ILLUME

PROJECT:

Customer Awareness and Participation Study

PROJECT SPONSOR:

Energy Trust of Oregon

PREPARED BY:

ILLUME Advising, LLC

January 2023

ACKNOWLEDGEMENTS

ILLUME Advising, LLC is a forward-thinking consulting company at the rare intersection of insight and execution. Founded in 2013, the company has quickly grown to include a deep bench of quantitative and qualitative research experts. ILLUME uses cutting edge research strategies to help build a resilient energy ecosystem to enrich lives, improve global health, and ensure a more secure and sustainable future.

For this effort, we would like to acknowledge, first and foremost, Dan Rubado and the rest of the team at Energy Trust of Oregon. We would also like to recognize the dedicated work of Ewald & Wasserman Research Consultants, LLC. Finally, we would like to acknowledge the ILLUME team members Lisa Obear, Mallika Jayaraman, Leith Nye, and Alex Dunn.

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MEMO

Date: 4/26/2023
To: Energy Trust Board of Directors
From: Dan Rubado, Sr. Project Manager – Evaluation
Subject: Staff Response to the 2022 Customer Awareness and Participation Survey

Illume Advising completed the 2022 Customer Awareness and Participation Survey on behalf of Energy Trust and obtained over 1,900 responses from residential customers in Energy Trust's service area in Oregon. The study's main goals were to characterize Energy Trust's residential customers, measure recent participation levels in its residential programs, assess awareness of Energy Trust and its services, and track progress towards improving service to groups that have been underserved by Energy Trust in the past.

Similar to previous studies, this study identified significant differences in program awareness, participation, and benefits by race, income level, homeownership, housing type and geography, among other factors. While some of these differences were relatively small or have shrunk since the last study, many disparities have persisted; these results provide insights for Energy Trust staff on where to concentrate future efforts and investments. Given the timing of the study, it may take several years for recent programmatic changes and resulting demographic shifts in participants to show up in results.

Among these findings:

- **Low levels of service to Latinx and Indigenous residents**. Although these groups tend to be lower income, are more likely to be renters and many live in rural areas, these factors do not fully explain the gaps in participation and awareness for these groups.
- **High overlap between residents with low incomes and renters, where awareness and participation remain especially low.** There are challenging structural barriers to better serving renters since they have little control over their living space; landlords and property managers may have little financial incentive to invest in energy efficiency since the benefits will be realized in the utility bills of their tenants. Energy Trust has had success with larger multifamily buildings and low-income agencies, where operational costs are more of a concern and efficiency can be incorporated into other types of building-wide upgrades.
- **Low participation in Energy Trust's gas-only service area, including in Eastern Oregon.** A low prevalence of eligible households in these areas combined with the small number of applicable gas efficiency measures, makes it difficult to get customers interested or provide much value to them. If Energy Trust can obtain funding to serve more of Oregon's electricity customers in the future, it will become much easier to serve these communities with meaningful offers.

Energy Trust, including its Residential, Existing Buildings (serving multifamily properties), and Solar programs, has pivoted in the last few years to provide increasingly targeted outreach and services to customers groups that have been underserved by Energy Trust—particularly communities of color, customers with low incomes, and rural communities. This has included working with a variety of community-based organizations (CBOs), and other partners, to conduct outreach to their clients and provide services, including many new offers and co-funding, often greatly reducing or eliminating the upfront cost to participants. This work has created many new and ongoing relationships with CBOs around the state, more targeted offers and services that cover larger portions of upfront costs, and a network of small-scale delivery partners. These efforts have resulted in more diverse beneficiaries of Energy Trust's residential programs. It will be several years before these changes and improvements are fully represented in program participation rates in studies like this one, but data from recent participants show that these changes are happening. However, this shift to new customer groups is occurring somewhat slowly as new partnerships and initiatives are created and brought to scale.

While Energy Trust has had early success in partnering with CBOs to create new initiatives, these efforts have been challenging to bring to scale and can be more complicated to develop and administer than Energy Trust's mass market offers. This has limited the near-term impact of these partnerships somewhat, but Energy Trust staff are learning how best to partner with and support a growing number of CBOs and communities to serve new customers. In the long run, these efforts will allow Energy Trust to reach more customers than ever before and provide them with better services.

The Customer Awareness and Participation Survey will be repeated in the future to provide updated information to Energy Trust and its stakeholders. Given that Energy Trust does not currently collect demographic information from all program participants and beneficiaries,[1] we will continue to periodically conduct this type of general population survey to quantitatively assess Energy Trust's progress toward more equitably distributing program services and benefits. Energy Trust plans to follow-up on this research with more in-depth qualitative research to explore how we can better reach groups that have not been well served and what types of energy services they need the most.

[1] Not all program participants fill out program forms, so there is no opportunity to capture their demographic information. These situations include contractor-completed forms, services delivered by CBOs or other entities, retail and distributor level discounts on efficient products and equipment, upgrades at rental properties, and projects at multifamily buildings not focused on a single unit.

