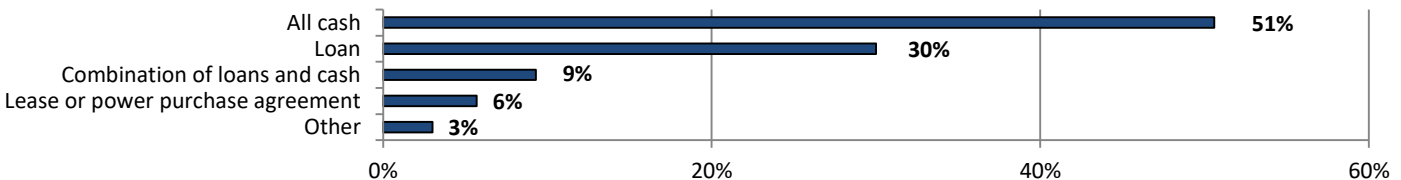


Survey questions:

- Q12Q. How did you find your contractor? (Multiple responses possible)
- Q12R. How easy or difficult was the process of finding and selecting your contractor, using a 5-point scale?
- Q13New. How many contractors did you get a bid from before deciding to move forward with your project? (Only asked of respondents who used a contractor to have work performed)

Payment

How system was paid for (n=247)



Survey questions:

- Q13. How did you pay for your system? (Only asked of Solar PV System respondents)

Home Products Summary

- Satisfaction for the Clothes Washer measure was high, with 94 percent of respondents rating the overall experience a four or five out of five.
- Smart thermostats incentives were split between the Existing Homes and Home Products programs in 2017. The Fast Feedback results for smart thermostats are summarized under Existing Homes.
- Free ridership for Clothes Washers was up slightly from 2016 to 48 percent.

Program	Completed Surveys	Percent Satisfied	Free Ridership
Home Products – Clothes Washers	229	94%	48%

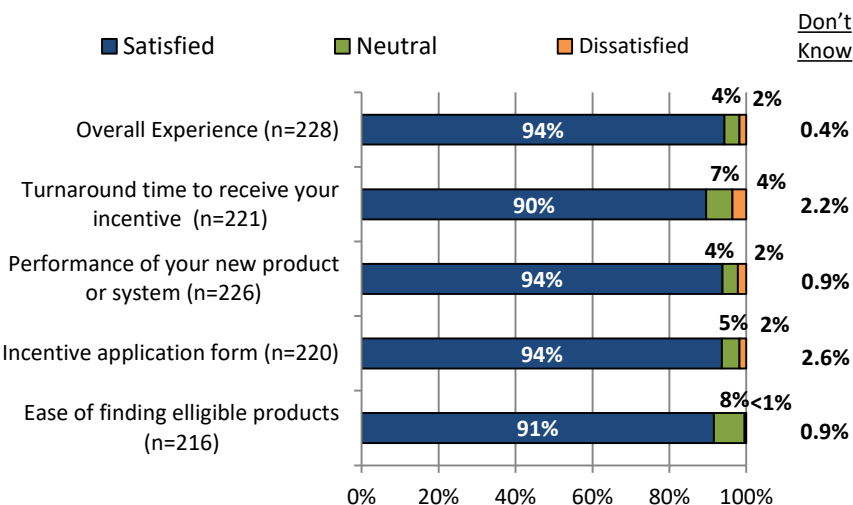
NOTE: Please see Appendix A for more information about how free ridership numbers are calculated from survey responses.

Clothes Washers

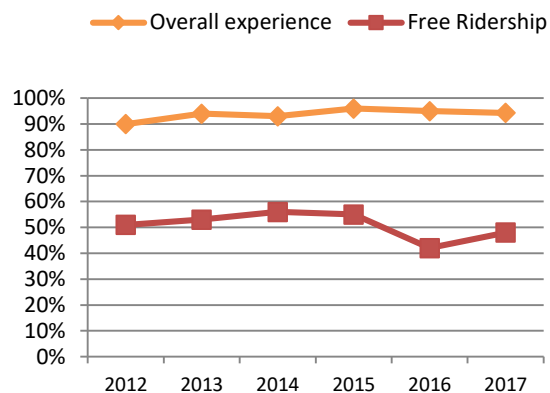
- Ninety-four percent of Clothes Washers respondents rated their overall satisfaction a 4 or 5 out of 5. Satisfaction with turnaround time to receive incentive received the lowest rating (90 percent).
- Twenty-three percent of respondents had used the Energy Trust website, talked or emailed with a representative, or received printed materials before purchasing their unit.
- Free ridership was up slightly to 48 percent.
- Sixty-five percent of respondents would have bought the same unit in the absence of Energy Trust incentives and information. The biggest influence on the purchase decision was the salesperson (57 percent), followed by the Energy Trust incentive (46 percent).

Participant Satisfaction

Satisfaction with Program Elements



Satisfaction Over Time (Annual)

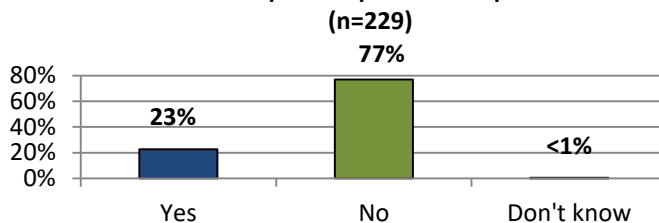


Survey question:

- Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied.

Interactions With Energy Trust Prior to Purchasing Product

Visited the Energy Trust Website, talked or emailed with a representative, or received printed materials prior to purchase of product



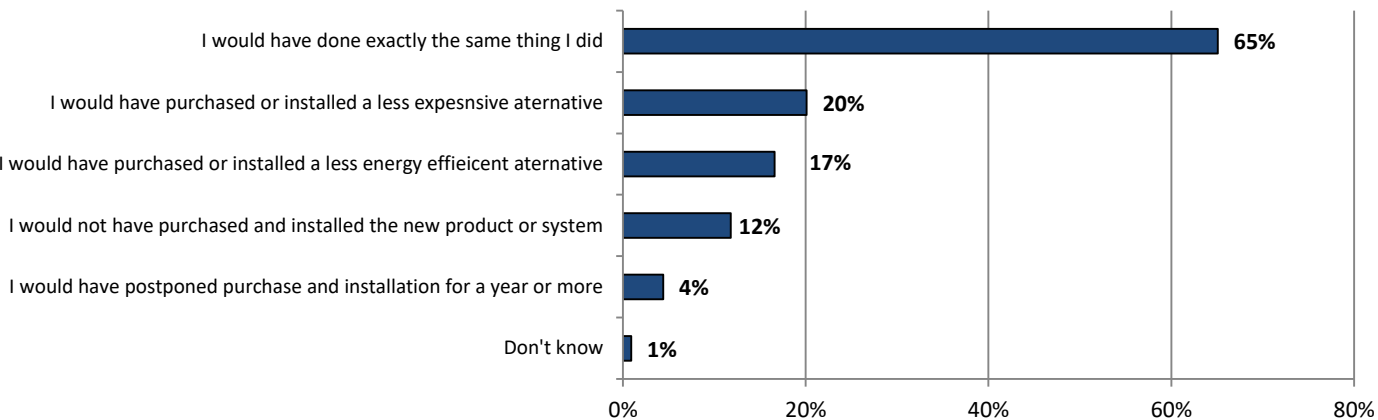
Survey Question:

- Q2. Did you or anyone in your household visit the Energy Trust website, talk or e-mail with an Energy Trust representative, or receive any printed materials before you purchased your product?

Clothes Washers

Impact of Incentives and Information

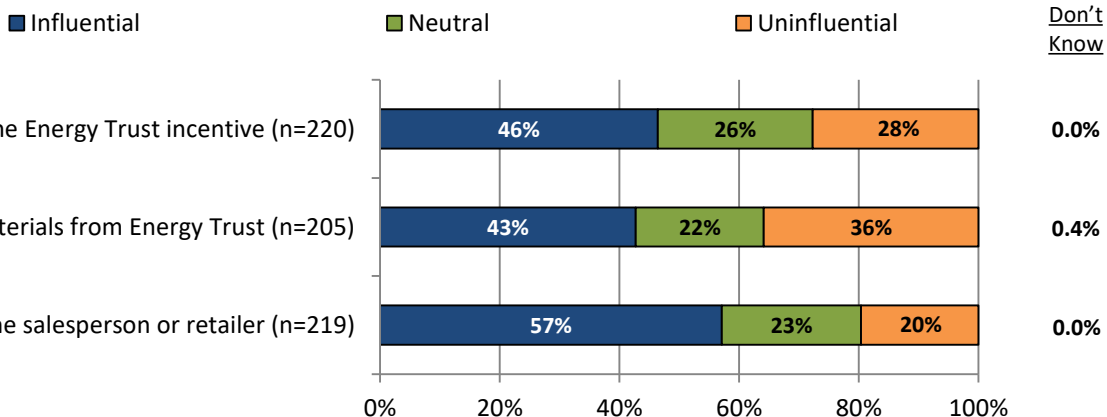
Actions Would Have Taken Without Incentive or Information (n=229)



Survey questions:

- Q3. Which of the following statements describe the actions you would have taken had the Energy Trust incentive and information not been available? (Multiple responses possible)

Influences on Decision to Purchase Product

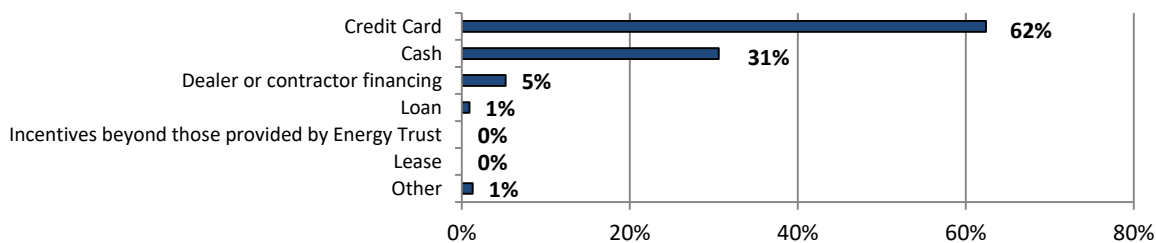


Survey questions:

- Q4A. How influential were the following elements on your decision to purchase your product?

Payment

How it was paid for (n=229)



Survey Question:

- Q12W. How did you pay for it? (Multiple responses possible)

Existing Homes Summary

- The total number of completed Existing Homes surveys is 1,456 (1,280 in Oregon, 176 in Washington).
- Overall satisfaction with Existing Homes Oregon measures varied from a high of 96 percent (Smart Thermostat) to 82 percent for Wall insulation, with an overall average of 91%. Overall satisfaction for Existing Homes Washington was 93 percent.
- Free ridership rates varied from 43 percent, for windows and insulation, to 21 percent for heat pump water heaters.

Survey Group	Oregon Surveys Completed	Washington Surveys Completed	Percent Satisfied	Free Ridership
Existing Homes - Oregon	1,280	-	91%	-
Ceiling Insulation	155	2	89%	42%
Floor Insulation	81	-	90%	43%
Wall Insulation*	28	-	82%	
Heat Pump (excluding DHPs)	115	-	90%	38%
Ductless Heat Pumps	158	-	91%	30%
Gas Tank Water Heaters	41	1	90%	36% ¹
Heat Pump Water Heaters*	20	-	90%	21%
Windows	230	31	90%	43%
Gas Fireplaces	228	20	88%	37%
Gas Furnaces	-	90	92%	†
Smart Thermostats	223	32	96%	39%
Existing Homes – Washington**	-	176	93%	†

* Very small sample size, interpret with caution.

** There are no measure-level quotas for Existing Homes - Washington.

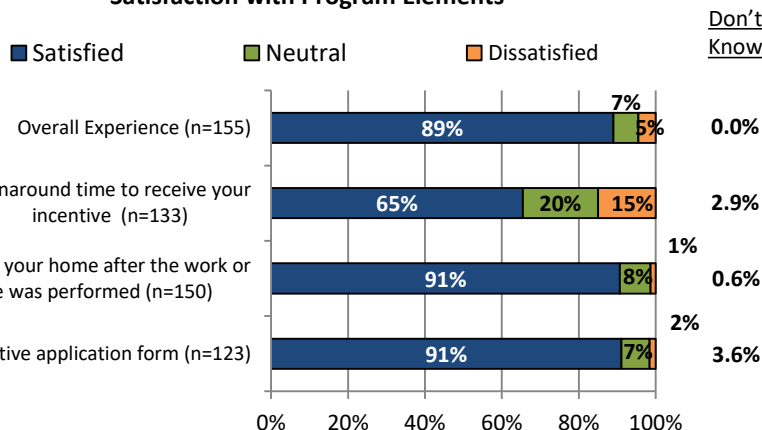
† Free ridership is not computed for WA participants, so they are excluded here. All gas furnace respondents were part of the Existing Homes Washington sample.

Ceiling Insulation

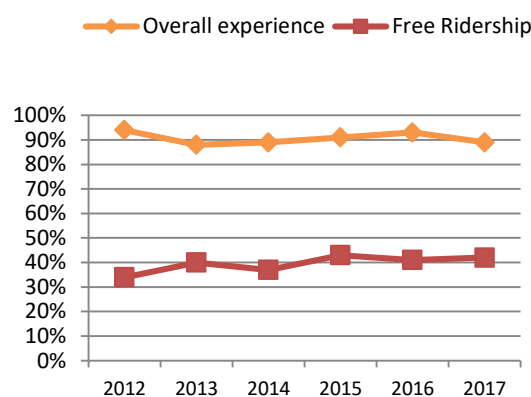
- Eighty-nine percent of Ceiling Insulation respondents rated their overall satisfaction a 4 or 5 out of 5. Satisfaction was lowest with the turnaround time to receive the incentive (65 percent), but satisfaction with comfort of the home and incentive application form was higher, with 91 percent satisfied for both.
- Forty-five percent of respondents visited the Energy Trust website, talked or emailed with a representative, or received printed materials before installing insulation.
- The free ridership rate remained steady at 42 percent.
- Sixty-five percent would have installed insulation without Energy Trust incentives and information, while 23 percent would have postponed the insulation for at least a year and 13 percent would not have had home weatherization or improvements performed.
- The contractor was the most influential element on the decision to have ceiling insulation installed (rated 4 or 5 by 78 percent of respondents), followed by the incentive (62 percent).
- Ninety-four percent of respondents were satisfied with their contractor; 38 percent consulted the approved trade ally list when choosing their contractor.

Participant Satisfaction

Satisfaction with Program Elements



Satisfaction Over Time (Annual)

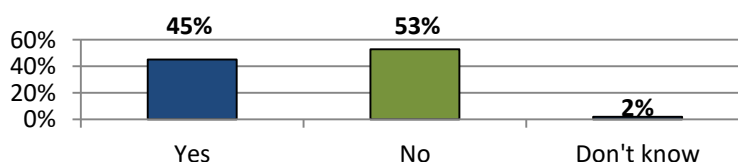


Survey question:

- Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied.

Interactions With Energy Trust Prior to Project

Visited the Energy Trust Website, talked or emailed with a representative, or received printed materials prior to project (n=155)



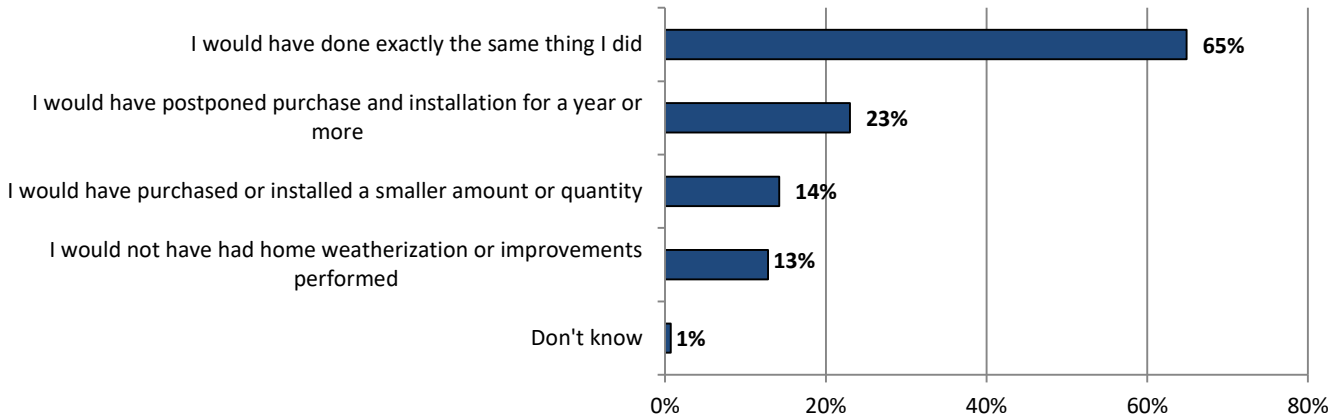
Survey Question:

- Q2. Did you or anyone in your household visit the Energy Trust website, talk or e-mail with an Energy Trust representative, or receive any printed materials before you had any services or work performed?

Ceiling Insulation

Impact of Incentives and Information

Actions Would Have Taken Without Incentive or Information (n=148)



Survey questions:

- Q3A. Which of the following statements describe the actions you would have taken had the Energy Trust incentives and information not been available? (Multiple responses possible)

Influences on Decision to Have Services or Work Performed

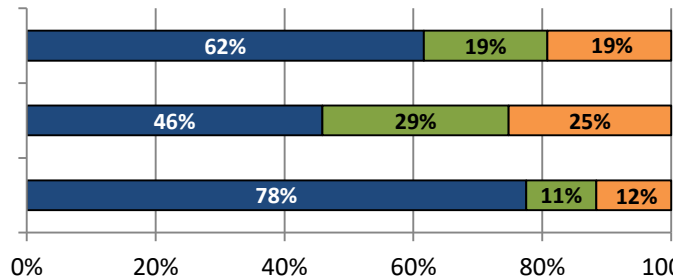
Influential

Neutral

Uninfluential

Don't Know

The Energy Trust incentive (n=146)

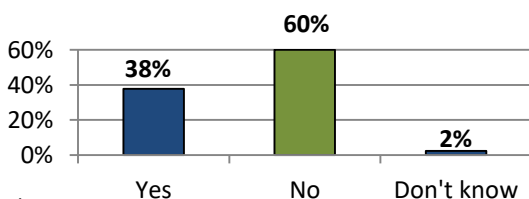


Survey questions:

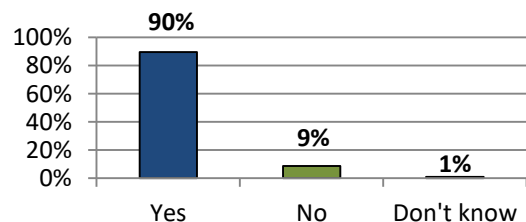
- Q4A. How influential were the following elements on your decision to have services or work performed?

The Contractor

Did you consider Energy Trust's list of approved trade allies when selecting your contractor? (n=130)



Did your contractor complete some or all of the incentive paperwork for you? (n=115)

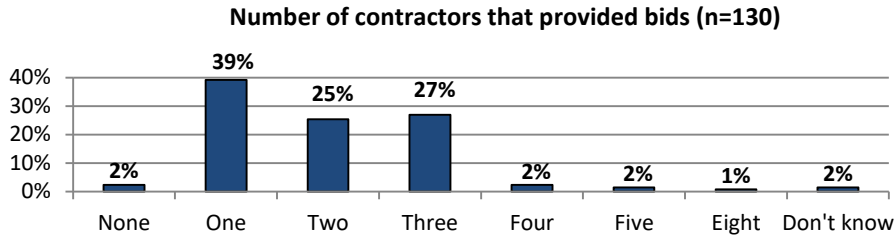


Survey questions:

- (These questions are only asked of respondents who used a contractor to have work performed)
- Q9. Did you ever consider Energy Trust's list of approved allies when selecting your contractor?
- Q9A. Did your contractor complete some or all of the incentive paperwork for you?