EXECUTIVE SUMMARY

The ILLUME team was contracted by Energy Trust of Oregon (Energy Trust) to complete the 2022 Customer Awareness and Participation (CAP) Survey. To complete this research, ILLUME surveyed 1,942 participating and nonparticipating customers in the Energy Trust service territory from June through September of 2022. This study aimed to reach a representative sample of customers to provide Energy Trust with a snapshot of customer awareness, understanding, and perspectives about Energy Trust and its related services.

Research Objectives

The overarching "North Star" research goals, intended to be outcomes of the 2022 CAP research, are as follows:

- Obtain representative, quantitative information about residential customers in Energy Trust's Oregon service area, with a focus on customer groups that are underserved by Energy Trust.
- Measure participation levels in residential programs to track progress towards improving service to populations that are underserved by Energy Trust.
- Assess customer awareness of Energy Trust, especially among customer groups that are underserved by Energy Trust.
- Utilize these data to improve and refine communication tactics, marketing tactics, program design, and program implementation.
- Develop a repeatable, comparable survey that can be used longitudinally to track trends over time.

To meet these research goals, the survey and sample design were developed to answer the following key researchable questions:

- What are the household, demographic, and building characteristics of Energy Trust customers?
- What is their home ownership or rental status?
- Do they pay their own energy bills, and do they receive any assistance to do so? Are they concerned with their ability to cover the cost of their energy bills?
- What types of energy-using equipment do they have in their homes?
- Are customers aware of Energy Trust as an organization? Are they aware of various Energy Trust services and offerings?
- How do the above findings vary across participant and nonparticipant groups?
- How do the above findings vary across demographic and geographic identifiers?

The main body of this report explores the results of the survey across these key goals and researchable questions.

Key Findings

The following section summarizes the key findings from our research.

Overall, the 2022 CAP study found lower rates of awareness, knowledge, and participation than in 2020. Some of these differences may be attributable to differences in survey, sample, and weighting design and methodology. The prior survey was also fielded during initial COVID-19 shutdowns, which may have impacted responses. In addition to these factors, changes to Energy Trust program offerings and overall changes in economic climate may also explain the decline in these metrics. Specifically, some offerings from Energy Trust were discontinued between the 2013 – 2019 period analyzed in the previous study and the 2015 – 2021 period as markets transformed, the delivery channel changed, or the offerings were no longer cost effective.

Overall, white customers receive the highest financial benefits and are mostly likely to be aware of Energy Trust programs. White respondents had statistically significantly higher rates of awareness of both energy efficiency and solar services, and they received at least twice the financial benefits from the programs compared to other racial/ethnic groups. **Although white customers received higher financial benefits, participation rates across several racial/ethnic groups were relatively similar.** This is likely driven by the types of offerings customers can access, and relationships between race/ethnicity and other demographics, such as homeownership. As an example, Black/African American respondents had the highest rates of indirect participation across all racial and ethnic groups. Indirect participation refers to respondents who receive benefits from measures not installed within their unit, such as lighting installed in an apartment common area or a building HVAC system. Black/African American respondents likely have the highest rates of indirect participation as this group also reported the highest rates of renting (69%). Since the savings for these upgrades are divided among all residents in a building, indirect participants realize lower financial benefits than direct participants. They also may not be aware that their building has participated. Therefore, while Black/African American respondents participate at a similar rate to white respondents, they receive fewer financial benefits and have lower awareness due to higher rates of indirect participation.

Latino/Hispanic customers are the most underserved of all racial groups, with some of the lowest participation rates, levels, awareness, and knowledge across all analyses. Latino/Hispanic respondents received the lowest financial benefits in terms of participation level. Latino/Hispanic homeowners had higher levels of awareness of Energy Trust programs compared to Latino/Hispanic renters, but both groups had equally low participation rates, indicating there are likely barriers for all Latino/Hispanic customers to participate in Energy Trust programs.

In general, homeowners are served at higher rates than renters. Both single-family and mobile/manufactured homes have higher participation rates, depth of participation, and higher levels of awareness and knowledge than respondents in small multifamily homes and multifamily buildings. As context for how this intersects with other demographic variables, white respondents had the highest rates of homeownership (70%), while the majority of Latino or Hispanic and Black or African American respondents indicated that they were renters (50% and 69%, respectively). This is connected to several other factors that may impact participation rate and depth, such as whether a customer is a direct or indirect participant, as well as whether the respondent wants to or is able to invest in their property.

There were no statistically significant differences in participation rate or financial benefits received by income; however, low-income customers were significantly less likely to be aware of or have knowledge of Energy Trust and its services/offerings. Participation rates were very similar across income levels, and while financial benefits received were lower for low-income customers, the difference was not statistically significant. However, awareness and knowledge of Energy Trust and Energy Trust services were generally lower among low-income respondents than among other income groups. Rates of home ownership are positively correlated with income, so it is likely that low-income customers more commonly receive services through indirect participation than customers with higher incomes. It should also be noted that there is a specific carve-out from public purpose funds in Oregon for low-income weatherization programs delivered by community action agencies and administered by Oregon Housing and Community Services, and Energy Trust historically did not target these customers for programs. However, that has changed in recent years as Energy Trust has focused more on the equity of its services and now has many offers focused on low-income households.

Respondents across urban and rural areas (urban areas, suburban areas/small cities, and rural areas) participate in Energy Trust programs at similar rates and have similar levels of awareness and knowledge. While there were some differences in participation levels, these were not statistically significant.

When looking at specific regions within Oregon, respondents in the Portland Metro region have the highest rates of participation, awareness, and knowledge, and receive the highest financial benefits from Energy Trust. Rates of participation, awareness, knowledge, and financial benefits were highest next for Southern Oregon, followed by the Willamette Valley/North Coast region. Respondents East of the Cascades consistently reported the lowest participation, awareness, and knowledge rates and the lowest financial benefits.

Dual fuel customers had the highest rates of participation, awareness, and knowledge and the highest financial benefits. Electric only customers received the highest financial benefits on average, while gas only customers received the lowest financial benefits. This is likely due to fewer gas measures than electric measures being available through Energy Trust programs and services and gas only customers often being ineligible for certain measures based on their water- and space-heating fuels.

Overall, 85% of respondents reported using air conditioning (AC), either a central AC, window or portable AC, or heat pump. While central ACs or heat pumps were the most common cooling systems used by homeowners, renters were more likely to use window ACs and portable ACs. The most common cooling types for homeowners were central AC (53%), ceiling fans (21%), and central heat pumps (17%), while the most common cooling types for renters were window AC (32%), portable AC (30%), and ceiling fans (21%). Central AC was most common in single-family homes, while window and portable ACs were more common in small multifamily homes and multifamily buildings. Central heat pumps were the most common cooling type for manufactured homes. Central AC, ceiling fans, and window ACs were the most common cooling systems overall.

Overall, natural gas furnaces were the most common heating system type, used by 48% of households. While homeowners most reported using a natural gas furnace or central heat pump to heat their home, renters were more likely to report using baseboards or wall heaters, although a handful also used natural gas or electric furnaces. Most owners had natural gas furnaces (61%), followed by central heat pumps (17%) and woodstoves or fireplaces (11%). Among renters, the most common heating system types were electric baseboard or wall heaters (42%), natural gas furnaces (21%), and electric furnaces (15%). Natural gas furnaces were most common in single-family homes, electric baseboard and wall heaters were most common in small multifamily homes and multifamily buildings, and electric furnaces and electric central heat pumps were most common in mobile or manufactured homes.

Renters, low-income customers, respondents living in multifamily or mobile/manufactured homes, Latino/Hispanic respondents, and Black/African American respondents were more likely to report being worried about their bills or say their home felt drafty or uncomfortable than other groups of respondents, indicating an opportunity to serve these respondents through Energy Trust programs. Similarly, respondents living in urban areas were more likely to feel uncomfortable than those living in small towns and rural areas, likely due to higher concentrations of multifamily buildings. It is possible that other structural or environmental factors—such as urban heat island effects—could be impacting these results. Other groups who reported worrying about their energy bills at high rates included Native American/Indigenous respondents (51% reporting high levels of worry), who had the third highest rates of concern behind Black/African American (60%) and Latino/Hispanic respondents (59%), compared to other racial groups. As noted previously, there are complex relationships between many of these demographic factors that impact these findings.

1. INTRODUCTION

Background

Energy Trust is an independent nonprofit organization, selected and overseen by the Oregon Public Utility Commission, to lead Oregon utility customers in benefiting from saving energy and generating renewable power. Energy Trust services, cash incentives, and solutions have helped participating customers of Portland General Electric (PGE), Pacific Power, NW Natural, Cascade Natural Gas, and Avista save more than $4.6 billion on their energy bills since 2002.

Energy Trust offers numerous energy efficiency and clean energy programs to residential customers, including rebates for single or multifamily equipment upgrades (such as heating and cooling equipment, insulation, thermostats, etc.), upstream retail incentives (for point-of-sale equipment like thermostats, water-saving devices, and lighting), and new construction rebates. Energy Trust also offers programs and services to specific market segments, including income-qualifying customers and those living in manufactured homes, and by partnering with community-based organizations. Lastly, Energy Trust provides incentives and support for customers installing home solar panels.

Energy Trust offerings for different building types are summarized in Table 1 below.