Ceiling Insulation

Number of Contractors Who Gave Bid



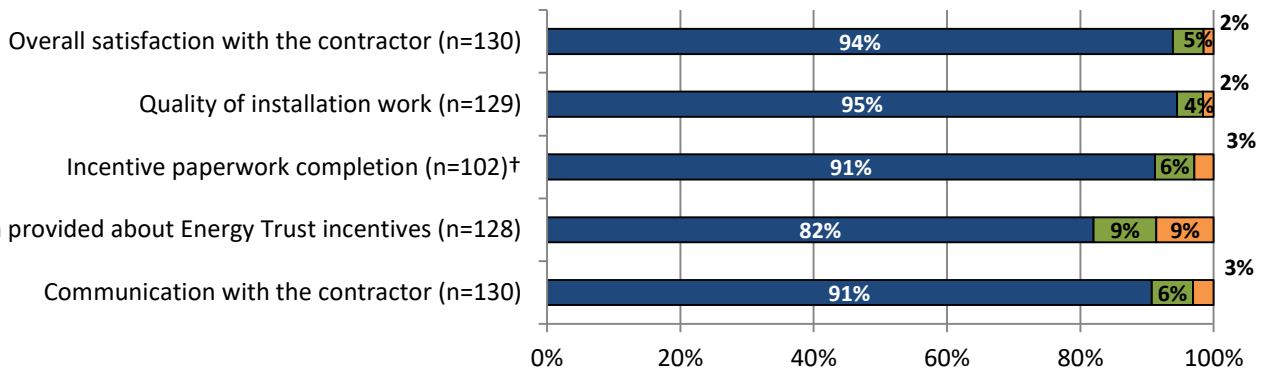
Survey questions:

(Only asked of respondents who used a contractor to have work performed)

- Q13New. How many contractors did you get a bid from before deciding to move forward with your project?

Satisfaction With Contractor

■ Satisfied ■ Neutral ■ Dissatisfied



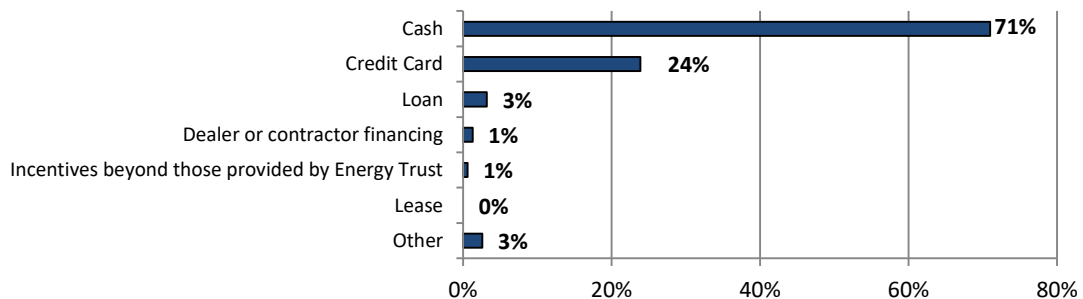
Survey questions:

(These questions are only asked of respondents who used a contractor to have work performed)

- Q8. Thinking of your experience with your contractor, please indicate the number that corresponds to your satisfaction with the following service elements, with 1 indicating not at all satisfied and 5 indicating very satisfied. († Only asked of those who had a contractor complete their paperwork)

Payment

How it was paid for (n=155)



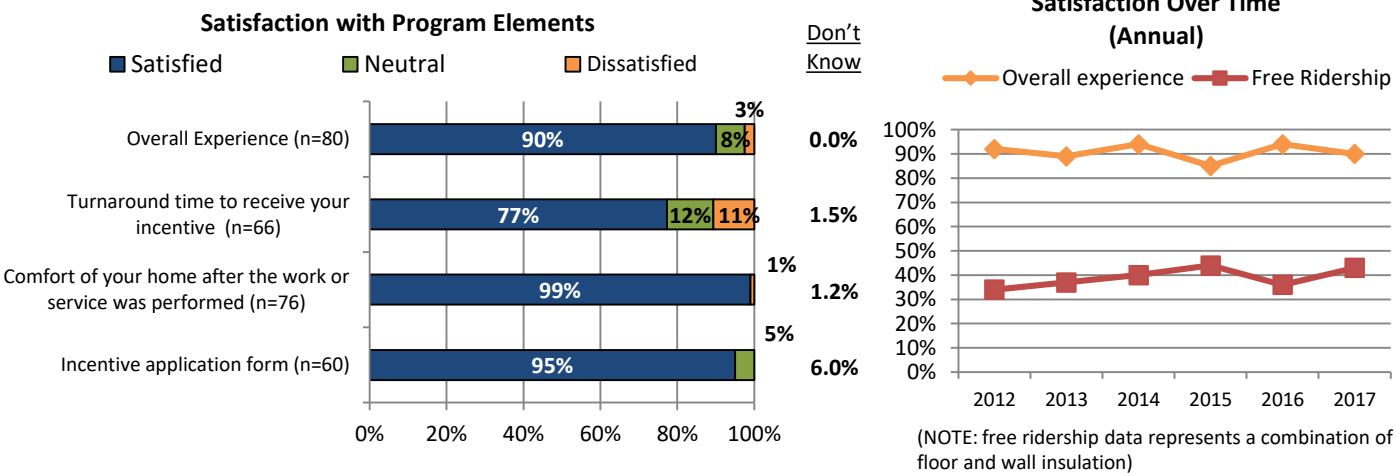
Survey Question:

- Q12W. How did you pay for it? (Multiple responses possible)

Floor Insulation

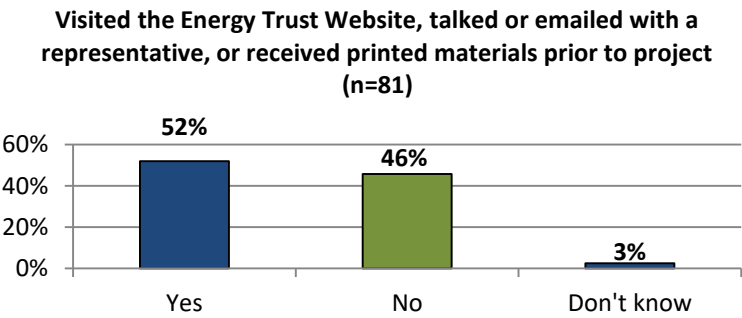
- Ninety percent of Floor Insulation respondents rated their overall satisfaction a 4 or 5 out of 5. Ninety-nine percent of respondents were satisfied with the comfort of their home, while 77 percent were satisfied with the turnaround time to receive the incentive.
- Fifty-two percent of respondents visited the Energy Trust website, talked or emailed with a representative, or received printed materials before having insulation installed.
- Free ridership for floor and wall insulation increased significantly to 43 percent, similar to ceiling insulation.
- Sixty-one percent would have installed floor insulation without Energy Trust incentives and information; 24 percent would have postponed installation for at least a year.
- The contractor was most influential in the decision to have floor insulation installed (rated a 4 or 5 by 73 percent of respondents), followed by the Energy Trust incentive (65 percent).
- Eighty-nine percent of respondents were satisfied with their contractor; thirty-one percent considered the approved trade ally list when choosing their contractor.

Participant Satisfaction



Survey question:
 • Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied.

Interactions With Energy Trust Prior to Project

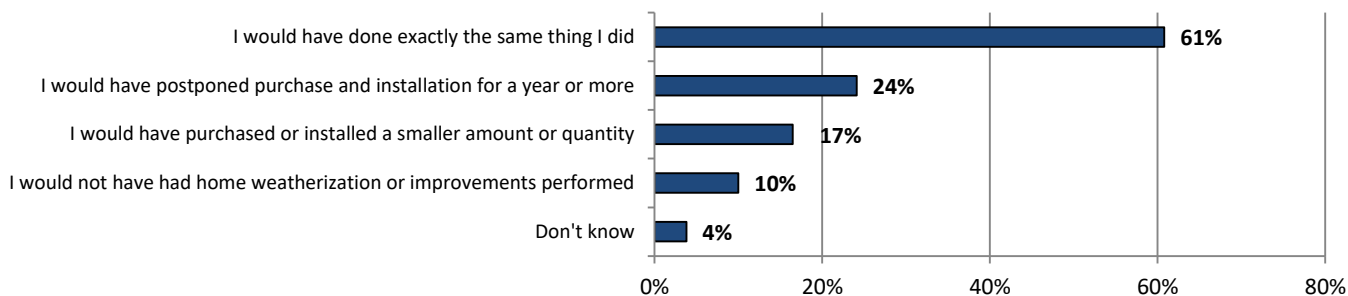


Survey Question:
 • Q2. Did you or anyone in your household visit the Energy Trust website, talk or e-mail with an Energy Trust representative, or receive any printed materials before had services or work performed?

Floor Insulation

Impact of Incentives and Information

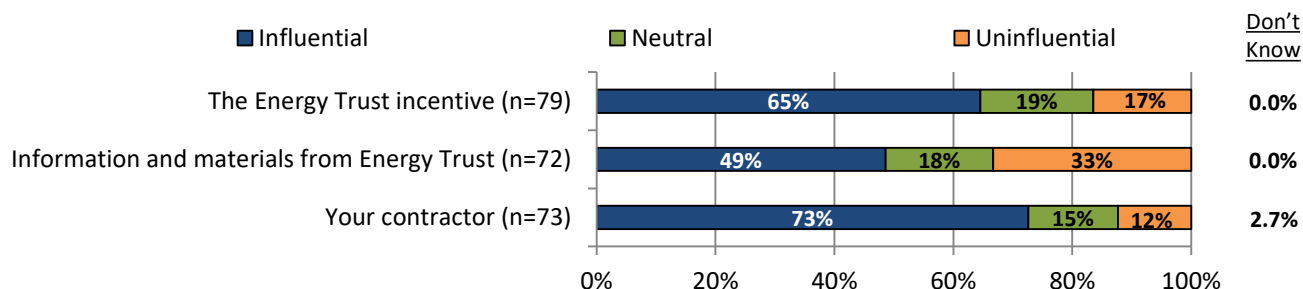
Actions Would Have Taken Without Incentive or Information (n=79)



Survey questions:

- Q3A. Which of the following statements describe the actions you would have taken had the Energy Trust incentives and information not been available? (Multiple responses possible)

Influences on Decision to Have Services or Work Performed

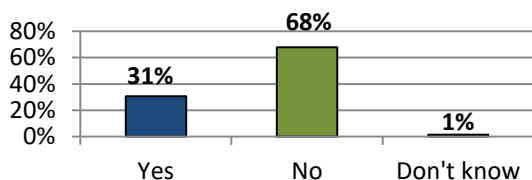


Survey questions:

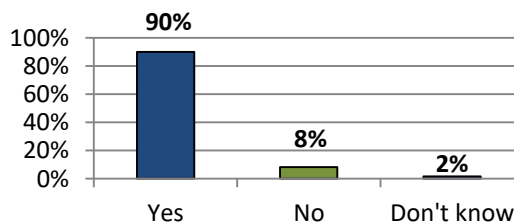
- Q4A. How influential were the following elements on your decision to have services or work performed?

The Contractor

Did you consider Energy Trust's list of approved trade allies when selecting your contractor? (n=75)



Did your contractor complete some or all of the incentive paperwork for you? (n=61)



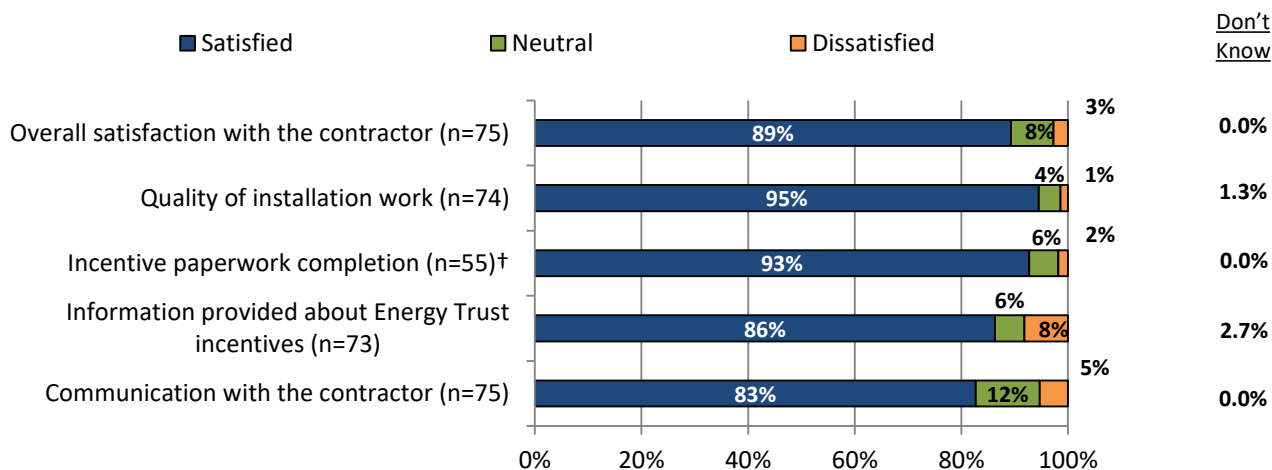
Survey questions:

(These questions are only asked of respondents who used a contractor to have work performed)

- Q9. Did you ever consider Energy Trust's list of approved allies when selecting your contractor?
- Q9A. Did your contractor complete some or all of the incentive paperwork for you?

Floor Insulation

Satisfaction With Contractor



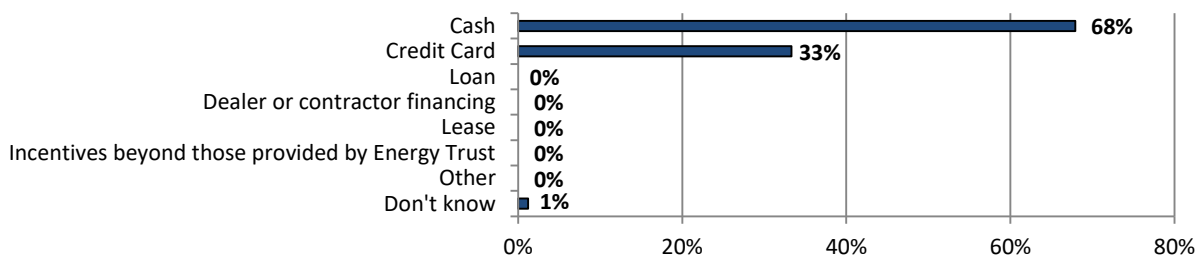
Survey questions:

(Only asked of respondents who used a contractor to have work performed)

- Q8. Thinking of your experience with your contractor, please indicate the number that corresponds to your satisfaction with the following service elements, with 1 indicating not at all satisfied and 5 indicating very satisfied. († Only asked of those who had a contractor complete their paperwork)

Payment

How it was paid for (n=81)

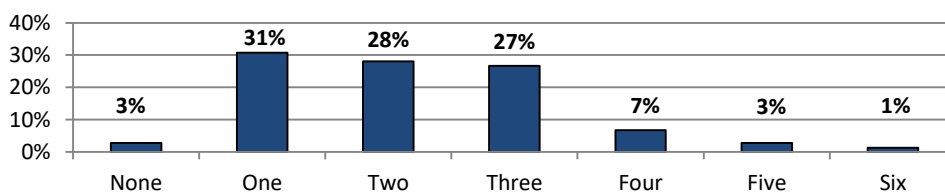


Survey Question:

- Q12W. How did you pay for it? (Multiple responses possible)

Number of Contractors Who Gave Bid

Number of contractors that provided bids (n=75)



Survey questions:

- Q13New. How many contractors did you get a bid from before deciding to move forward with your project?

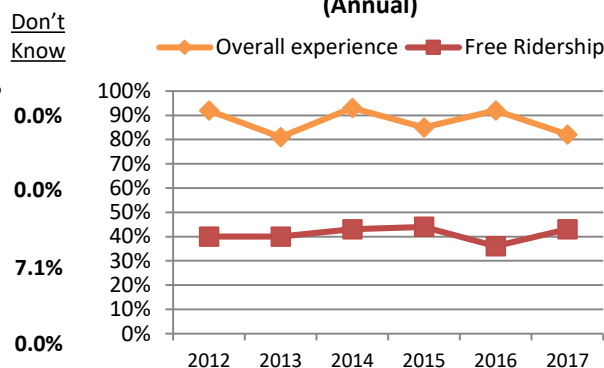
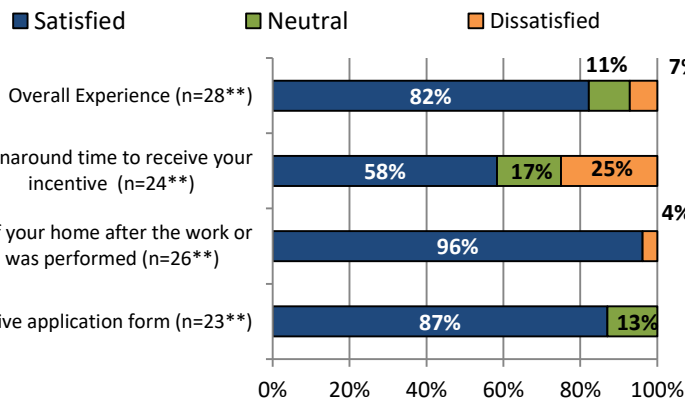
Wall Insulation

- Eighty-two percent of Wall Insulation respondents rated their overall satisfaction a 4 or 5 out of 5. Satisfaction with the comfort of the home was 96 percent among those who gave a rating, while satisfaction with the turnaround time to receive the incentive was 58 percent.
- Thirty-nine percent of respondents visited the Energy Trust website, talked or emailed with a representative, or received printed materials before having insulation installed.
- Free ridership for floor and wall insulation increased significantly to 43 percent, similar to ceiling insulation.
- Sixty-four percent reported that they would have wall installed insulation without the incentive and information; 18 percent would have installed a smaller quantity.
- The contractor was most influential in the decision to have wall insulation installed (85 percent rating a 4 or 5), while 46 percent reported the Energy Trust incentive as influential.
- Ninety-six percent of respondents were satisfied with their contractor; 32 percent considered the approved trade ally list when choosing their contractor.