Table 1. Program offerings by building type

PROGRAM	DESCRIPTION	BUILDING TYPE
Home retrofit	Residential customers can receive standard incentives for heating and cooling systems, controls, fireplaces, insulation, windows, water heating (WA), and thermostats (available through instant coupon, PGE marketplace and direct ship) after completing an incentive application. Trade ally contractors perform most project installations.	Single-family homes, small multifamily (2-4 units), multifamily (5 or more units)
New buildings	This program provides incentives and services to construct efficient new multifamily buildings which can benefit tenants through low energy costs. Services include energy modeling, metering, and certification assistance, performance-based incentives, and a la carte options for the installation of efficient equipment.	Small multifamily (2-4 units), multifamily (5 or more units)
Retail and distribution	Retail incentives are paid to retailers and passed on to consumers as instant discounts on lighting, showerheads, smart thermostats, certain clothes washers and clothes dryers, and water heaters at point of purchase. Distributor incentives are paid to distributors to encourage the stocking and sales of energy-saving equipment, such as fireplaces with electronic ignitions and qualified high efficiency water heaters. Participating distributors may provide “instant discounts” to installers for purchasing qualifying gas and electric water heaters.	All building types
Energy Performance Score new construction	Energy Trust works with builders and verifiers to increase the energy efficiency of newly constructed homes through incentives, education, trade and program ally support, and quality assurance.	Single-family homes

PROGRAM	DESCRIPTION	BUILDING TYPE
Savings Within Reach (SWR)	This program offers higher incentives and on-bill repayment for income-qualified customers or those customers receiving unemployment benefits or other financial assistance as the result of the pandemic. Customers receive SWR incentives as a discount on their contractor project invoice, and Energy Trust reimburses the contractor for incentivized projects, minimizing out of pocket costs for these customers. Energy Trust also offered a gas furnace bonus for Savings Within Reach customers to support emergency replacements.	Single-family homes and small multifamily
Manufactured Homes	Energy Trust offers incentives and no-cost upgrades to residents of existing manufactured homes for HVAC, home energy reviews and weatherization upgrades. Additionally, higher incentives are available for qualifying heat pumps and ductless heat pumps installed by participating trade allies through the Manufactured Homes Heat Pump Fixed Price Promotion (FPP). Additionally, incentives, support, education materials and collateral are available for new manufactured home retailers, customers and manufacturers for the sale, purchase, and siting of ENERGY STAR® and NEEM+ Certified homes and efficient heat pump and water heating equipment.	Mobile and manufactured homes
Manufactured Home Replacement	This offer was initially launched as a limited-scale demonstration project from 2017 to 2021. It was then relaunched as an ongoing component of the Residential program portfolio in Q1 2022. Energy Trust provides incentives to support customers replacing their manufactured home. Serves owners of manufactured homes built before 1995 and household income meets Savings Within Reach qualifications or home is in community with affordability guidelines. The offer provides financial and technical assistance to owners of older manufactured homes who are seeking to replace their home with a newly built, energy- efficient home. Customers include households impacted by wildfires and other state-declared disaster events.	Mobile and manufactured homes
Manufactured Home No-Cost Services	This program offering was launched in 2002 as a pilot, subsequently, incorporated in Energy Trust's Home Retrofit program and subsequently redesigned in 2021. Free duct sealing and duct repairs are available for qualified existing manufactured homeowners or renters. The program strives to focus on homes built prior to 1995 and with no history of weatherization repairs. Energy Trust staff pre-approve every home through a brief customer interview during which home age, heating system, and site usage history is checked. Sites which are considered 'good candidates' (or which have a high likelihood of needing duct sealing or repair) are referred to participating trade allies.	Mobile and manufactured homes

PROGRAM	DESCRIPTION	BUILDING TYPE
	Approved trade allies then conduct diagnostic testing to ensure any duct sealing or repair would meet program criteria before performing work. Diagnostic testing is combined with a complete Home Energy Assessment, which collects additional useful home details such as HVAC system type and age, water heating, thermostat, insulation, and other details which are reported to the program.	
Existing Buildings Program Multifamily Services	Energy Trust of Oregon's Existing Building Multifamily services consists of five tracks: • Buy-Down – This track focuses on a set of measures that are likely to be purchased at the distributor level including appliances, water heaters, and HVAC. • Common Area Lighting – This track offers incentives for installation of efficient lighting in common areas. This offering was moved to C&I lighting starting in 2020. • Standard – This track includes deemed savings measures, which are reevaluated on a regular basis to stay current with building codes and market data and to assess new technologies. • Direct Install – This offers installation of specific no-cost measures in customer units. Due to COVID concerns, this offering was modified in 2020 to include energy- and water-savings devices that were left behind in kits for customers to self-install. • Custom – This track is utilized when there are complex projects that cannot go through the standard track. The program works with a set of Allied Technical Assistance Contractors (ATACs) to produce studies of potential energy saving measures before retrofit work is completed.	Small multifamily, large multifamily
Solar	Solar offerings aim to create a vigorous and sustainable market for solar in Oregon by offering cash incentives that lower above-market costs for small residential and commercial solar projects, educating consumers, creating, and enforcing quality standards and ensuring a robust network of qualified trade ally contractors. The Solar program supports installation of distributed solar systems across all customer sectors and types.	Single-family
Solar Within Reach	Solar within reach offers increased incentives to customers below 400% of federal poverty level to make installation of solar more affordable for these households.	Single-family

Source: Process Evaluation of the Residential Program. https://www.energytrust.org/wp-content/uploads/2022/08/Residential-Process-Evaluation-Final_wSR.pdf

In early 2022, Energy Trust of Oregon contracted ILLUME Advising to conduct its 2022 Customer Awareness and Participation (CAP) Survey. This survey is a continuation of the Customer Insights Study, fielded in 2016, 2017, 2018, and 2020 to inform customer communications and learn more about the demographics of residential program participants and nonparticipants. In 2022, Energy Trust of Oregon shifted the goals of the CAP survey to be more closely focused on customer awareness and program participation levels for different customer groups, particularly those that Energy Trust has underserved in the past. The overarching "North Star" research goals, intended to be outcomes of the 2022 CAP research, are as follows:

- Obtain representative, quantitative information about residential customers in Energy Trust's Oregon service area, with a focus on customer groups that are underserved by Energy Trust.
- Measure participation levels in residential programs to track progress towards improving service to populations that are underserved by Energy Trust.
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To meet these research goals, the survey and sample design was developed to answer the following key researchable questions:

- What are the household, demographic, and building characteristics of Energy Trust customers?
- What is their home ownership or rental status?
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- What types of energy-using equipment do they have in their homes?
- Are customers aware of Energy Trust as an organization? Are they aware of various Energy Trust services and offerings?
- How do the above findings vary across participant and nonparticipant groups?
- How do the above findings vary across demographic and geographic identifiers?

This report includes an overview of the study methodology, key findings and results, and an appendix containing detailed survey results.

2. METHODOLOGY

Sampling

The ILLUME team utilized Energy Trust's utility customer information and project tracking data as the main sources of data for sampling. All sampling was conducted at the unique site address level. The population file provided included all active residential utility premises in Energy Trust's service territory in Oregon. These data included several variables including participation status and details, limited contact information, and some demographic information (such as urban/rural index). To facilitate sampling, our team merged in Census tract information to the site-level population data.

Our team took a two-step approach to sampling to meet the goal of providing a representative sample of Energy Trust customers while also being able to analyze specific groups of interest at a statistically significant level. This included developing:

- **A "core" sample group (target n~1,500),** intended to be representative of the Energy Trust population.
- **An "oversample" group (target n~300),** intended to provide additional completes in key demographic groups of interest.

The CAP study sought to achieve 90/10 precision across numerous geographic and demographic customer groups. Using Census data as an estimate, our team projected that we should reach sample size goals across most groups using a proportional sample approach. For a few groups, primarily some racial and ethnic demographic groups, we determined that we would need to oversample to achieve 90/10 precision.

The team estimated that by targeting approximately 1,500 completes as part of the "core" sample, we could achieve most demographic targets by selecting a representative sample. Table 2 below details our targeted completes by demographic group for the "core" sample only. Overall, our team was able to achieve a closely representative sample of Energy Trust customers; more discussion on this is included in the Customer Characteristics section.

Table 2. Core Sample Targets by Demographic Proportional to Energy Trust Population

DEMOGRAPHIC CATEGORY	RESPONSE CATEGORY	TARGET COMPLETES (n)	TARGET % OF POPULATION
Participation Status [a]	Participant completes	212	14%
	Nonparticipant completes	1288	86%
Race/Ethnicity [b]	White Alone (not Hispanic or Latino)	1127	75%
	Latino or Hispanic	201	13%
	Black/African American	33	2%
	Asian or Pacific Islander	74	5%
	Native American/Indigenous	27	2%
	Middle Eastern/North African	15	1%
	Multiracial or mixed race	60	4%
	Other	N/A	N/A

DEMOGRAPHIC CATEGORY	RESPONSE CATEGORY	TARGET COMPLETES (n)	TARGET % OF POPULATION
Household Income Category [c]	Low-income	339	23%
	Moderate-income	231	15%
	Moderately High-income	391	26%
	High-income	539	36%
Homeownership [d]	Own (incl. resident landlord)	1070	62%
	Rent (& other non-owners)	430	38%
	Other	N/A	N/A
	Not sure	N/A	N/A
Housing Type [e]	Single-family (detached)	952	63%
	Mobile or manufactured home	116	8%
	Small multifamily (2-4 units)	175	12%
	Multifamily (5+ units)	257	17%
	Other	N/A	N/A
Urbanization Level [f]	Urban areas	1215	81%
	Small cities and suburbs	214	14%
	Small towns and rural areas	71	5%
Participation Quintile [g]	Q1	174	12%
	Q2	280	19%
	Q3	357	24%
	Q4	357	24%
	Q5	332	22%

[a] For the purposes of sampling, participants were defined as direct participants only. Nonparticipants were defined as indirect participants and nonparticipants. Definitions of direct and indirect participation and further details on sampling methodology can be found in Appendix A.
[b] More information on how race and ethnic groups were categorized for sampling and analysis can be found in the Analysis Grouping section.
[c] More information on how income groups are defined can be found in the Analysis Grouping section.
[d] More information on homeownership can be found in House and Building characteristics section.
[e] More information on housing type can be found in House and Building characteristics section.
[f] More information on urbanization level can be found in Geographical and Census characteristics section.
[g] More information on participation quintile can be found in Table 3 below.