Participant Satisfaction

Satisfaction with Program Elements

Satisfaction Over Time (Annual)



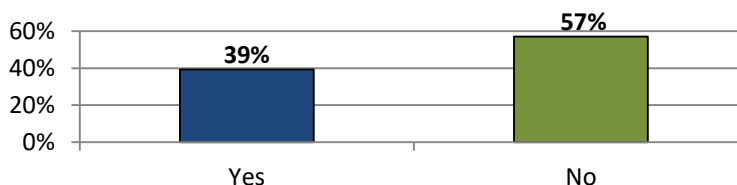
(NOTE: free ridership data represents a combination of floor and wall insulation)

Survey question:

- Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied. (**caution: small sample size)

Interactions With Energy Trust Prior to Project

Visited the Energy Trust Website, talked or emailed with a representative, or received printed materials prior to project (n=28)**



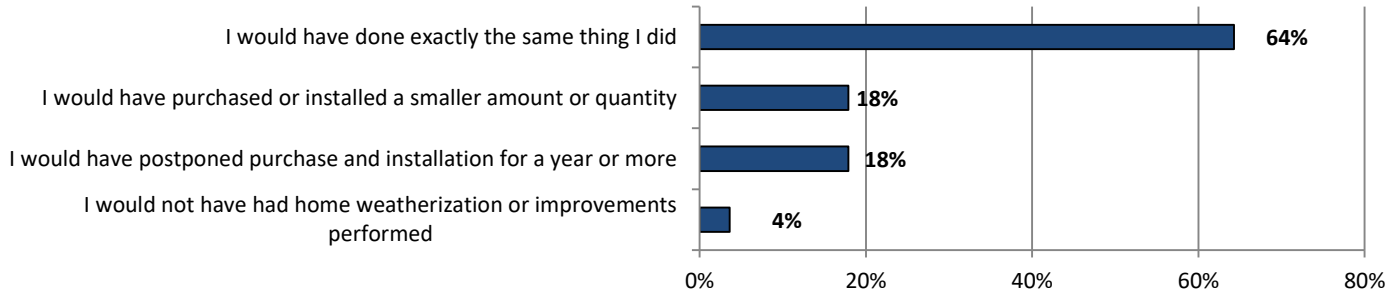
Survey Question:

- Q2. Did you or anyone in your household visit the Energy Trust website, talk or e-mail with an Energy Trust representative, or receive any printed materials before you had services or work performed? (**caution: small sample size)

Wall Insulation

Impact of Incentives and Information

Actions Would Have Taken Without Incentive or Information (n=28**)



Survey questions:

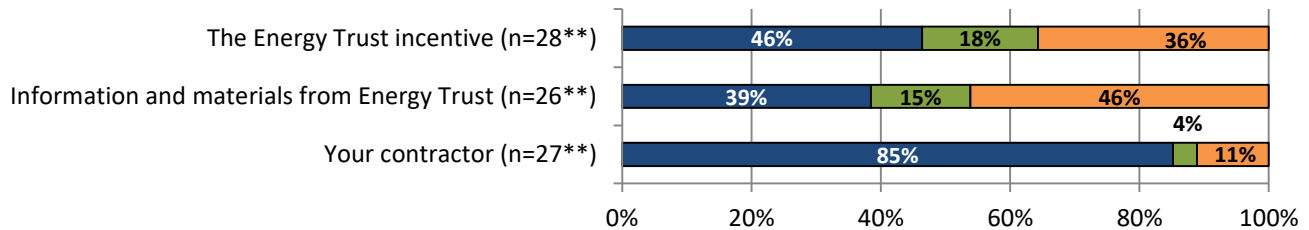
- Q3A. Which of the following statements describe the actions you would have taken had the Energy Trust incentives and information not been available? (**caution: small sample size) (Multiple responses possible)

Influences on Decision to Have Services or Work Performed

Influential

Neutral

Uninfluential

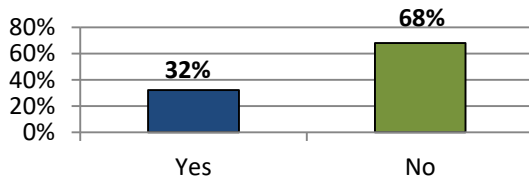


Survey questions:

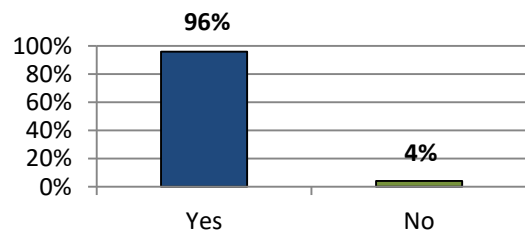
- Q4A. How influential were the following elements on your decision to have services or work performed? (**caution: small sample size)

The Contractor

Did you consider Energy Trust's list of approved trade allies when selecting your contractor? (n=28**)



Did your contractor complete some or all of the incentive paperwork for you? (n=24**)



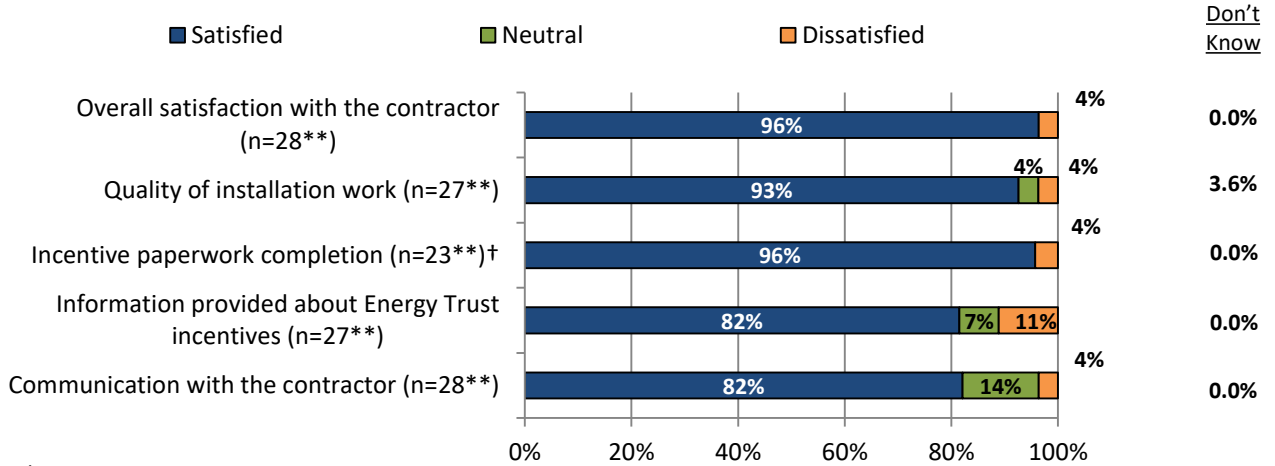
Survey questions:

(These questions are only asked of respondents who used a contractor to have work performed)

- Q9. Did you ever consider Energy Trust's list of approved allies when selecting your contractor? (**caution: small sample size)
- Q9A. Did your contractor complete some or all of the incentive paperwork for you? (**caution: small sample size)

Wall Insulation

Satisfaction With Contractor



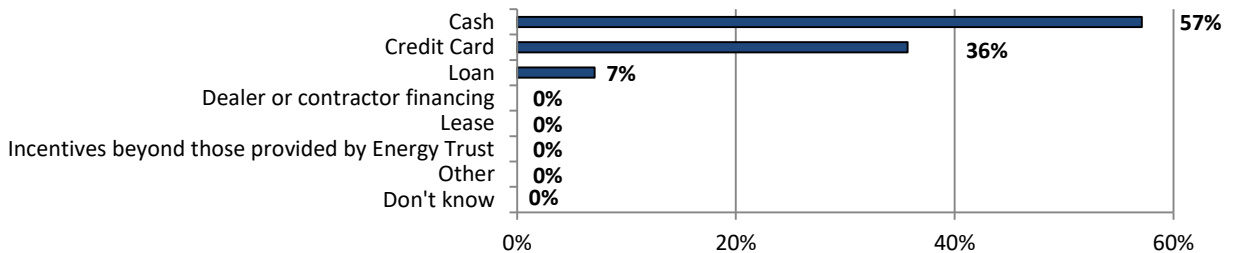
Survey questions:

(Only asked of respondents who used a contractor to have work performed)

- Q8. Thinking of your experience with your contractor, please indicate the number that corresponds to your satisfaction with the following service elements, with 1 indicating not at all satisfied and 5 indicating very satisfied. (**caution: small sample size) († Only asked of those who had a contractor complete their paperwork)

Payment

How it was paid for (n=28)**

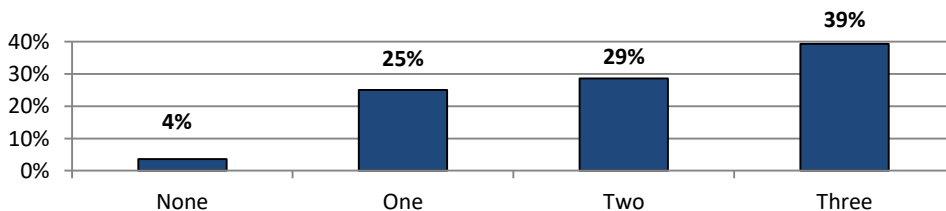


Survey Question:

- Q12W. How did you pay for it? (**caution: small sample size) (Multiple responses possible)

Number of Contractors Who Gave Bid

Number of contractors that provided bids (n=28)**



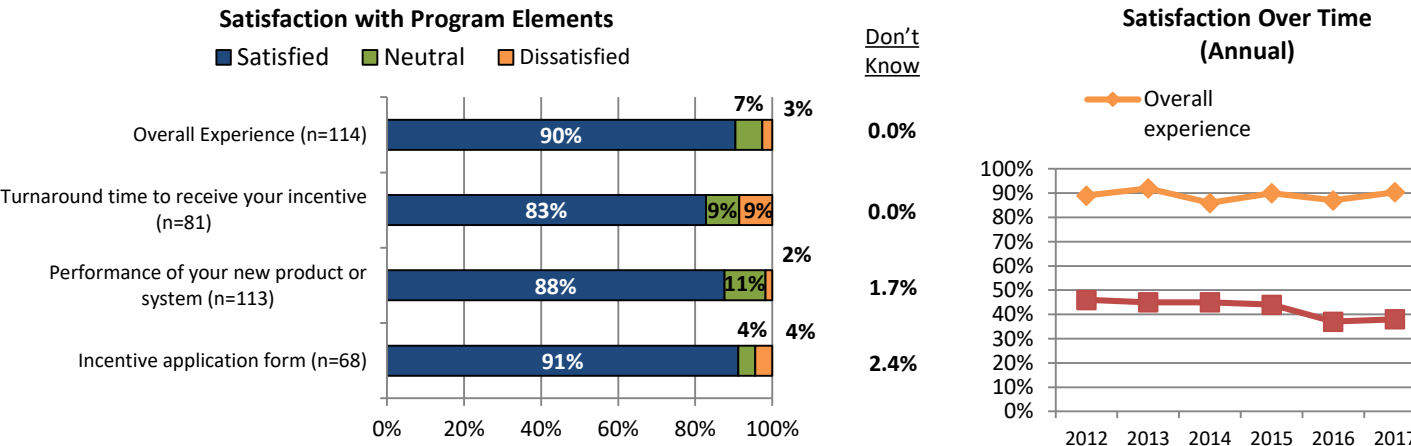
Survey questions:

- Q13New. How many contractors did you get a bid from before deciding to move forward with your project? (**caution: small sample size)

Heat Pumps (excluding DHPs)

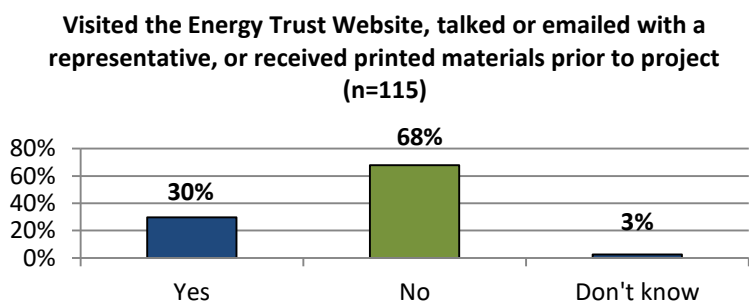
- Ninety percent of Heat Pump respondents rated their overall satisfaction a 4 or 5 out of 5. Eighty-eight percent were satisfied with the performance of their new system.
- Thirty percent of respondents visited the Energy Trust website, talked or emailed with a representative, or received printed materials before installing their heat pump.
- Free ridership remained steady at 38 percent.
- Fifty-two percent of respondents would have installed the same heat pump in absence of Energy Trust incentive and information; 33 percent would have purchased a less expensive alternative and 24 percent would have installed a less energy efficient alternative.
- The contractor had the most influence on the decision to install the heat pump (79 percent rating 4 or 5 out of 5), followed by the Energy Trust incentive (51 percent).
- Most respondents have applied (or will apply) for the state tax credit (80 percent).
- Eighty-nine percent of respondents were satisfied with their contractor; 28 percent considered the approved trade ally list when choosing their contractor.

Participant Satisfaction



Survey question:
 • Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied.

Interactions With Energy Trust Prior to Project

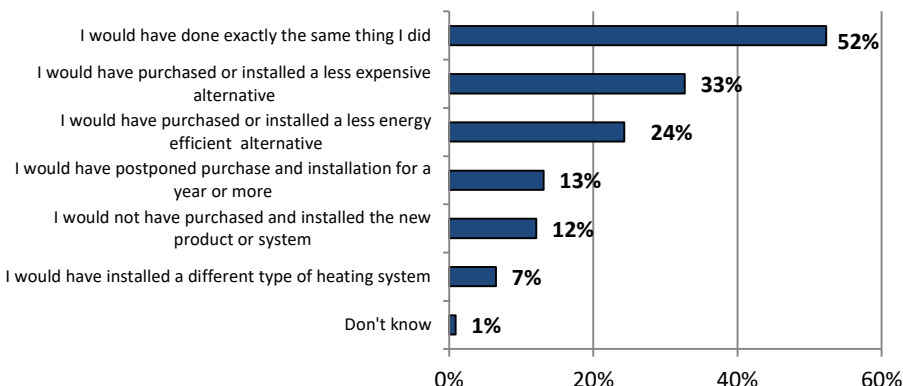


Survey Question:
 • Q2. Did you or anyone in your household visit the Energy Trust website, talk or e-mail with an Energy Trust representative, or receive any printed materials before you had services or work performed?

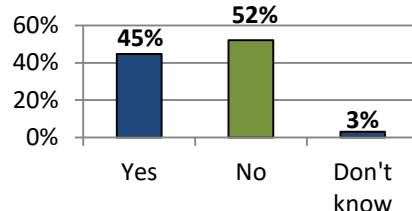
Heat Pumps (excluding DHPs)

Impact of Incentives and Information

Actions Would Have Taken Without Incentive or Information (n=107)



Was your old heat pump operating when you replaced it with the new equipment? (n=96)

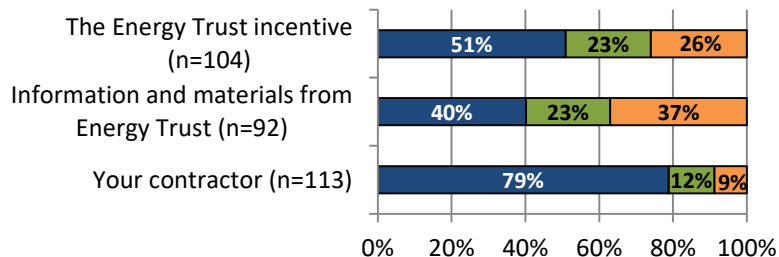


Survey questions:

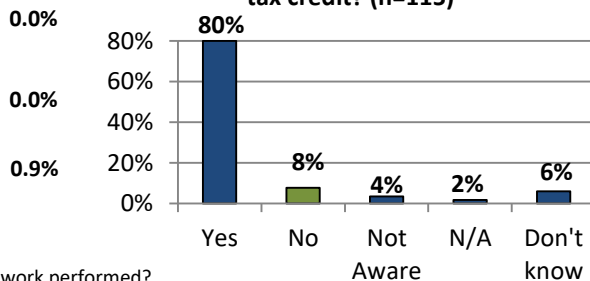
- Q3A. Which of the following statements describe the actions you would have taken had the Energy Trust incentives and information not been available? (*Multiple responses possible*)
- Q3D. Was your old heat pump operating when you replaced it with the new equipment? (*Only asked of respondents who reported replacing their existing heat pump*)

Influences on Decision to Have Services or Work Performed

■ Influential ■ Neutral ■ Uninfluential Don't Know



Have you applied or will you apply for the applicable Oregon state residential energy tax credit? (n=115)

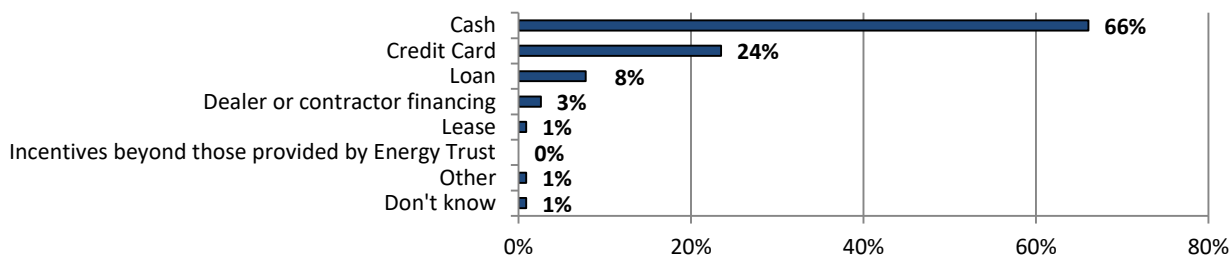


Survey questions:

- Q4A. How influential were the following elements on your decision to have services or work performed?
- Q6. Have you applied or will you apply for the applicable Oregon state residential energy tax credit?

Payment

How it was paid for (n=115)

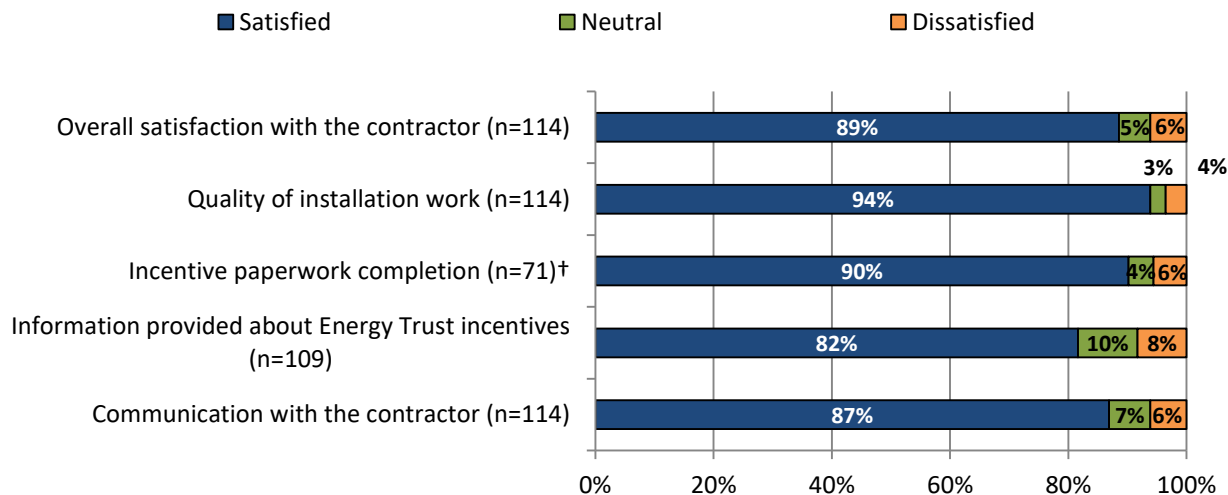


Survey Question:

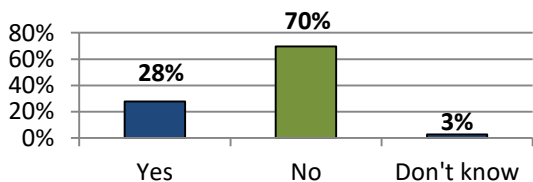
- Q12W. How did you pay for it? (*Multiple responses possible*)

Heat Pumps (excluding DHPs)

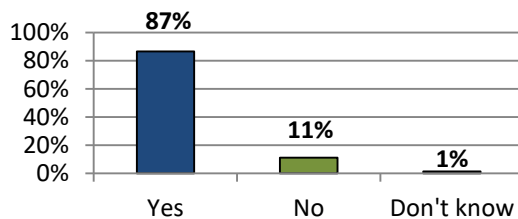
Satisfaction With Contractor



Did you consider Energy Trust's list of approved trade allies when selecting your contractor? (n=115)



Did your contractor complete some or all of the incentive paperwork for you? (n=82)



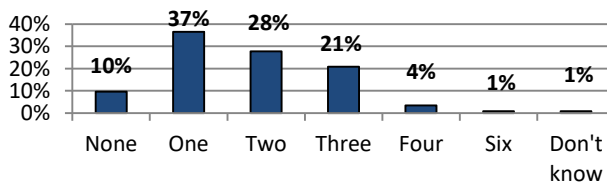
Survey questions:

(These questions are only asked of respondents who used a contractor to have work performed)

- Q8. Thinking of your experience with your contractor, please indicate the number that corresponds to your satisfaction with the following service elements, with 1 indicating not at all satisfied and 5 indicating very satisfied. († Only asked of those who had a contractor complete their paperwork)
- Q9. Did you ever consider Energy Trust's list of approved allies when selecting your contractor?
- Q9A. Did your contractor complete some or all of the incentive paperwork for you?

Number of Contractors Who Gave Bid

Number of contractors that provided bids (n=115)



Survey questions:

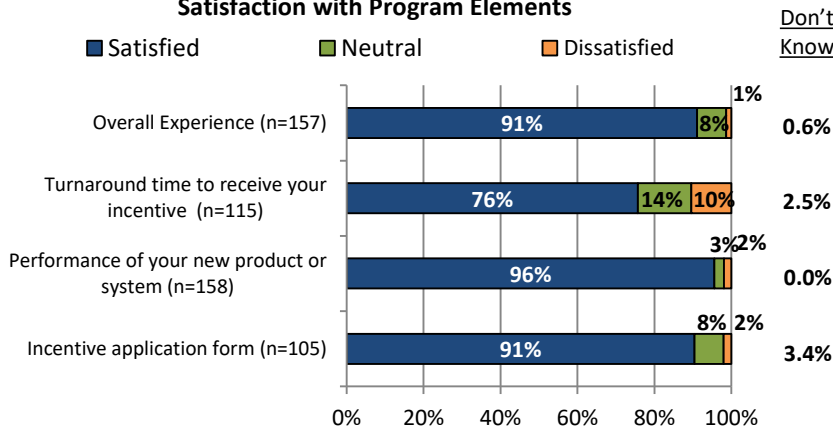
- Q13New. How many contractors did you get a bid from before deciding to move forward with your project?