To achieve the most representative sample possible, our team acknowledged that different demographic groups do not always reply to surveys with similar response rates. To account for this, the ILLUME team did not take a simple random sample, but instead took a participation quintile approach for the "core" sampling strategy, which assumes that nonparticipants respond to surveys at a lower rate than participants do. The intent of this approach was to ensure that we do not oversample populations already well served by Energy Trust, and make sure that underserved populations are appropriately represented. Our team estimated participation rates by Census tract, grouped them, and estimated projected response rates based on similar studies conducted elsewhere.

Table 3 below shows the target sampling approach taken by quintile for the "core" sample.

Table 3. Core Sample Quintile Approach

QUINTILE	PARTICIPATION RATE RANGE	TRACTS (N)	POPULATION (N)	RESPONSE RATE (PARTICIPANT)	RESPONSE RATE (NONPARTICIPANT)
1	0-6%	158	161,233	22%	12%
2	6-12%	158	260,431	23%	13%
3	12-16%	158	331,762	23%	14%
4	16-19%	158	332,293	24%	15%
5	>19%	159	309,202	25%	16%

Lastly, our team supplemented the core sample for a few key groups of interest using several oversampling approaches. As highlighted in Table 2, for several key racial and ethnic groups with smaller populations within Energy Trust territory, our team projected we would not have enough completes using a representative sampling approach to reach 90/10 confidence and precision within those groups. Therefore, we worked with a vendor to append email and demographic identifiers for an additional 26,000 customers. Specifically, we aimed to identify an additional 2,000 survey recipients among the following groups:

- Black/African American
- Asian or Pacific Islander
- Native American/Indigenous
- Middle Eastern/North African
- Multiracial or mixed race

In addition to using purchased demographic identifiers, our team also utilized a Census tract analysis (Native American/Indigenous) and a surname analysis (Middle Eastern/North African) to identify customers within each racial and ethnic group. Table 4 below shows the overall final oversample approach and counts. More detail can be found in Appendix A on both the core sample and oversample approach.

Table 4. Oversample Approach by Demographic Group

GROUP	COUNT	INFO SOURCE	TARGET RESPONSES
Black/African American	417	Vendor data	60
Asian or Pacific Islander	127	Vendor data	20
Native American/Indigenous	1,259	Vendor / census data	60
Middle Eastern/North Africa	197	Vendor data / Surname analysis	70
Multiracial or Mixed race	Unknown	N/A	30
Total	2,000		240

The final sample included 12,204 sample points, including 10,204 core sample points and 2,000 oversample points, with the goal of achieving 1,800 total survey completes (approximately 15% response rate).

Survey Fielding

Our survey partner, E&W Research, led the fielding process. The 2022 survey was considerably reduced in length compared to the 2020 study and took approximately five to seven minutes for a customer to complete. All customers were offered a $20 incentive to complete the survey, which was distributed as a digital VISA gift card (or alternatively, customers could request to have a tangible VISA gift card mailed to their home). Prior to full launch, our team conducted a pre-test with a small sample of customers to ensure the survey and outreach methods were working correctly.

The survey was fielded from June to September of 2022. Our team utilized a multi-mode survey fielding approach to maximize response rates across all groups. This included the following outreach steps in approximately the order they were conducted:

- **Letter-to-web.** The team sent invitation letters to the entire sample as the first outreach step. These letters explained the purpose of the study and included links/QR codes and access numbers that connected to the web survey.
- **Email-to-web.** Only a proportion of customers had emails on file. Our team purchased emails from a customer sample service to help supplement. Emails were sent to these customers as a follow-up to the letters, including links to the web survey.
- **Utility outreach and coordination.** Several utilities (Avista, Pacific Power, and PGE) agreed to send follow up emails to customers who had not yet responded to the survey, encouraging them to respond. NW Natural and Cascade Natural Gas included information about the survey in their newsletters to customers.
- **Postcard reminder.** All respondents who had not yet replied to the survey were sent a postcard reminder that also included links/QR codes and access numbers that connected to the web survey.
- **Mail survey.** Near the end of the fielding cycle, a proportion of customers who had not replied to any other outreach were mailed paper versions of the surveys (in both Spanish and English) with pre-paid return envelopes.
- **Call-in telephone.** During the entire fielding process, all outreach included a call-in number. Respondents could take the survey over the phone in English, Spanish, Mandarin, or Vietnamese.

Figure 1 below shows the full timeline and survey outreach process.

Figure 1. Survey outreach timeline

All survey outreach—including letters, postcards, and emails—included both Spanish and English translation. Additionally, the web survey was available in English, Spanish, Mandarin, and Vietnamese. The mail survey included both an English and a Spanish version.

Overall, we achieved 1,942 final survey responses with complete and usable data. Across all channels, this represents a 16% response rate.

Weighting

The intent of our sampling approach was to achieve a final survey dataset that required minimal weighting and was well-representative of the overall Energy Trust population. Overall, the final survey dataset met this goal, with most demographic groups within just a few percentage points of the population proportion. In initial planning, our team intended to weight, at a minimum, by participation quintiles, to correct for any assumptions made about response rates by quintile. Before finalizing this approach, our team conducted numerous sensitivity analyses, including additional weights by various demographic variables. Ultimately, we determined that a quintile-only weighting approach was most appropriate and introduced the least amount of error. These weights were applied to the core sample only. No weights were applied to the oversample data. More details on the overall weighting approach are included in Appendix A.

Analysis

Once survey fielding was complete, our team conducted a final review and cleaning of the data. Any ineligible, or incomplete surveys were removed from the final dataset. Surveys completed by respondents about a property other than the home they lived in most of the year, a second home, or a vacation home were also removed from the analysis. Overall, only eight surveys were dropped; this did not affect the overall representativeness of the survey.

Analysis Grouping

The analysis team grouped certain variables to create categories to compare in our analysis.

Respondent income categories were defined by percentage multiples of federal poverty level (FPL). Low-income respondents were ultimately defined as having incomes less than 200% FPL, moderate incomes representing 200 – 300% of FPL, moderate-high incomes representing 300 – 500% of FPL, and high incomes being above 500% FPL. FPL is defined based on income ranges and household size as shown in Table 5 below.

Table 5. Federal Poverty Level Thresholds

HOUSEHOLD SIZE	2021 FEDERAL POVERTY LEVEL THRESHOLD
1	$12,880
2	$17,420
3	$21,960
4	$26,500
5	$31,040
6	$35,580
7	$40,120
8	$44,660
9	$49,200
10	$53,740
11	$58,280
12	$62,820
13	$67,360
14 or more	$71,900

The CAP survey collected income in ranges that did not align with the household size, as shown below.

- Less than $25,000
- $25,000 - $34,999
- $35,000 - $49,999
- $50,000 - $74,999
- $75,000 - $99,999
- $100,000 - $149,999
- $150,000 - $199,999
- $200,000 or more

Consistent with the 2020 Customer Insights study, we used the midpoint income of each range to map the income to the FPL income range, except for the lowest and highest income category, where we used the minimum and maximum values respectively. In other words, respondents who selected less than $25,000 were assumed to have an income of $25,000, those who selected $200,000 or more were assumed to have an income of $200,000, and all other income ranges were assumed to have an income value at the midpoint of the range (e.g., those who selected an income range of $25,000- $34,999 were assumed to have an income of $30,000). The mapping of each response option to the different income ranges is shown below in Table 6.

Table 6. Low, Moderate, Moderate-High-, and High-Income Definitions

HOUSEHOLD SIZE	INCOME RANGE							
	Less than $25,000	$25,000 - $34,999	$35,000 - $49,999	$50,000 - $74,999	$75,000 - $99,999	$100,000 - $149,999	$150,000 - $199,999	$200,000 or more
1	Low	Moderate	Moderate/ High	Moderate/ High	High	High	High	High
2	Low	Low	Moderate	Moderate/ High	High	High	High	High
3	Low	Low	Low	Moderate	Moderate/ High	High	High	High
4	Low	Low	Low	Moderate	Moderate/ High	Moderate/ High	High	High
5	Low	Low	Low	Moderate	Moderate	Moderate/ High	High	High
6	Low	Low	Low	Low	Moderate	Moderate/ High	Moderate/ High	High
7	Low	Low	Low	Low	Moderate	Moderate/ High	Moderate/ High	Moderate/ High
8	Low	Low	Low	Low	Low	Moderate	Moderate/ High	Moderate/ High
9	Low	Low	Low	Low	Low	Moderate	Moderate/ High	Moderate/ High
10	Low	Low	Low	Low	Low	Moderate	Moderate/ High	Moderate/ High
11	Low	Low	Low	Low	Low	Moderate	Moderate/ High	Moderate/ High
12	Low	Low	Low	Low	Low	Low	Moderate	Moderate/ High
13	Low	Low	Low	Low	Low	Low	Moderate	Moderate
14 or more	Low	Low	Low	Low	Low	Low	Moderate	Moderate

The team also created groupings to analyze race/ethnicity data. While respondents were allowed to select multiple responses to the race/ethnicity question, the groups used in the analysis had to be mutually exclusive to allow for comparisons between groups. Additionally, non-exclusive analysis of results by race/ethnicity is included in the Appendix.