Ductless Heat Pumps

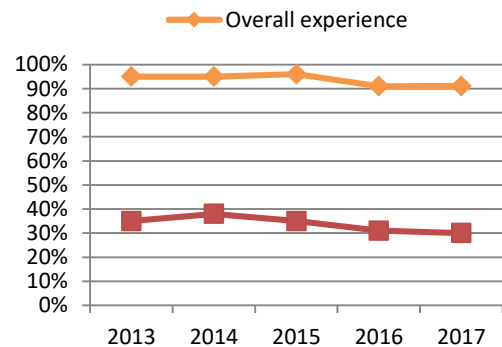
- Ninety-one percent of respondents rated their overall satisfaction with ductless heat pumps a 4 or 5 out of 5. Satisfaction was lowest with the turnaround time to receive the incentive (76 percent) and highest with the performance of the new system (96 percent).
- Twenty-nine percent of respondents visited the Energy Trust website, talked or emailed with a representative, or received printed materials before installing their heat pump.
- The free ridership rate was relatively stable at 30%.
- Forty-five percent would have installed the same equipment in the absence of Energy Trust incentives and information, although 71 percent reported that the Energy Trust incentive influenced their decision; 33 percent would have postponed the installation a year or more.
- The contractor was the most influential element on the decision to have the system installed (79 percent rating a 4 or 5 out of 5).
- Ninety-four percent of respondents were satisfied with their contractor; 29 percent considered the approved trade ally list when choosing their contractor.

Participant Satisfaction

Satisfaction with Program Elements



Satisfaction Over Time (Annual)

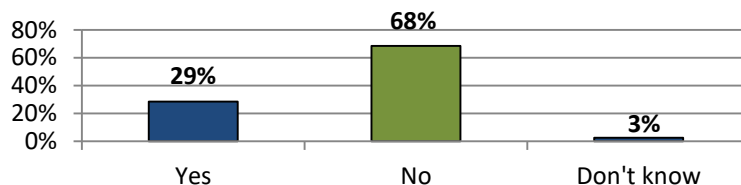


Survey question:

- Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied.

Interactions With Energy Trust Prior to Project

Visited the Energy Trust Website, talked or emailed with a representative, or received printed materials prior to project (n=158)



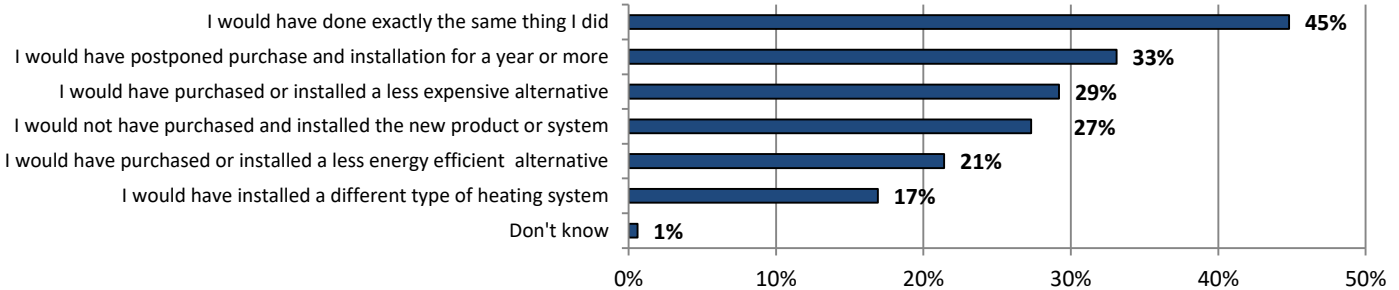
Survey Question:

- Q2. Did you or anyone in your household visit the Energy Trust website, talk or e-mail with an Energy Trust representative, or receive any printed materials before you had any services or work performed?

Ductless Heat Pumps

Impact of Incentives and Information

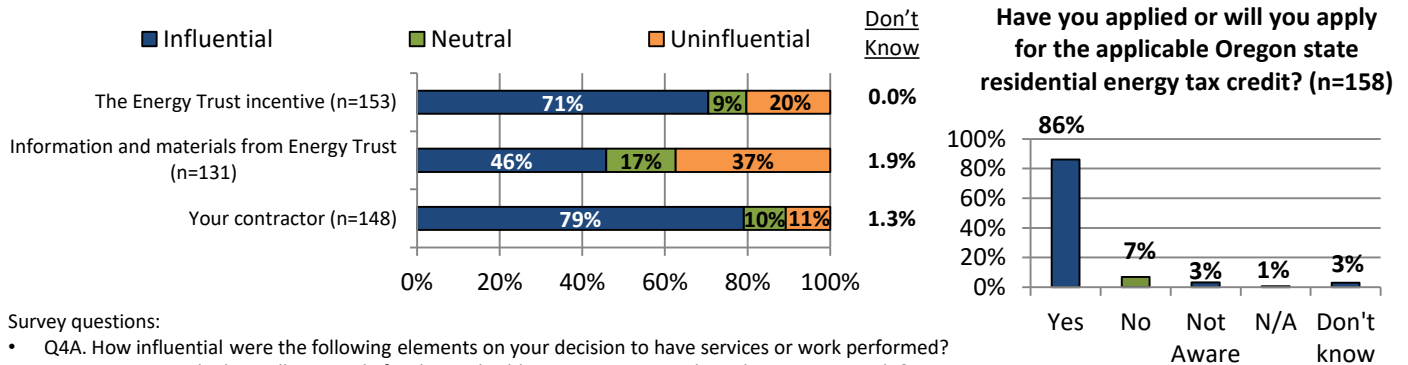
Actions Would Have Taken Without Incentive or Information (n=154)



Survey questions:

- Q3A. Which of the following statements describe the actions you would have taken had the Energy Trust incentives and information not been available? (Multiple responses possible)

Influences on Decision to Have Services or Work Performed

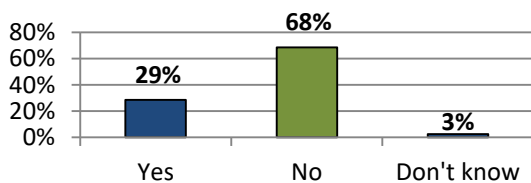


Survey questions:

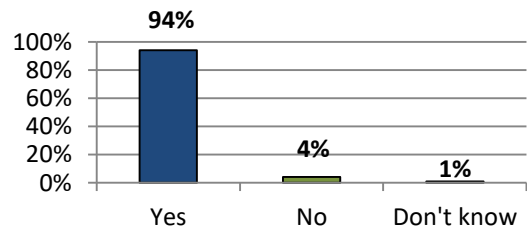
- Q4A. How influential were the following elements on your decision to have services or work performed?
- Q6. Have you applied or will you apply for the applicable Oregon state residential energy tax credit?

The Contractor

Did you consider Energy Trust's list of approved trade allies when selecting your contractor? (n=158)



Did your contractor complete some or all of the incentive paperwork for you? (n=119)

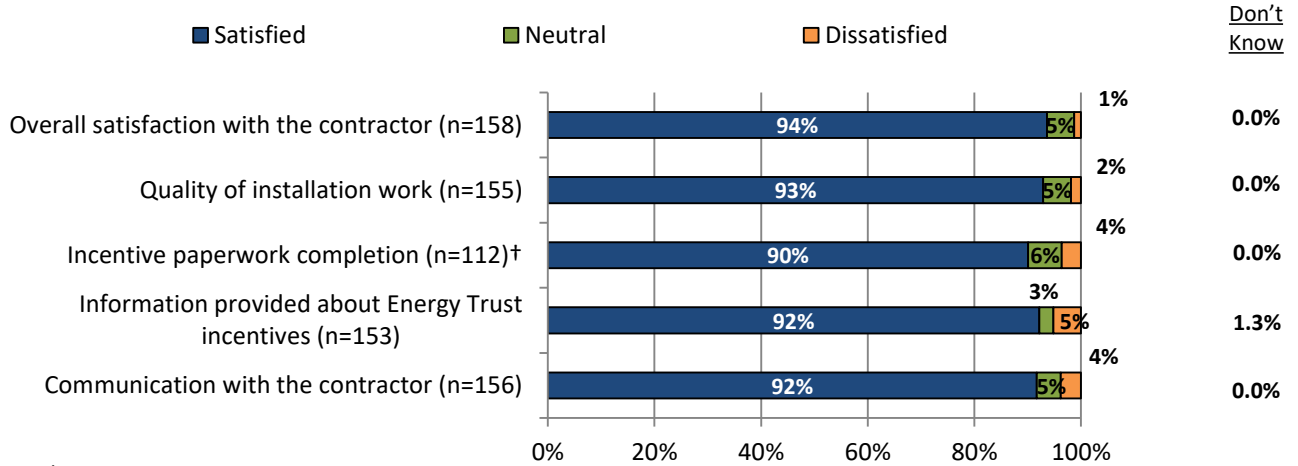


Survey questions:

- (These questions are only asked of respondents who used a contractor to have work performed)
- Q9. Did you ever consider Energy Trust's list of approved allies when selecting your contractor?
 - Q9A. Did your contractor complete some or all of the incentive paperwork for you?

Ductless Heat Pumps

Satisfaction With Contractor



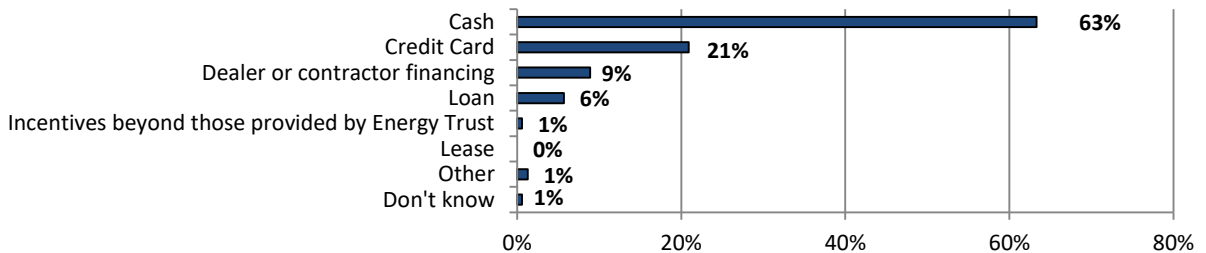
Survey questions:

(Only asked of respondents who used a contractor to have work performed)

- Q8. Thinking of your experience with your contractor, please indicate the number that corresponds to your satisfaction with the following service elements, with 1 indicating not at all satisfied and 5 indicating very satisfied. († Only asked of those who had a contractor complete their paperwork)

Payment

How it was paid for (n=158)

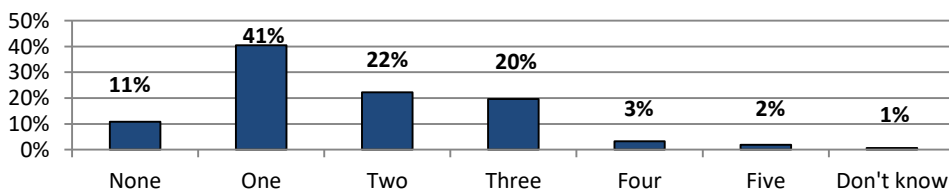


Survey Question:

- Q12W. How did you pay for it? (Multiple responses possible)

Number of Contractors Who Gave Bid

Number of contractors that provided bids (n=158)



Survey questions:

- Q13New. How many contractors did you get a bid from before deciding to move forward with your project?

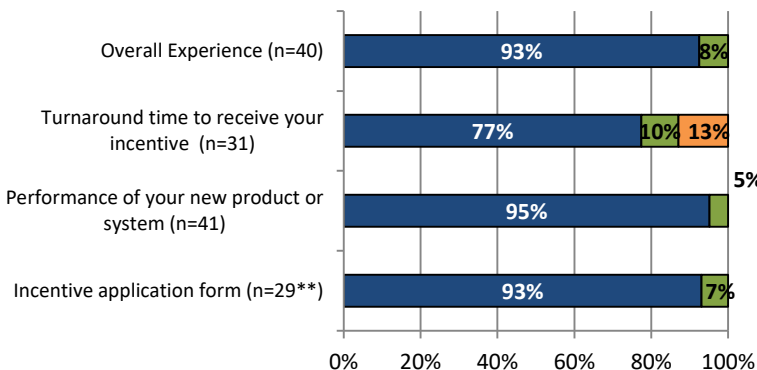
Gas Tank Water Heaters

- Ninety-three percent of Gas Tank Water Heater respondents rated their overall satisfaction a 4 or 5 out of 5. Satisfaction was lowest with the turnaround time to receive incentives (77 percent) and highest with performance of the product (95 percent).
- Fifty-four percent of respondents visited the Energy Trust website, talked or emailed with a representative, or received printed materials before work was scheduled or performed.
- Free ridership dropped significantly in 2017 to 36 percent.
- Forty-eight percent of respondents said that they would have bought a less expensive water heater without Energy Trust incentives. Forty percent of respondents rated the influence of the incentive a 4 or 5 out of 5.
- Sixty-three percent of respondents have applied (or will apply) for the state tax credit.
- Ninety-eight percent of respondents were satisfied with their contractor; 27 percent considered the approved trade ally list when choosing their contractor.
- Seventy-eight percent reported that their old water heater was still operating when they replaced it.

Participant Satisfaction

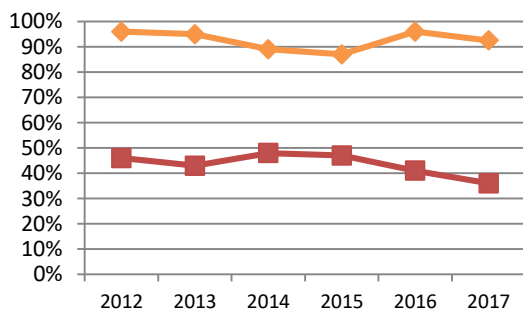
Satisfaction with Program Elements

■ Satisfied ■ Neutral ■ Dissatisfied



Satisfaction Over Time (Annual)

◆ Overall experience ■ Free Ridership

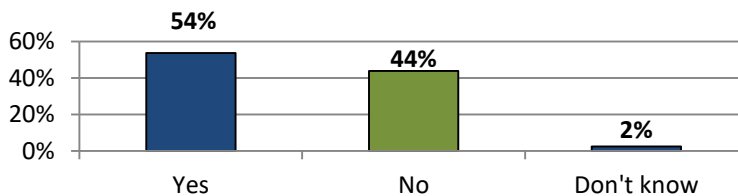


Survey question:

- Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied. (**caution: small sample size)

Interactions With Energy Trust Prior to Project

Visited the Energy Trust Website, talked or emailed with a representative, or received printed materials prior to project (n=41)



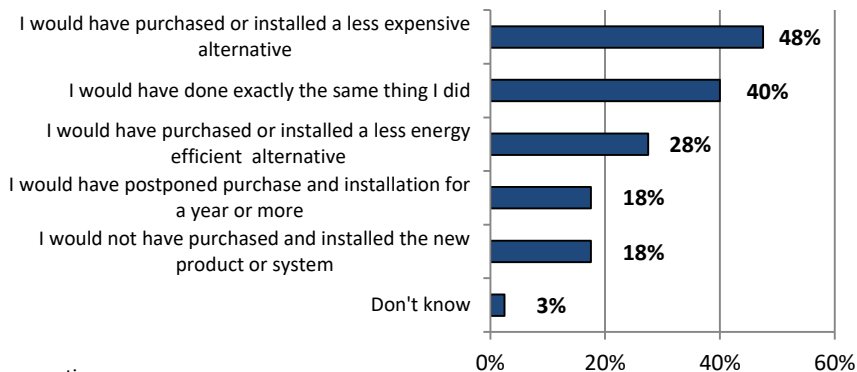
Survey Question:

- Q2. Did you or anyone in your household visit the Energy Trust website, talk or e-mail with an Energy Trust representative, or receive any printed materials before you had services or work performed?

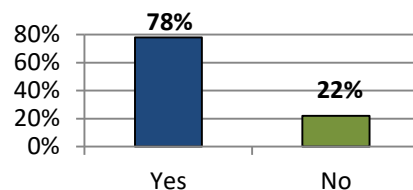
Gas Tank Water Heaters

Impact of Incentives and Information

Actions Would Have Taken Without Incentive or Information (n=40)



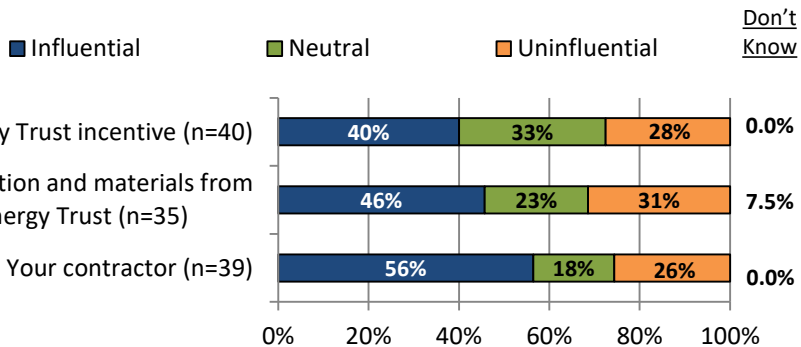
Was your old water heater operating when you replaced it with the new equipment? (n=41)



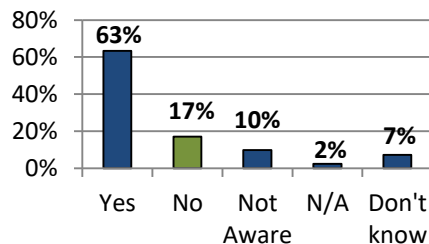
Survey questions:

- Q3A. Which of the following statements describe the actions you would have taken had the Energy Trust incentives and information not been available? (*Multiple responses possible*)
- Q3D. Was your old water heater operating when you replaced it with the new equipment?

Influences on Decision to Have Services or Work Performed



Have you applied or will you apply for the applicable Oregon state residential energy tax credit? (n=41)

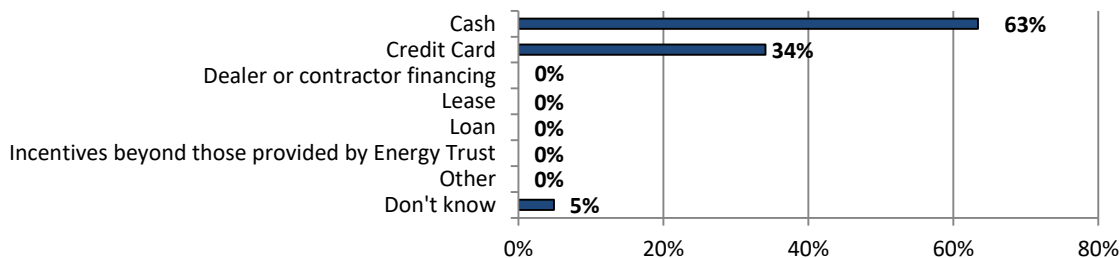


Survey questions:

- Q4A. How influential were the following elements on your decision to have services or work performed?
- Q6. Have you applied or will you apply for the applicable Oregon state residential energy tax credit?

Payment

How it was paid for (n=41)

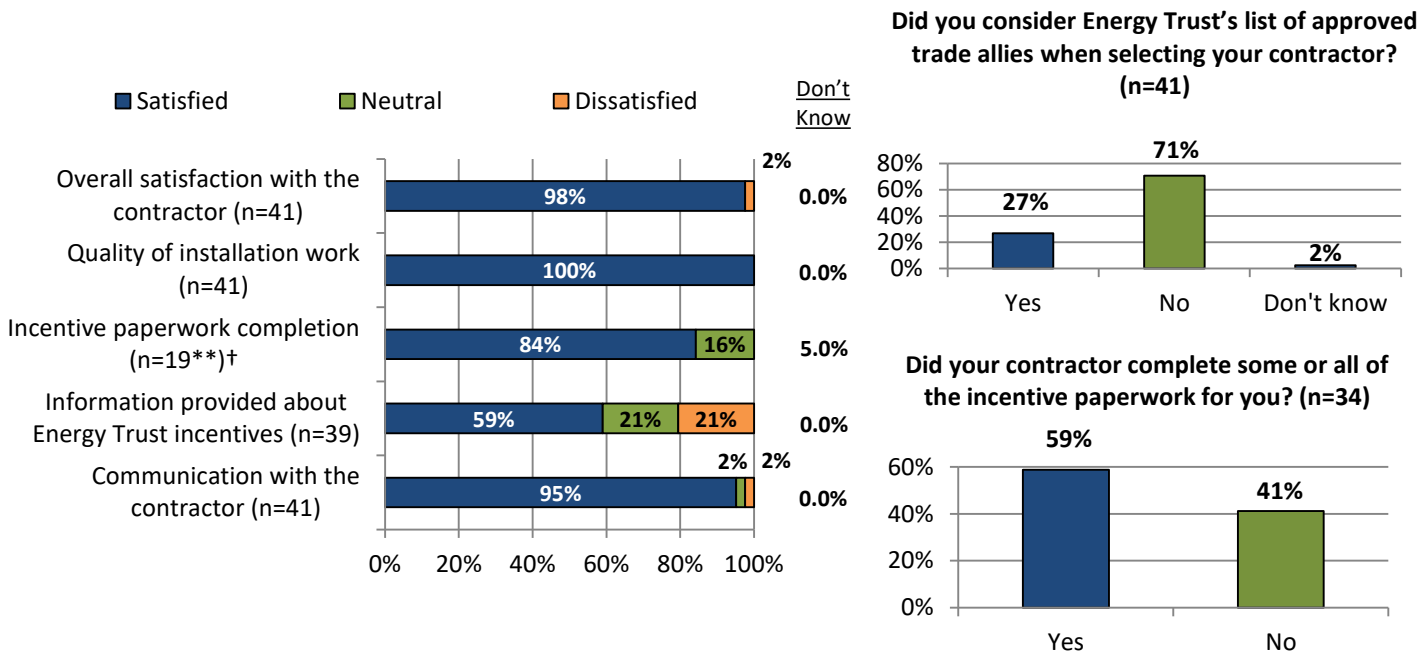


Survey Question:

- Q12W. How did you pay for it? (*Multiple responses possible*)

Gas Tank Water Heaters

Satisfaction With Contractor



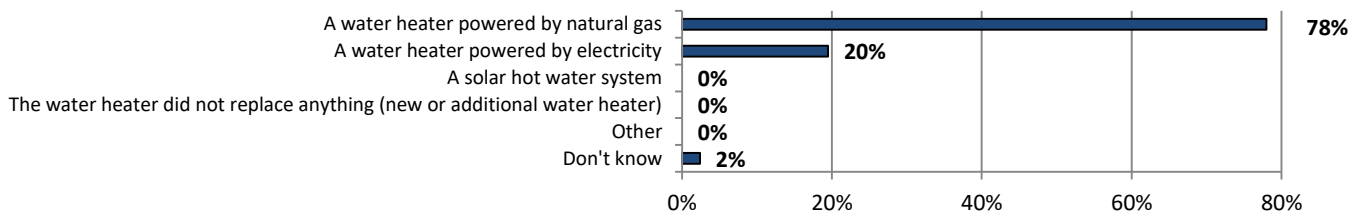
Survey questions:

(These questions are only asked of respondents who used a contractor to have work performed)

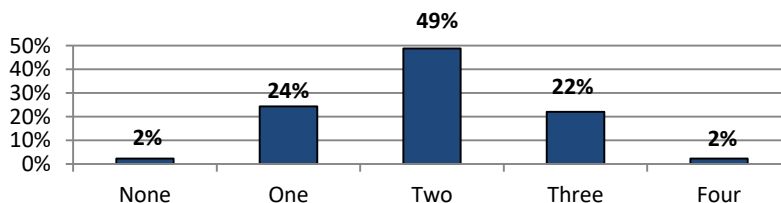
- Q8. Thinking of your experience with your contractor, please indicate the number that corresponds to your satisfaction with the following service elements, with 1 indicating not at all satisfied and 5 indicating very satisfied. (**caution: small sample size) († Only asked of those who had a contractor complete their paperwork)
- Q9. Did you ever consider Energy Trust's list of approved allies when selecting your contractor?
- Q9A. Did your contractor complete some or all of the incentive paperwork for you?

Replacement Info and Number of Contractors Who Gave Bid

Did the new water heater you purchased replace... (n=41)



Number of contractors that provided bids (n=41)



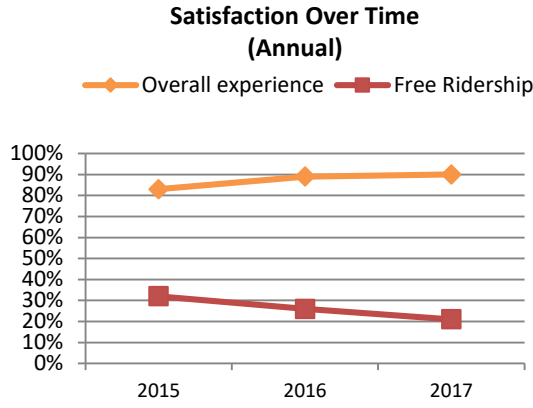
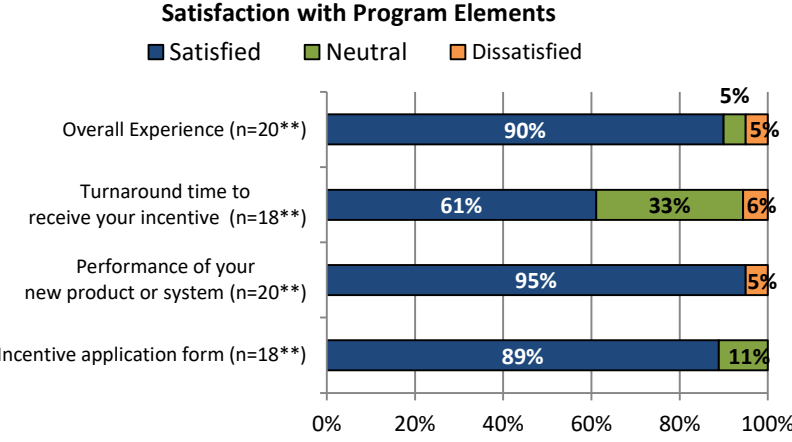
Survey questions:

- Q12S. Did the new water heater you purchased replace...?
- Q13New. How many contractors did you get a bid from before deciding to move forward with your project?

Heat Pump Water Heaters

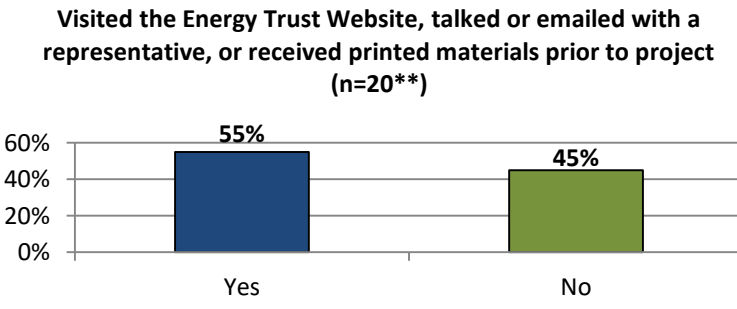
- Ninety percent of Heat Pump Water Heater respondents rated their overall satisfaction with heat pump water heaters a 4 or 5 out of 5.
- Fifty-five percent of respondents visited the Energy Trust website, talked or emailed with a representative, or received printed materials before installing their system.
- The free ridership rate was 21 percent.
- Half of all respondents would have postponed the project one year or more in the absence of Energy Trust incentives and information or would have installed a less energy efficient alternative; only 25 percent would have done exactly the same project.
- The Energy Trust incentive was the most influential element on the decision to have the system installed (83 percent rating a 4 or 5 out of 5), followed by the contractor (61 percent).
- Seventy-two percent of respondents were satisfied with their contractor; 53 percent considered the approved trade ally list when choosing their contractor.
- Eighty-five percent of respondents replaced an electric water heater and 10 percent were not replacements. Heat pump water heaters were most commonly installed in a garage (45 percent) or a basement (35 percent).

Participant Satisfaction



Survey question:
 • Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied. (**caution: small sample size)

Interactions With Energy Trust Prior to Project

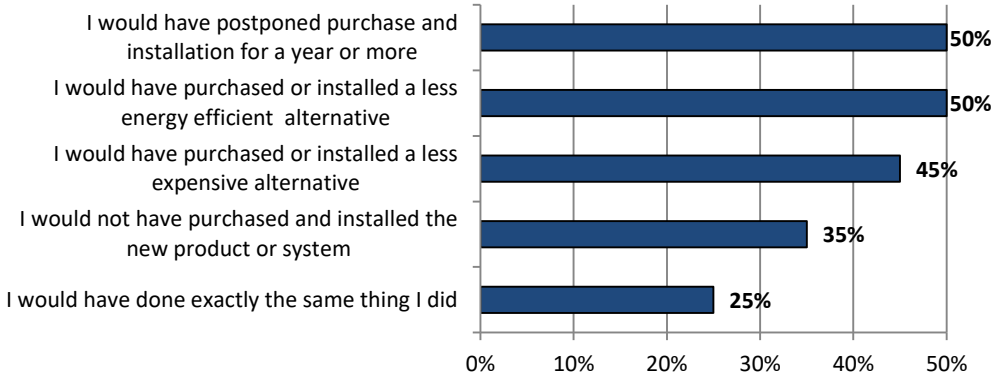


Survey Question:
 • Q2. Did you or anyone in your household visit the Energy Trust website, talk or e-mail with an Energy Trust representative, or receive any printed materials before you had any services or work performed? (**caution: small sample size)

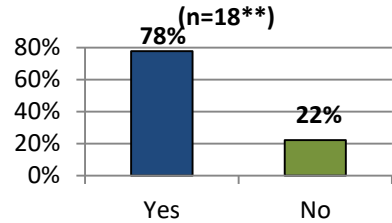
Heat Pump Water Heaters

Impact of Incentives and Information

Actions Would Have Taken Without Incentive or Information (n=20**)



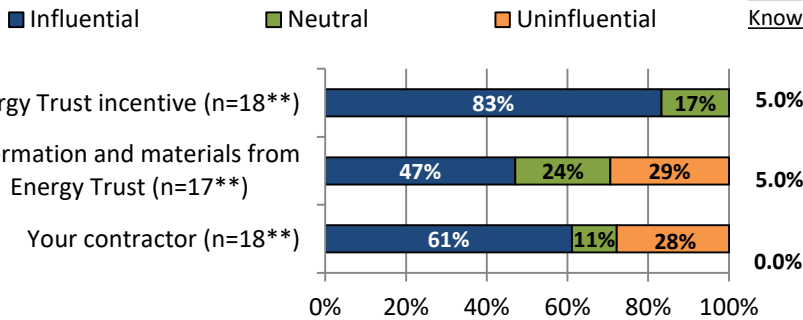
Was your old water heater operating when you replaced it with the new equipment? (n=18**)



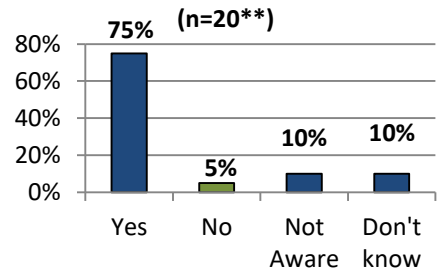
Survey questions:

- Q3A. Which of the following statements describe the actions you would have taken had the Energy Trust incentives and information not been available? (**caution: small sample size) (Multiple responses possible)
- Q3D. Was your old heat pump operating when you replaced it with the new equipment? (**caution: small sample size)

Influences on Decision to Have Services or Work Performed



Have you applied or will you apply for the applicable Oregon state residential energy tax credit? (n=20**)

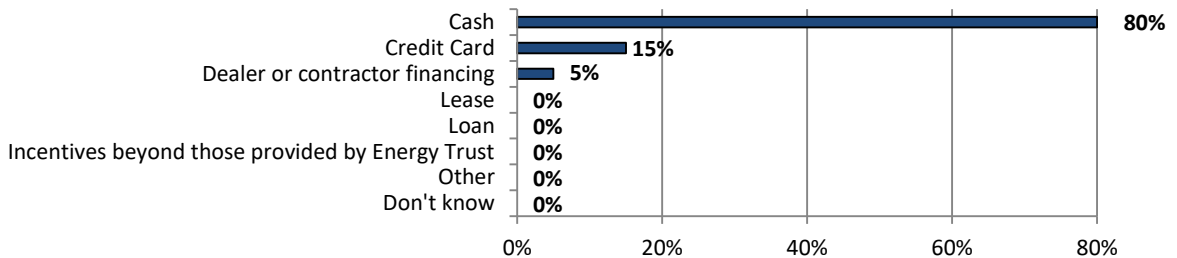


Survey questions:

- Q4A. How influential were the following elements on your decision to have services or work performed? (**caution: small sample size)
- Q6. Have you applied or will you apply for the applicable Oregon state residential energy tax credit? (**caution: small sample size)

Payment

How it was paid for (n=20**)

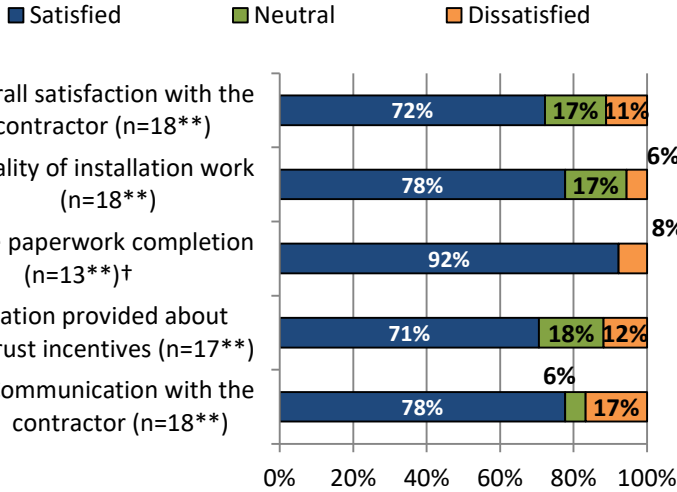


Survey Question:

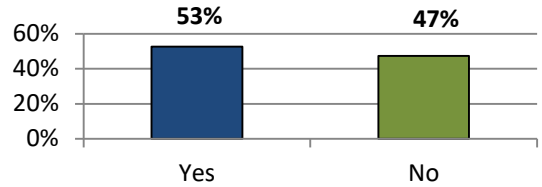
- Q12W. How did you pay for it? (**caution: small sample size) (Multiple responses possible)

Heat Pump Water Heaters

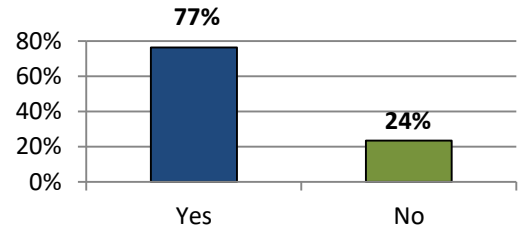
Satisfaction With Contractor



Did you consider Energy Trust's list of approved trade allies when selecting your contractor? (n=19**)



Did your contractor complete some or all of the incentive paperwork for you? (n=17**)



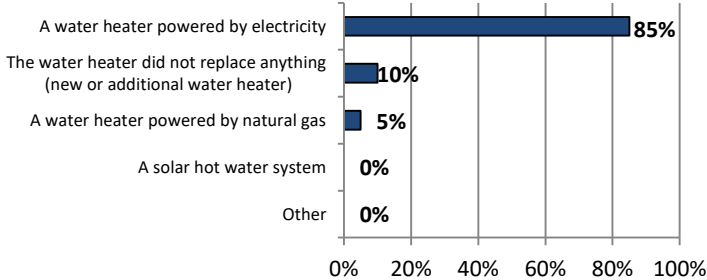
Survey questions:

(These questions are only asked of respondents who used a contractor to have work performed)

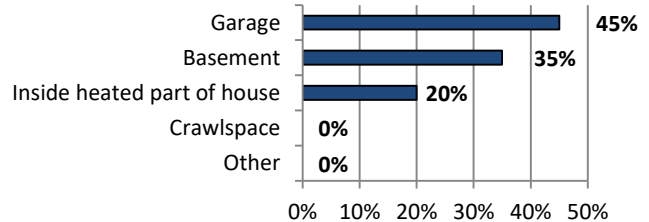
- Q8. Thinking of your experience with your contractor, please indicate the number that corresponds to your satisfaction with the following service elements, with 1 indicating not at all satisfied and 5 indicating very satisfied. (**caution: small sample size) († Only asked of those who had a contractor complete their paperwork)
- Q9. Did you ever consider Energy Trust's list of approved allies when selecting your contractor? (**caution: small sample size)
- Q9A. Did your contractor complete some or all of the incentive paperwork for you? (**caution: small sample size)

Replacement Info

Did the new water heater you purchased replace... (n=20**)



Where in your home is your heat pump water heater located? (n=20**)

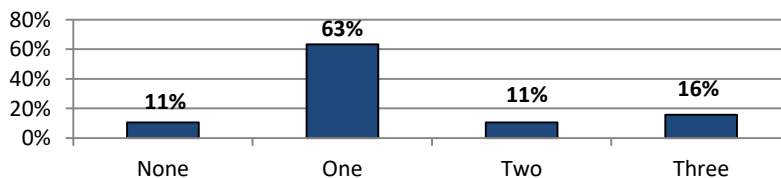


Survey questions:

- Q12S. Did the new water heater you purchased replace...? (**caution: small sample size)
- Q12T. Where in your home is your heat pump water heater located? (**caution: small sample size) (Only asked of Heat Pump Water Heater respondents.)

Number of Contractors Who Gave Bid

Number of contractors that provided bids (n=19**)



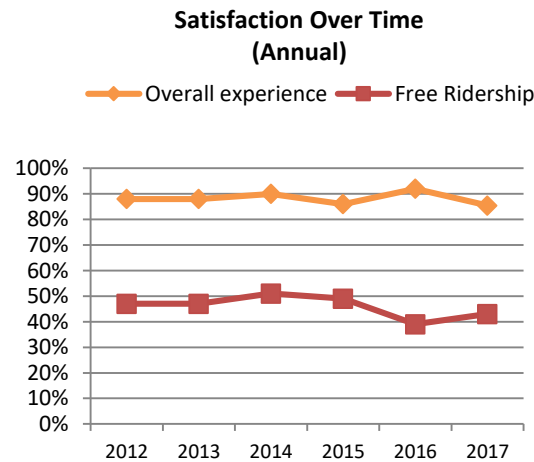
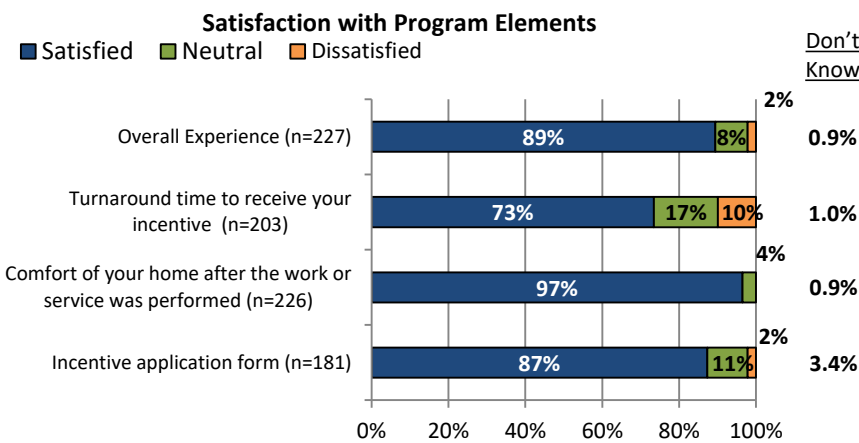
Survey questions:

- Q13New. How many contractors did you get a bid from before deciding to move forward with your project? (**caution: small sample size)

Windows

- Eighty-nine percent of Window respondents rated their overall satisfaction a 4 or 5 out of 5. Respondents were least satisfied with the turnaround time for the incentive (73 percent), but were very satisfied with the comfort of their home (97 percent).
- Thirty-three percent of respondents visited the Energy Trust website, talked or emailed with a representative, or received printed materials before having their windows installed.
- The free ridership rate was relatively stable at 43 percent.
- Sixty-three percent of respondents indicated that in the absence of Energy Trust incentives, they would have installed the same windows.
- The contractor was the most influential factor on their decision to have work performed (76 percent rating 4 or 5), followed by the Energy Trust incentive (48 percent).
- Ninety-three percent of respondents were satisfied with their contractor; only 25 percent considered the approved trade ally list when choosing their contractor.

Participant Satisfaction

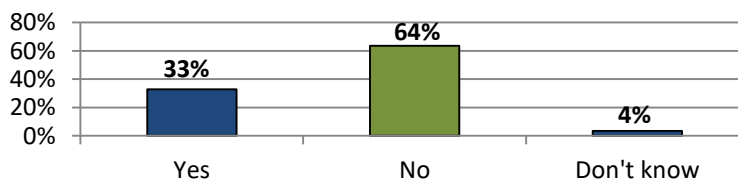


Survey question:

- Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied.

Interactions With Energy Trust Prior to Project

Visited the Energy Trust Website, talked or emailed with a representative, or received printed materials prior to project (n=231)

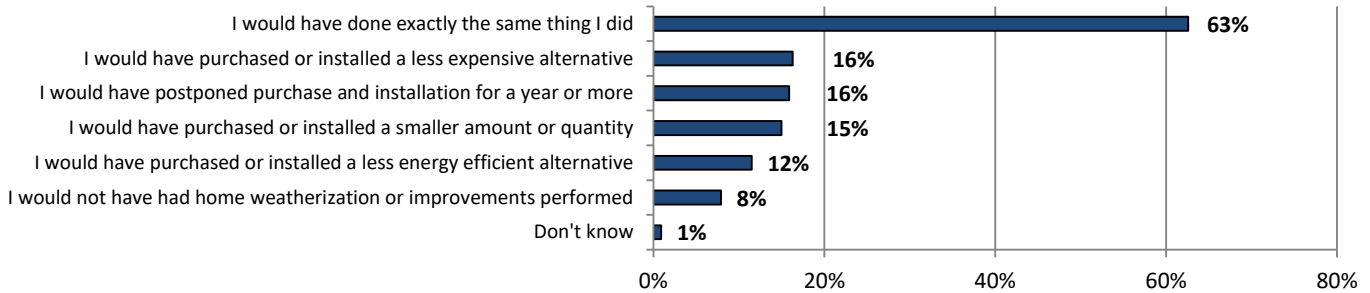


Survey Question:

- Q2. Did you or anyone in your household visit the Energy Trust website, talk or e-mail with an Energy Trust representative, or receive any printed materials before you had services or work performed?

Impact of Incentives and Information

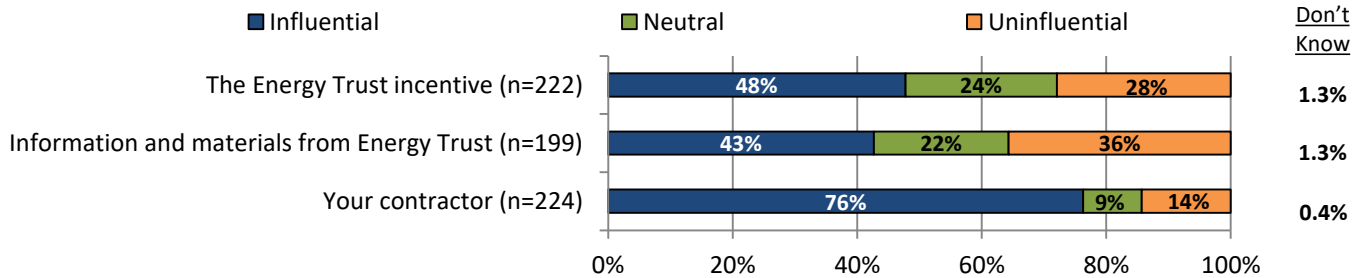
Actions Would Have Taken Without Incentive or Information (n=227)



Survey questions:

- Q3A. Which of the following statements describe the actions you would have taken had the Energy Trust incentives and information not been available? (*Multiple responses possible*)

Influences on Decision to Have Services or Work Performed

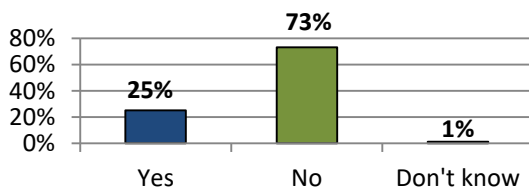


Survey questions:

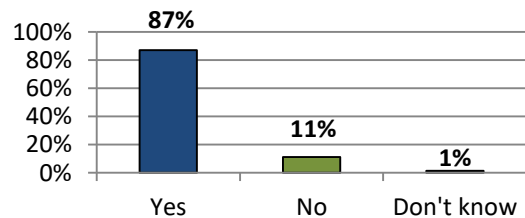
- Q4A. How influential were the following elements on your decision to have services or work performed?

The Contractor

Did you consider Energy Trust's list of approved trade allies when selecting your contractor? (n=231)



Did your contractor complete some or all of the incentive paperwork for you? (n=208)

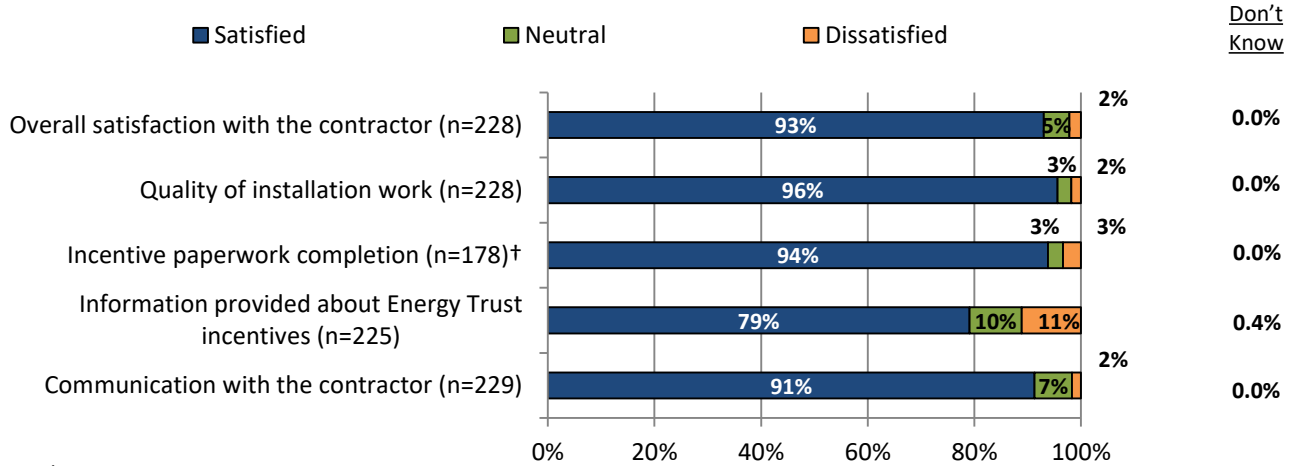


Survey questions:

(These questions are only asked of respondents who used a contractor to have work performed)

- Q9. Did you ever consider Energy Trust's list of approved allies when selecting your contractor? (***caution: small sample size*)
- Q9A. Did your contractor complete some or all of the incentive paperwork for you? (***caution: small sample size*)

Satisfaction With Contractor



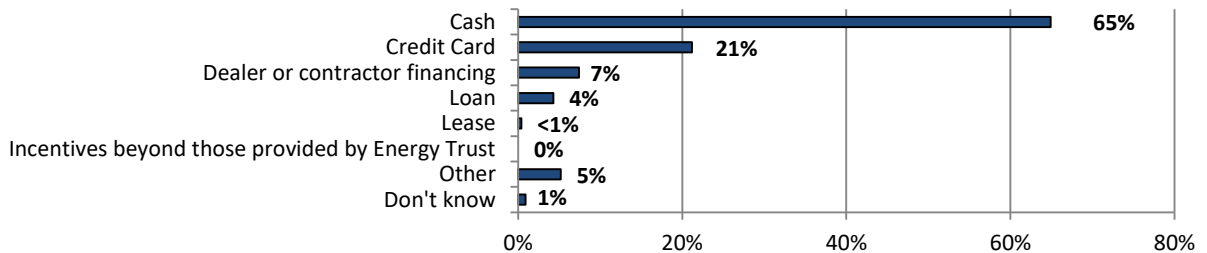
Survey questions:

(Only asked of respondents who used a contractor to have work performed)

- Q8. Thinking of your experience with your contractor, please indicate the number that corresponds to your satisfaction with the following service elements, with 1 indicating not at all satisfied and 5 indicating very satisfied. († Only asked of those who had a contractor complete their paperwork)

Payment

How it was paid for (n=231)

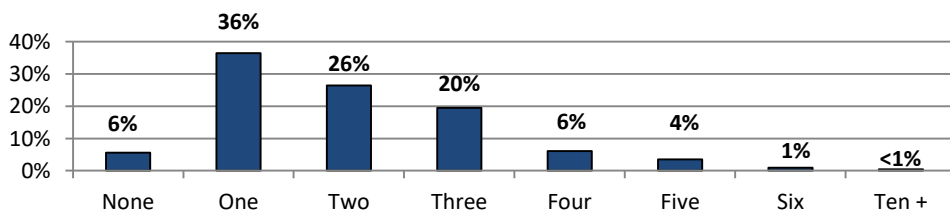


Survey Question:

- Q12W. How did you pay for it? (Multiple responses possible)

Number of Contractors Who Gave Bid

Number of contractors that provided bids (n=231)



Survey questions:

- Q13New. How many contractors did you get a bid from before deciding to move forward with your project?

Gas Fireplaces

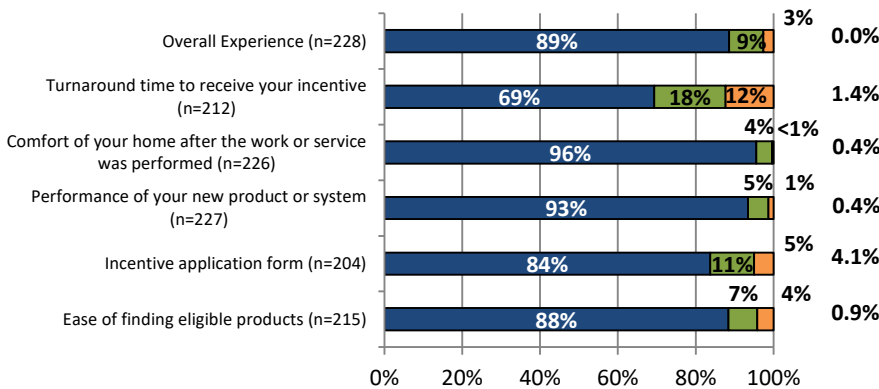
- Eighty-nine percent of respondents with gas fireplaces rated their overall satisfaction a 4 or 5 out of 5. Satisfaction was lowest with the turnaround time to receive the incentive (69 percent) and highest with comfort of home after the work was performed (96 percent).
- The free ridership rate decreased slightly to 37 percent.
- Fifty-seven percent of respondents said they would have done the same project in absence of Energy Trust incentives and information, while 18 percent would have postponed installation for a year or more and 17 percent would have installed a less efficient option.
- The most influential factor on the decision to purchase the product was the appearance of the fireplace (92 percent), followed by its efficiency (86 percent).
- In 63 percent of cases, the gas fireplace replaced a wood burning fireplace or stove, while 28 percent replaced a previous gas fireplace.
- Ninety-one percent of respondents were satisfied with their contractor; 36 percent considered the approved trade ally list when choosing their contractor.

Participant Satisfaction

Satisfaction with Program Elements

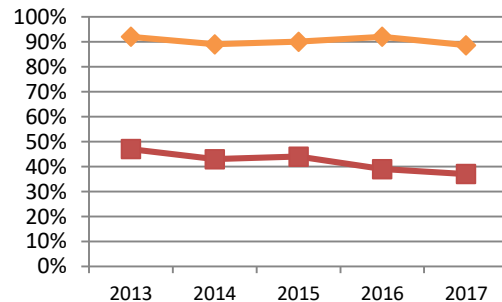
■ Satisfied ■ Neutral ■ Dissatisfied

Don't Know



Satisfaction Over Time (Annual)

— Overall experience

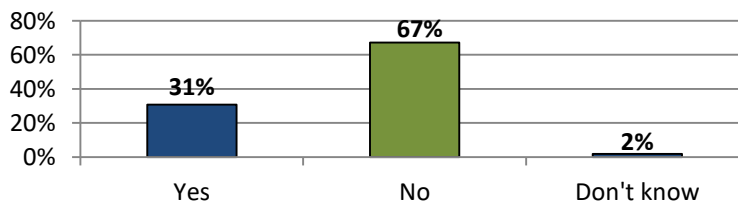


Survey question:

- Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied.

Interactions With Energy Trust Prior to Purchasing Product

Visited the Energy Trust Website, talked or emailed with a representative, or received printed materials prior to purchase of product (n=228)



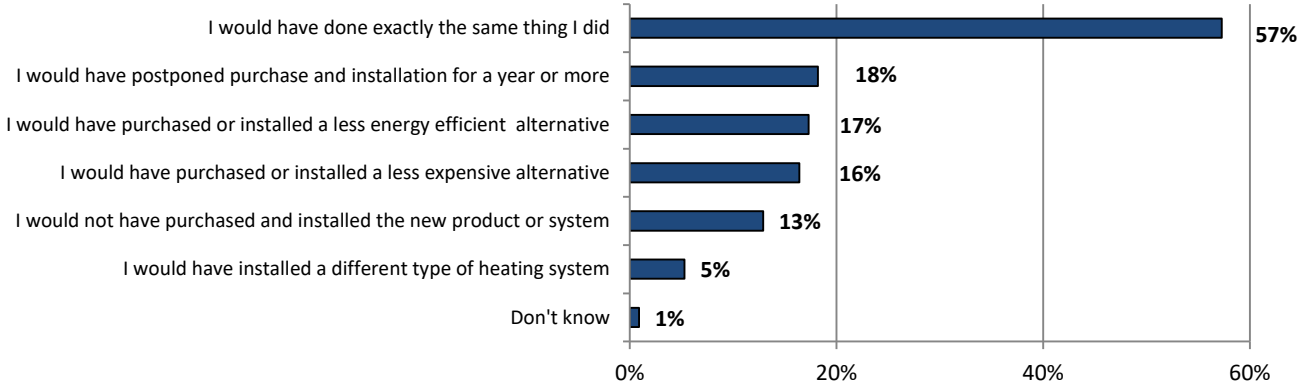
Survey Question:

- Q2. Did you or anyone in your household visit the Energy Trust website, talk or e-mail with an Energy Trust representative, or receive any printed materials before you purchased your product?

Gas Fireplaces

Impact of Incentives and Information

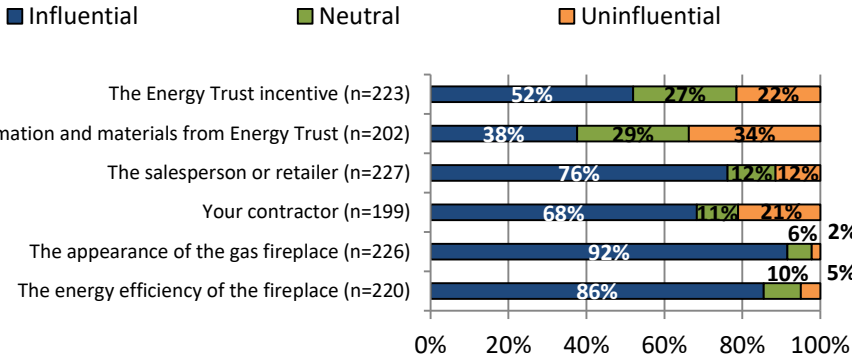
Actions Would Have Taken Without Incentive or Information (n=225)



Survey questions:

- Q3A. Which of the following statements describe the actions you would have taken had the Energy Trust incentives and information not been available? (Multiple responses possible)

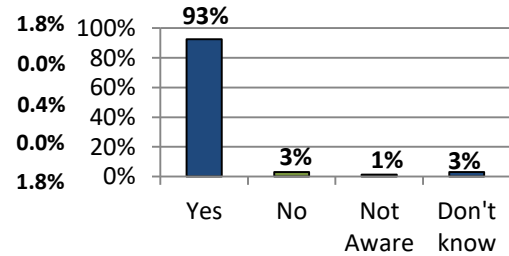
Influences on Decision to Purchase Product



Don't Know

0.0%
1.8%
0.0%
0.4%
0.0%
1.8%

Have you applied or will you apply for the applicable Oregon state residential energy tax credit? (n=228)

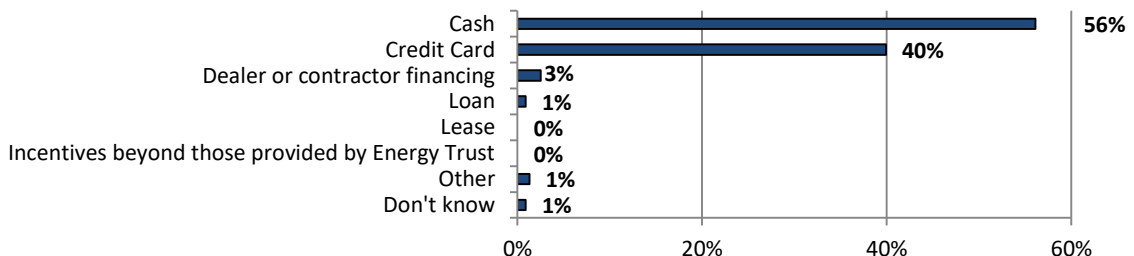


Survey questions:

- Q4A. How influential were the following elements on your decision to purchase your product?
- Q6. Have you applied or will you apply for the applicable Oregon state residential energy tax credit?

Payment

How it was paid for (n=228)

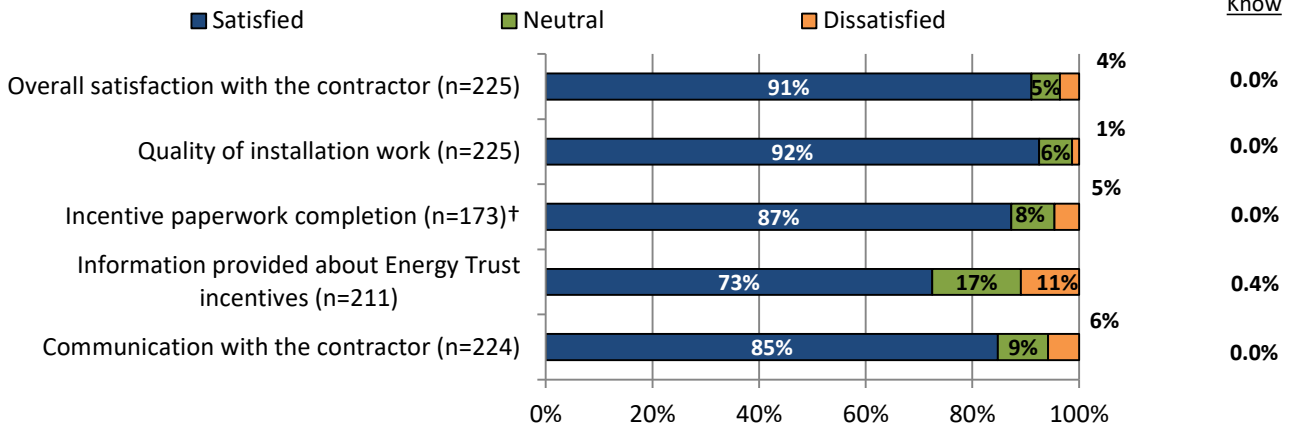


Survey Question:

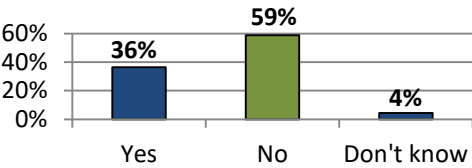
- Q12W. How did you pay for it? (Multiple responses possible)

Gas Fireplaces

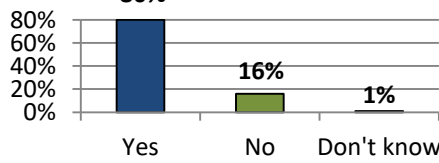
Satisfaction With Contractor



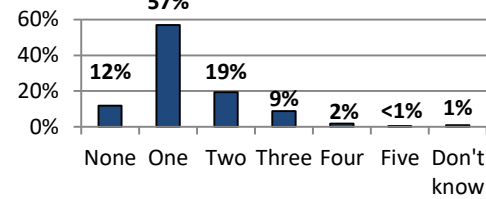
Did you consider Energy Trust's list of approved trade allies when selecting your contractor? (n=228)



Did your contractor complete some or all of the incentive paperwork for you? (n=218)



Number of contractors that provided bids (n=228)



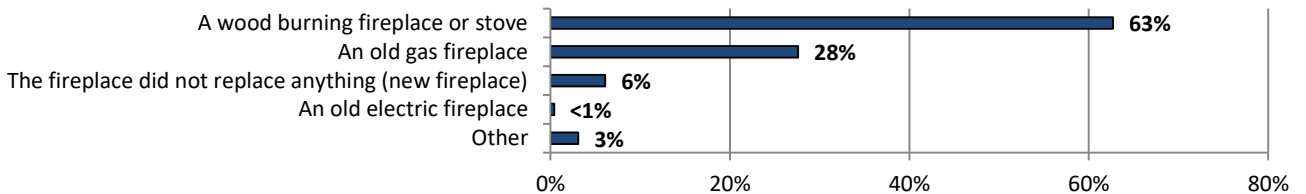
Survey questions:

(These questions are only asked of respondents who used a contractor to have work performed)

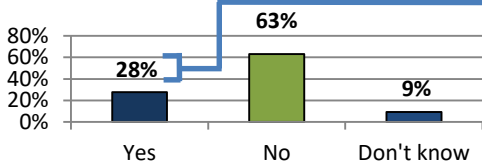
- Q8. Thinking of your experience with your contractor, please indicate the number that corresponds to your satisfaction with the following service elements, with 1 indicating not at all satisfied and 5 indicating very satisfied. († Only asked of those who had a contractor complete their paperwork)
- Q9. Did you ever consider Energy Trust's list of approved allies when selecting your contractor?
- Q9A. Did your contractor complete some or all of the incentive paperwork for you?
- Q13New. How many contractors did you get a bid from before deciding to move forward with your project?

Replacement Info and Bonus Incentive

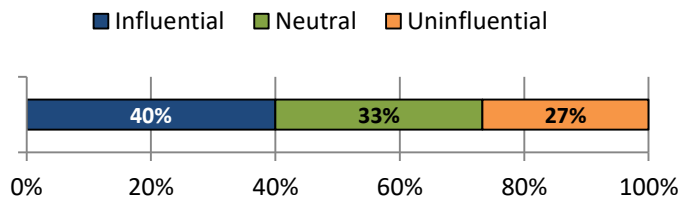
Did the gas fireplace you purchased replace... (n=228)



Do you recall receiving a bonus incentive for your project? (n=54)



Influence of Bonus Incentive (n=15)**



Survey questions:

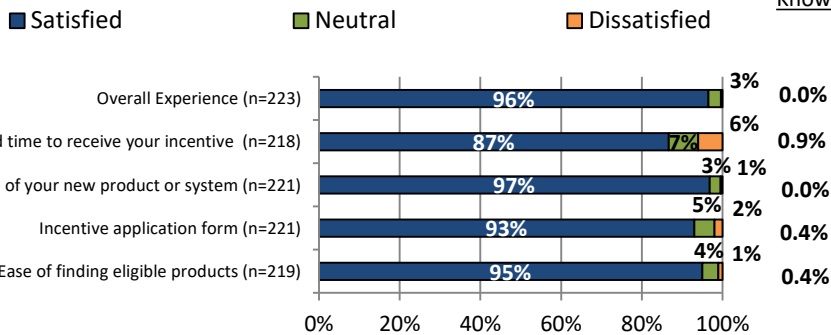
- Q12O. Did the gas fireplace you purchased replace...?
- Q13NewB. Do you recall receiving a bonus incentive for your project? (Only asked of respondents that received a bonus incentive)
- Q13NewI. How influential was the bonus incentive on your decision to move forward with your project? Please answer using a 5 point scale where 5 means it had a great influence and 1 means it did not have any influence. (**caution: small sample size) (Only asked of respondents that received a bonus incentive)

Smart Thermostats

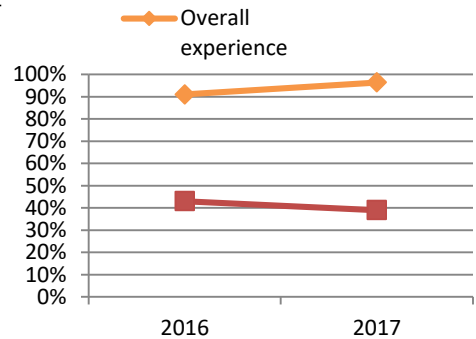
- Ninety-six percent of Smart Thermostat respondents rated their overall satisfaction a 4 or 5 out of 5.
- Forty-eight percent reported visiting the Energy Trust website, communicating with a representative, or receiving printed material prior to purchasing their thermostat.
- The free ridership rate decreased slightly to 39 percent.
- Forty-four percent said they would have purchased and installed the same product without the Energy Trust incentive or information. However, 60 percent of respondents said the Energy Trust incentive was influential in their purchase decision.
- The one participant that had a contractor install their smart thermostat was satisfied with their contractor.

Participant Satisfaction

Satisfaction with Program Elements



Satisfaction Over Time (Annual)

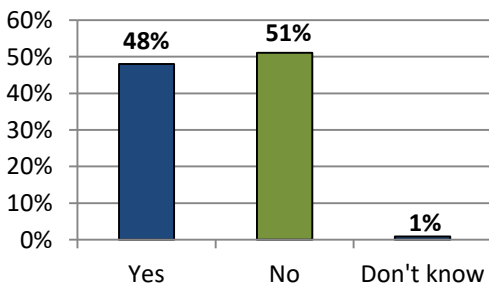


Survey question:

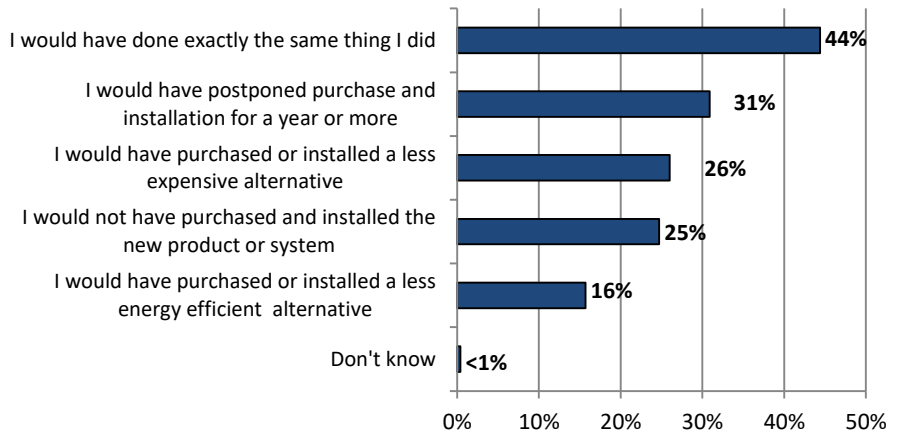
- Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied.

Interactions With Energy Trust Prior to Purchasing Product

Visited the Energy Trust Website, talked or emailed with a representative, or received printed materials prior to purchase of product (n=223)



Actions Would Have Taken Without Incentive or Information (n=223)

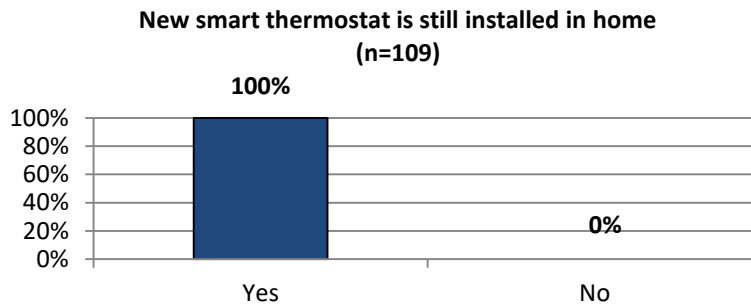


Survey Question:

- Q2. Did you or anyone in your household visit the Energy Trust website, talk or e-mail with an Energy Trust representative, or receive any printed materials before you purchased your product?
- Q3A. Which of the following statements describe the actions you would have taken had the Energy Trust incentives and information not been available? (Multiple responses possible)

Smart Thermostats

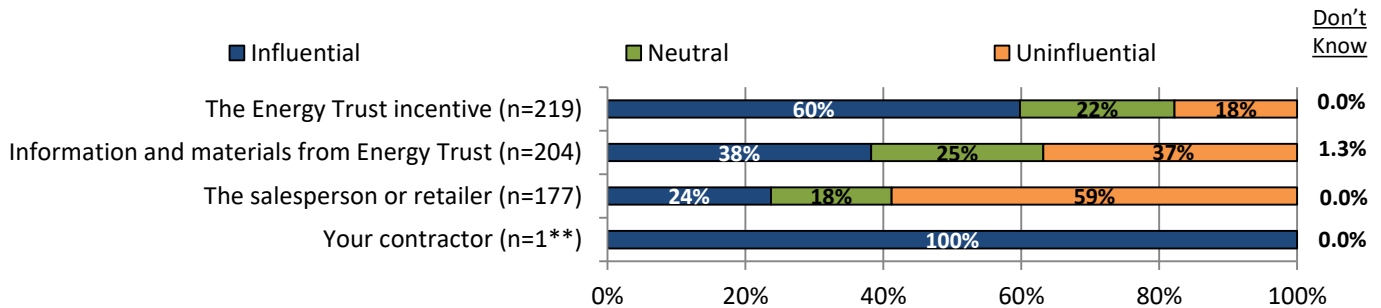
Smart Thermostat Installation Rate



Survey Question:

- Q1NEWB. Is the smart thermostat product that you recently purchased still installed in your home? (NOTE: This question was added MY 2017)

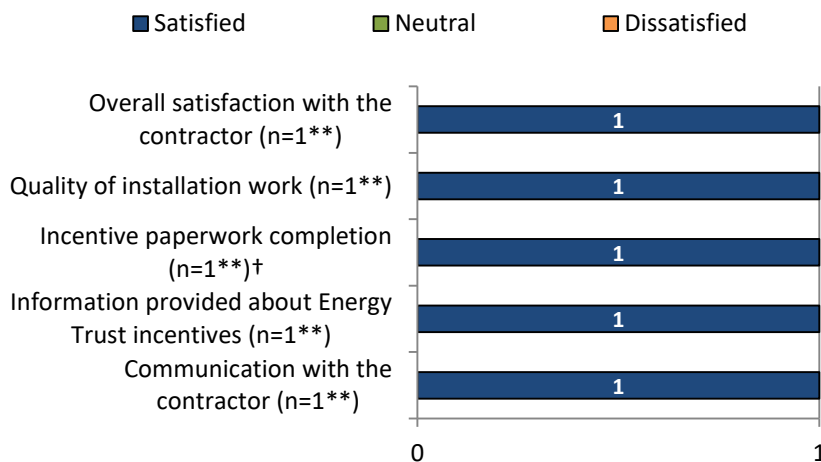
Influences on Decision to Purchase Product



Survey questions:

- Q4A. How influential were the following elements on your decision to purchase your product? (**caution: small sample size)

Satisfaction With Contractor



Did you consider Energy Trust's list of approved trade allies when selecting your contractor? (n=2)**

Yes	0
No	2

Did your contractor complete some or all of the incentive paperwork for you? (n=2)**

Yes	1
No	0
Not applicable	1

Survey questions:

(These questions are only asked of respondents who used a contractor to have work performed)

- Q8. Thinking of your experience with your contractor, please indicate the number that corresponds to your satisfaction with the following service elements, with 1 indicating not at all satisfied and 5 indicating very satisfied. (**caution: small sample size) († Only asked of those who had a contractor complete their paperwork)
- Q9. Did you ever consider Energy Trust's list of approved allies when selecting your contractor? (**caution: small sample size)
- Q9A. Did your contractor complete some or all of the incentive paperwork for you? (**caution: small sample size)

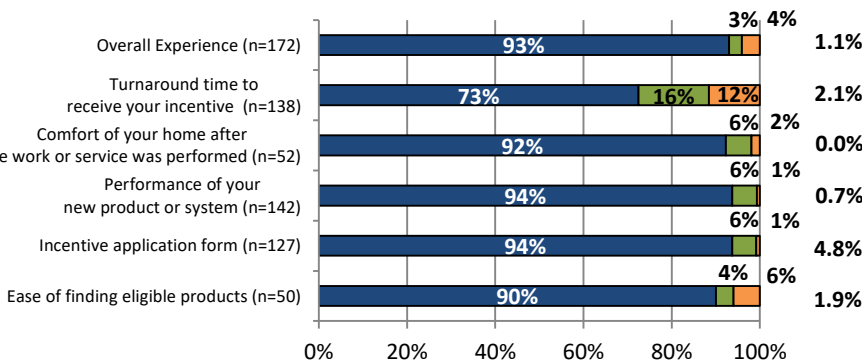
Existing Homes – Washington

- Ninety-three percent of Existing Homes Washington respondents rated their overall satisfaction a 4 or 5 out of 5. Satisfaction was lowest with the turnaround time to receive the incentive (73 percent) and highest with the performance of the new product or system and incentive application (both 94 percent), when applicable.
- Fifty-seven percent of respondents said they would have made the same improvements without Energy Trust incentive and information, while 18 percent would have installed a less expensive option.
- Eighty-one percent said the contractor had an influence on their decision making for the project and 40 percent said the Energy Trust incentive influenced their decision.
- For participants that had measures installed by a contractor, 91 percent were satisfied with their contractor and 27 percent had considered the trade ally list when selecting their contractor.

Participant Satisfaction

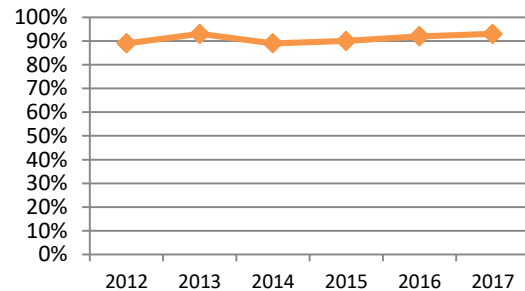
Satisfaction with Program Elements

■ Satisfied ■ Neutral ■ Dissatisfied



Satisfaction Over Time (Annual)

◆ Overall experience



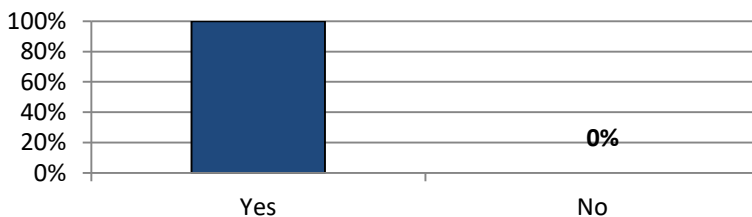
Survey question:

- Q1. Thinking of your participation with Energy Trust, please rate your satisfaction with each of the following elements on a 5-point scale where 5 is very satisfied and 1 is not at all satisfied. (**caution: small sample size)

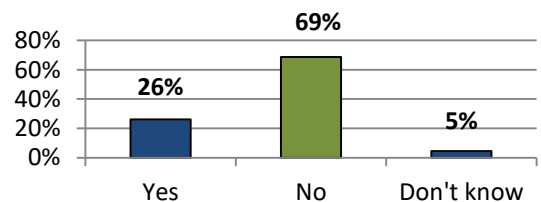
Interactions With Energy Trust Prior to Project

New smart thermostat is still installed in home (n=31)

100%



Visited the Energy Trust Website, talked or emailed with a representative, or received printed materials prior to project (n=176)



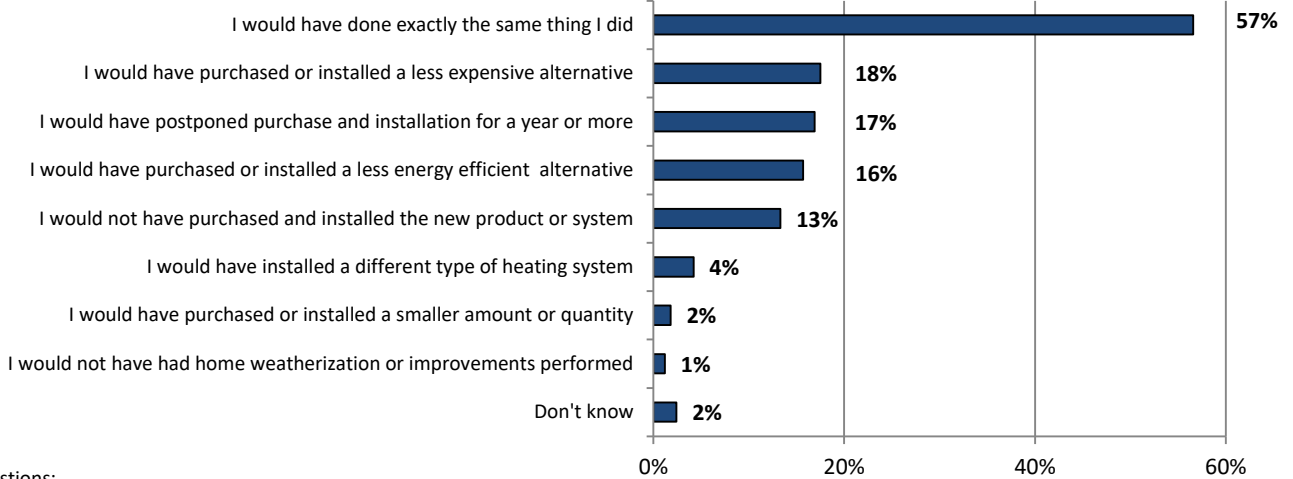
Survey Question:

- Q1NEWB. Is the smart thermostat product that you recently purchased still installed in your home? (*This question was added in 2017)
- Q2. Did you or anyone in your household visit the Energy Trust website, talk or e-mail with an Energy Trust representative, or receive any printed materials before you had services or work performed?

Existing Homes – Washington

Impact of Incentives and Information

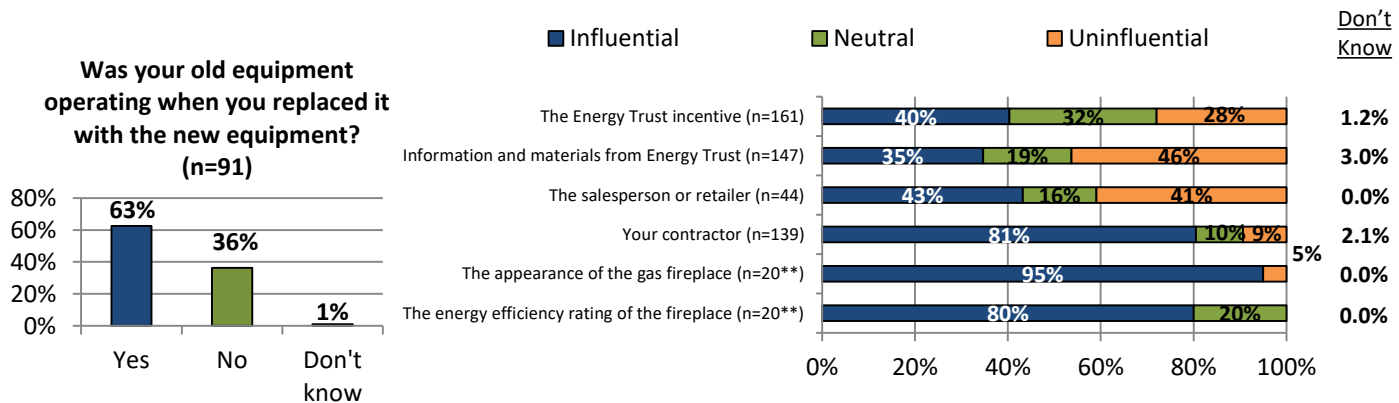
Actions Would Have Taken Without Incentive or Information (n=166)



Survey questions:

- Q3A. Which of the following statements describe the actions you would have taken had the Energy Trust incentives and information not been available? (Multiple responses possible)

Influences on Decision to Have Services or Work Performed

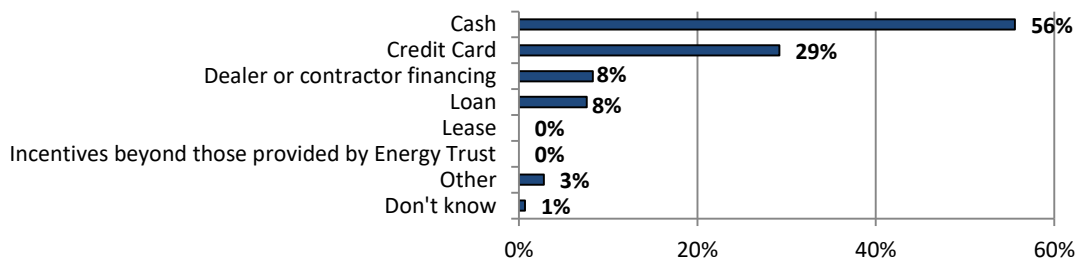


Survey questions:

- Q3D. Was your old <measure> operating when you replaced it with the new equipment?
- Q4A. How influential were the following elements on your decision to have services or work performed? (**caution: small sample size)

Payment

How it was paid for (n=144)

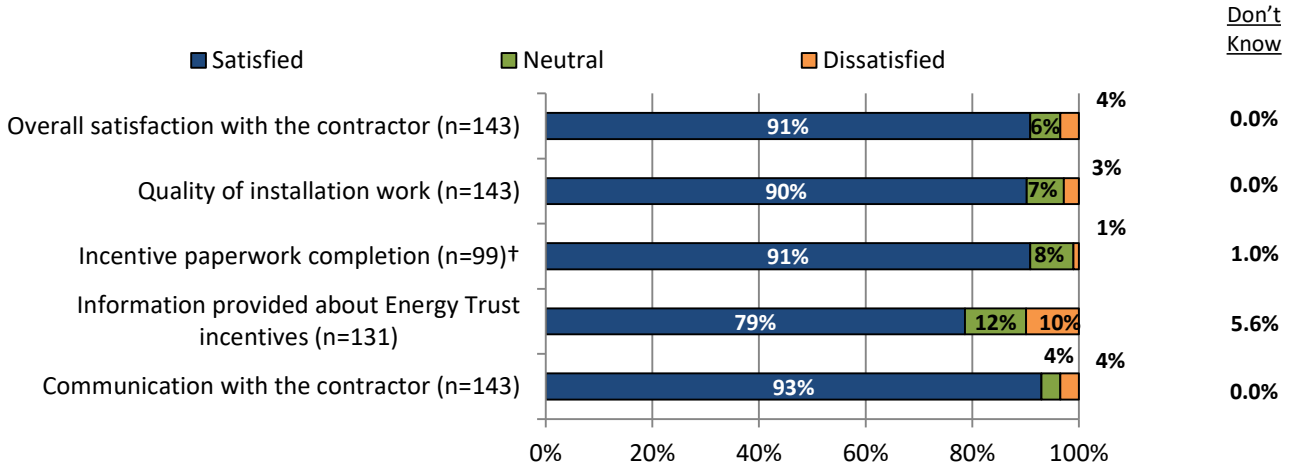


Survey Question:

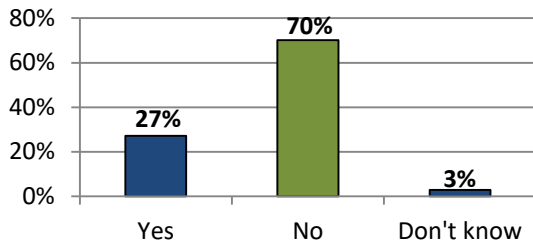
- Q12W. How did you pay for it? (Multiple responses possible)

Existing Homes – Washington

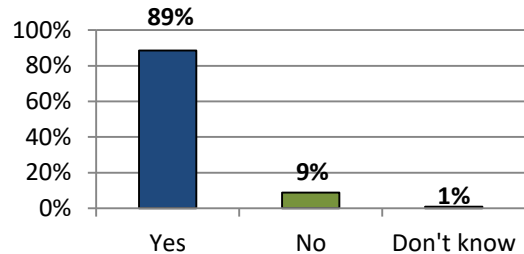
Satisfaction With Contractor



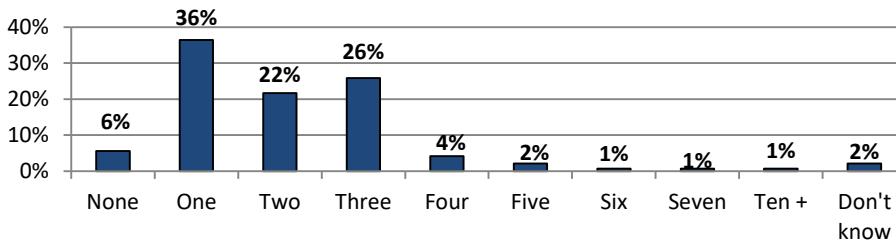
Did you consider Energy Trust's list of approved trade allies when selecting your contractor? (n=144)



Did your contractor complete some or all of the incentive paperwork for you? (n=113)



Number of contractors that provided bids (n=143)



Survey questions:

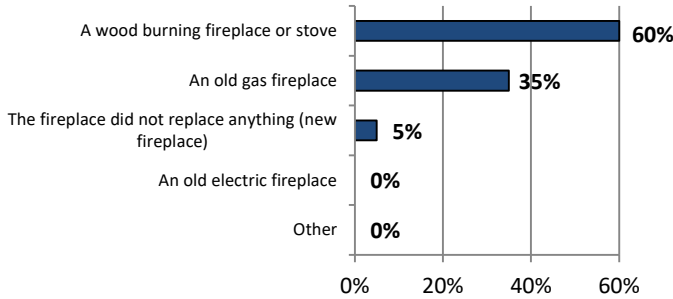
(These questions are only asked of respondents who used a contractor to have work performed)

- Q8. Thinking of your experience with your contractor, please indicate the number that corresponds to your satisfaction with the following service elements, with 1 indicating not at all satisfied and 5 indicating very satisfied. (*† Only asked of those who had a contractor complete their paperwork*)
- Q9. Did you ever consider Energy Trust's list of approved allies when selecting your contractor?
- Q9A. Did your contractor complete some or all of the incentive paperwork for you?
- Q13New. How many contractors did you get a bid from before deciding to move forward with your project?

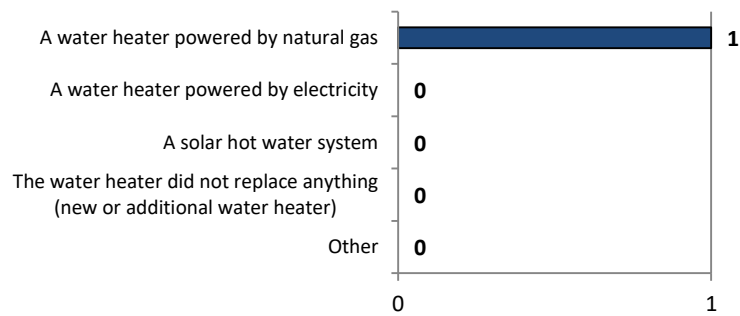
Existing Homes – Washington

Replacement Info

Did the gas fireplace you purchased replace...
(n=20**)



Did the new water heater you purchased replace...
(n=1**)

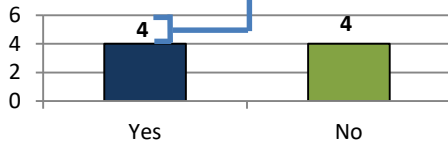


Survey questions:

- Q12O. Did the gas fireplace you purchased replace...? (**caution: small sample size)
- Q12S. Did the new water heater you purchased replace...? (**caution: small sample size)

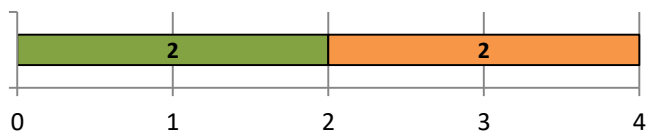
Bonus Incentive

Do you recall receiving a bonus incentive for your project?
(n=8**)



Influence of Bonus Incentive (n=4**)

■ Influential ■ Neutral ■ Uninfluential



Survey questions:

(These questions are only asked of respondents that received a bonus incentive)

- Q13NewB. Do you recall receiving a bonus incentive for your project? (**caution: small sample size)
- Q13NewI. How influential was the bonus incentive on your decision to move forward with your project? Please answer using a 5 point scale where 5 means it had a great influence and 1 means it did not have any influence. (**caution: small sample size)

Detailed Free Ridership Numbers

Commercial and Industrial

Existing Buildings - electric

Project Type	Low Scenario	Mid Scenario	High Scenario
Custom 2016-2017 (n=59)	7%	9%	11%
Lighting 2017 (n=117)	7%	9%	11%
Standard 2017 (n=35)	8%	9%	10%

There were fewer than 30 respondents in 2017 for the Custom track, so, we used data from 2016 and 2017 to estimate free ridership for this track.

Project Type	Free Ridership Rate	Proportion in Population (2017)
Custom	9%	21%
Lighting	9%	62%
Standard	9%	17%
Overall Free Ridership	9%	

Existing Buildings - gas

Project Type	Low Scenario	Mid Scenario	High Scenario
Custom 2015-2017 (n=46)	14%	17%	20%
Standard 2017 (n=43)	27%	31%	34%

There were fewer than 30 respondents in 2017 for the Custom track, so, we used data from 2015 to 2017 to estimate free ridership for this track.

Project Type	Free Ridership Rate	Proportion in Population (2017)
Custom	17%	45%
Standard	31%	55%
Overall Free Ridership	24%	

Production efficiency - electric

Project Type	Low Scenario	Mid Scenario	High Scenario
Custom 2017 (n=44)	10%	11%	12%
Lighting 2017 (n=82)	9%	9%	10%
Standard 2017 (n=79)	21%	22%	23%

Project Type	Free Ridership Rate	Proportion in Population (2017)
Custom	11%	58%
Lighting	9%	31%
Standard	22%	11%
Lighting and Standard	12%	42%
Overall Free Ridership	12%	

Production efficiency - gas

2014-2017	Low Scenario	Mid Scenario	High Scenario
Custom and standard 2015-2017 (n=32)	16%	18%	20%

There were fewer than 30 respondents in 2017 for Custom and Standard combined. So, we estimate a free ridership rate without breaking out Custom and Standard, and going back to 2015 to get the requisite 30 respondents.

Detailed Free Ridership Numbers

Multifamily - electric

2017	Low Scenario	Mid Scenario	High Scenario
Electric (n=122)	22%	24%	25%

The Existing Multifamily sample does not have subquotas, so we estimate one free ridership rate for electric and one for gas.

Multifamily - gas

2014-2017	Low Scenario	Mid Scenario	High Scenario
Gas (n=44)	12%	13%	13%

The Existing Multifamily sample does not have subquotas, so we estimate one free ridership rate for electric and one for gas. On the gas side, there were fewer than 30 respondents in 2017, so we used data going back to 2016 to achieve the requisite 30 respondents to calculate free ridership.

Residential

Home Products

2017	Low Scenario	Mid Scenario	High Scenario
Clothes Washers (n=229)	48%	48%	49%

Existing Homes

2017	Low Scenario	Mid Scenario	High Scenario
Ceiling Insulation (n=155)	40%	42%	43%
Other Insulation (floor, wall) (n=109)	41%	43%	45%
Heat Pumps (incl. DHPs) (n=272)	32%	33%	34%
Heat Pumps (excl. DHPs) (n=114)	36%	38%	40%
Ductless Heat Pumps (n=158)	29%	30%	31%
Gas Tank Water Heaters (n=41)	35%	36%	38%
Heat Pump Water Heaters (n=20)**	21%	21%	21%
Windows (n=230)	42%	43%	43%
Gas Fireplaces (n=227)	37%	37%	37%
Smart Thermostats (n=223)	39%	39%	40%

** Caution, small sample size.

Appendix A – Measures Included in Fast Feedback

Existing Buildings

- Projects must have either working therm or working kWh savings, and the incentive amount must be above zero
- Projects must have a program code indicating participation with Existing Buildings
- Studies are not included
- Projects with a track of O&M and Comprehensive are not included
- Strategic Energy Management projects are not included
- Mega projects are not included

Production Efficiency

- Projects must have either working therm or working kWh savings, and the incentive amount must be above zero
- Projects must have a program code indicating participation with Production Efficiency
- Studies are not included
- Motor projects are not included
- Projects in the Strategic Energy Management track are not included
- Mega projects are not included

Existing Multifamily

- Projects must have either working therm or working kWh savings, and the incentive amount must be above zero
- Projects must have a program code indicating participation with Existing Multifamily
- Instant savings measures, direct install measures, and appliance buy-down measures are not included

New Homes and Products

- Projects must have an incentive amount above zero
- Projects must have a program code indicating participation in the Products program
- Only clothes washer measures are eligible to be surveyed
- New homes, lighting and showerheads, and new manufactured home measures are not included

Appendix A – Measures Included in Fast Feedback

Existing Homes

- Projects must have either working therm or working kWh savings
- Projects must have a program code indicating participation with Existing Homes or Home Performance with Energy Star
- Only ceiling, floor, duct and wall insulation; gas fireplaces; heat pumps (including ductless); gas tank and heat pump water heaters; windows; gas furnaces (Washington only); smart thermostats; and Home Performance projects are surveyed through Fast Feedback
- Only Home Performance projects not served by Enhabit are included
- Savings Within Reach (moderate income track) and existing manufactured homes are not included

Solar

- Commercial and residential solar PV Projects must have working kWh production above zero
- Third-party owned systems are included but may be asked slightly different questions

Additionally, for all programs, projects must:

- Be recognized within a specific date range
- Be associated with a contact with one of the following project roles: lead, owner, property manager, accounts receivable, system owner or host owner (for third-party owned solar projects)
- Have a status of “completed” (commercial and industrial) or anything but a status of “abandoned” (residential)
- Be associated with a contact record containing a valid phone number

We also exclude customers that we have recorded as having been surveyed recently (within the past twelve months for residential and the past six months for commercial and industrial) to avoid survey fatigue.

It is worth noting that for the purposes of surveying, we consider a year (for example, 2017) to go from December 31st of the prior year through December 30th of 2017. The reason for this is to ensure that we have sufficient surveys early in the year to provide information about satisfaction, which we report on quarterly. In addition, we are looking for the month in which the check was cut, not the month the savings were recognized, and December 31st is a catch-all date for projects that were counted for the previous program year, but for which checks were cut in January, therefore they are typically January participants.

Appendix B – Free Ridership Calculations

The method used here to calculate free ridership is described in more detail in the memo “Energy Trust Free Ridership Methodology” by Phil Degens and Sarah Castor, originally dated June 4, 2008 and updated August 7, 2013. For simplicity, a project’s free ridership score is composed of two elements: a project change score and an influence score. The project change score is based on the respondent’s answer to the question “Which of the following statements describe the actions you would have taken if Energy Trust incentives, services, and information were not available?” Possible answer choices are assigned a number between 0 and 0.5, with 0 indicating no free ridership and 0.5 indicated the project was a full free rider. Since respondents can select multiple responses to the question, their answer choice with the lowest score is selected. If the respondent selects “Don’t know”, two scores are created to account for the range of possible answers (0 and 0.5). For non-residential projects, a follow-up question is asked of respondents who answered that they would not have done anything differently in absence of the program: “If your firm had not received the incentive, would it have made available the funds needed to cover the entire cost of the project?” If the respondent selects “Yes” their project change score is 0.5, if they select “No” or “Don’t Know,” they are given two scores for project change, as described above.

The influence score is based on their answers to the question about the influence of Energy Trust incentives, program representatives, contractor/salesperson, studies and other program elements. The answer choices are given a value between 0 (element’s influence was a 5, extremely influential) and 0.5 (element’s influence was a 1, not at all influential). The score for the most influential element is taken as the influence score. If a respondent answers “Don’t know” for all elements, they are given two influence scores to account for the range of possible answers (0 and 0.5).

The project change and influence scores are added to generate the free ridership score for each project. For respondents not providing any “Don’t know” answers this will be one number between 0 (no free ridership) and 1 (full free ridership). For those who gave a “Don’t know” answer to one of the questions, there are two free ridership scores, one high and one low. For those who answered “Don’t know” to both the project change and influence questions, no score is calculated.

Free ridership scores are averaged for all respondents of each program/measure group and shown as a percent, rather than a decimal. “Low Scenario” is the average of the free ridership scores where the low score is used for those who answered “Don’t know” to a question; “High Scenario” is the average where the high score is used for those who answered “Don’t know” to a question. “Mid Scenario” is the average of the Low and High Scenarios. Ultimately, the Mid Scenario is used as Energy Trust’s estimate of free ridership, or the percent of projects that received incentives but would have happened even in the absence of the program.

For non-residential participants, these scores are weighted by the project’s share of total working kWh and therm savings for all respondents to get a program-level estimate of free ridership. Gas and electric free-ridership rates are calculated separately; if a project has gas *and* electric savings, its free ridership score factors into the program’s gas and electric free ridership estimates, but it’s weight will differ, based on the fuel of interest. Residential measure free ridership estimates are not weighted.

Appendix B – Free Ridership Calculations

Evaluation staff report free ridership on an annual basis, which is used in Energy Trust's True-Up process to convert gross energy savings to net energy savings. In the past, if there were fewer than 10 respondents in a given program and fuel category, or in a given measure category, Evaluation staff did not estimate free ridership due to the small sample size. For as long as Fast Feedback surveys have been conducted, we have been able to meet this sample size requirement for all programs and fuels. After discussion with program staff, it was determined that this threshold was too low and that we needed larger minimum sample sizes to calculate stable estimates of free ridership.

Currently, the minimum number of respondents required to estimate free ridership is 30. Also, for the Existing Buildings and Production Efficiency programs, which have subquota groups based on program tracks, we strive to estimate free ridership for each subquota group and then weight the results by the proportion of savings in the population. For example, if Custom gas projects had a free ridership rate of 20% and Standard gas projects had a free ridership rate of 14%, and gas savings from Custom and Standard projects in the population were each 50%, the program's free ridership rate would be 17%. Thus, the overall program level free ridership estimates reflect the actual distribution of program track savings.

To estimate annual free ridership in cases where we lack 30 or more respondents, we pool responses from prior years' surveys, until we achieve 30 or more respondents, up to three years combined. For example, there were 13 Production Efficiency (PE) respondents with gas savings in 2013. To estimate the free ridership numbers that would be applied to 2013 PE projects in True-Up, we went back to 2011. These responses for 2011-2013 were pooled, which increased the total number of respondents to 37. This rule is only applied to non-residential program free ridership estimates.

For Production Efficiency and Existing Buildings programs, if there are fewer than 30 respondents in each subquota group, we will not estimate free ridership by subquota and will instead pool all responses.

Where free ridership is estimated using data from past years, we clearly note this in the report.

Appendix C – Revised 2016 Free Ridership Numbers

During the computation of the 2017 free ridership numbers, we noticed a small error in how some non-residential free ridership data were being aggregated across years, in cases where the annual sample size was less than 30, requiring aggregation of multiple years of data to achieve a stable estimate. We recalculated the 2016 free ridership numbers and report the revised numbers below.

2016 Non-Residential Free Ridership

Program / Track	Fuel	Years of Data	N	Free Ridership
Existing Buildings – Oregon	Electric	2015-2016	187	18% ^{1,2}
	Gas	2015-2016	86	20% ^{1,2}
Existing Buildings – Custom	Electric	2016	31	9%
	Gas	2015-2016	34	14% ²
Existing Buildings – Lighting	Electric	2016	82	19%
Existing Buildings – Standard	Electric	2015-2016	74	36% ²
	Gas	2016	52	25%
Existing Multifamily	Electric	2016	129	17%
	Gas	2014-2016	34	22% ²
Production Efficiency	Electric	2016	192	11% ¹
	Gas	2014-2016	30	16% ²
Production Efficiency – Custom	Electric	2016	44	10%
Production Efficiency – Lighting	Electric	2016	72	10%
Production Efficiency – Standard	Electric	2016	76	16%
Production Efficiency – Standard + Lighting	Electric	2016	148	12%

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. Free ridership is not computed for WA participants, so they are excluded here.

1 These program level free ridership rates are computed as the savings-weighted averages of the track level results, meaning that the influence of each track on the overall free ridership rate is directly proportional to its share of savings in the 2016 program.

2 Multiple years of survey data were aggregated together to compute free ridership for these non-residential programs and tracks because at least one sub-quota within the program had a sample size below 30. Additional years of data were added until 30 or more survey responses were achieved in each sub-quota.