As with the 2020 study, and to align most closely with the Census definition, any respondent who identified as Latino or Hispanic was categorized as Latino or Hispanic, regardless of whether they identified as any other race. Among those who identified as Latino or Hispanic and one or more other races (n=36), respondents most often identified as white and Latino/Hispanic (56%) or Native American/Indigenous and Latino/Hispanic (14%).

The research team defined multiracial respondents (n=86) as anyone selecting more than one race, except for those who identified as Latino/Hispanic. Of those who identified themselves as multiracial, 93% of respondents identified as white and one or more other races, with the two most common multiracial groups being Asian/Pacific Islander and white (41%), and Native American/Indigenous and white (25%).

While these categorizations oversimplify heterogenous groups, the team decided to use these definitions to better align with the 2020 Customer Insights Study to allow for comparisons to be made between the two time periods. The team conducted a secondary analysis in which respondents were included in the analysis for each racial group they selected. This analysis is included in the Appendix.

Outcome Variables

Once our final dataset and weighting scheme were determined, our team worked closely with Energy Trust to determine an analysis plan. Our analysis, and the remainder of this report, focuses on six key indicator variables of interest to Energy Trust. This includes:

- Participation Rate
- Participation Level
- Awareness of Energy Trust
- Knowledge of Energy Trust
- Awareness of Energy Trust Energy Efficiency Services
- Awareness of Energy Trust Solar Services

Other analyses are included throughout the report. The Appendix contains additional frequencies and crosstabulations with additional detail.

3. DETAILED FINDINGS

To meet the goals of the CAP study, our research team characterized Energy Trust of Oregon's customer population, measured key outcome metrics related to participation and awareness, and assessed customer attitudes towards energy efficiency. Below, we provide key findings, highlights, and results from this research and analysis.

Energy Trust Customer Population

One key objective of the CAP survey was to characterize the customer population, specifically understanding the household, building, and building characteristics of customers. Results presented in this section are based on survey responses from customers in the core sample only, which was designed to reflect the overall composition of Energy Trust's overall population. Additionally, these results have been weighted by quintile. Sampling and weighting approach are detailed further in the Methodology section and Appendix A. Methodology.

Customer Characteristics

The ILLUME team collected data to characterize the Energy Trust of Oregon population, including geographic, demographic, and building characteristics, as well as customer relationship with the utility. We used these results to understand patterns in participation and awareness across different groups. This section describes the overall composition of the Energy Trust population. As discussed in the Methodology section, our team designed the sample to achieve as close to a representative sample as possible.

Table 7 below shows our target completes along with the core-only completed surveys (data in the table below are unweighted; note that most of the analysis in the remainder of this report includes weighted data so counts and percents will not align). Overall, the completed surveys were well-representative of the overall Energy Trust population. However, it should be noted that one demographic group that was likely underreached was the Latino/Hispanic group. The research team determined that the best course was not to weight to adjust for this group, as we felt this may introduce more bias.[1] Results should be interpreted with this finding in mind.

[1] Census data indicates that their 2020 effort undercounted Hispanic/Latino residents by a significant amount compared to 2010 (https://www.census.gov/newsroom/press-releases/2022/2020-census-estimates-of-undercount-and-overcount.html). Additionally, the CAP survey race/ethnicity question differed slightly from the Census race and ethnicity questions, which are asked separately.

Table 7. Core Sample Actual Completes and Targets by Demographic Proportional to Energy Trust Population

DEMOGRAPHIC CATEGORY	RESPONSE CATEGORY	CORE SAMPLE COMPLETES (n)	CORE SAMPLE % (UNWEIGHTED)	TARGET COMPLETES (n) (ENERGY TRUST POPULATION)	TARGET % (ENERGY TRUST POPULATION)
Participation Status (Direct Participation)	Participant completes	241	15%	212	14%
	Nonparticipant completes	1403	85%	1288	86%
Race/Ethnicity	White Alone (not Hispanic or Latino)	1253	77%	1127	75%
	Latino or Hispanic	140	9%	201	13%
	Black/African American	39	2%	33	2%
	Asian or Pacific Islander	87	5%	74	5%
	Native American/Indigenous	14	1%	27	2%
	Middle Eastern/North African	3	0%	15	1%
	Multiracial or mixed-race [a]	60	4%	60	4%
	Other	28	2%	N/A	N/A
Household Income Category	Low-income	428	29%	339	23%
	Moderate-income	225	15%	231	15%
	Moderately High-income	449	30%	391	26%
	High-income	398	27%	539	36%
Homeownership	Own (incl. resident landlord)	1055	65%	1070	62%
	Rent (& other non-owners)	554	34%	430	38%
	Other	20	1%	N/A	N/A
	Not sure	5	0%	N/A	N/A
Housing Type	Single-family (detached)	1035	63%	952	63%
	Mobile or manufactured home	88	5%	116	8%
	Small multifamily (2-4 units)	223	14%	175	12%
	Multifamily (5+ units)	269	16%	257	17%
	Other	26	2%	N/A	N/A

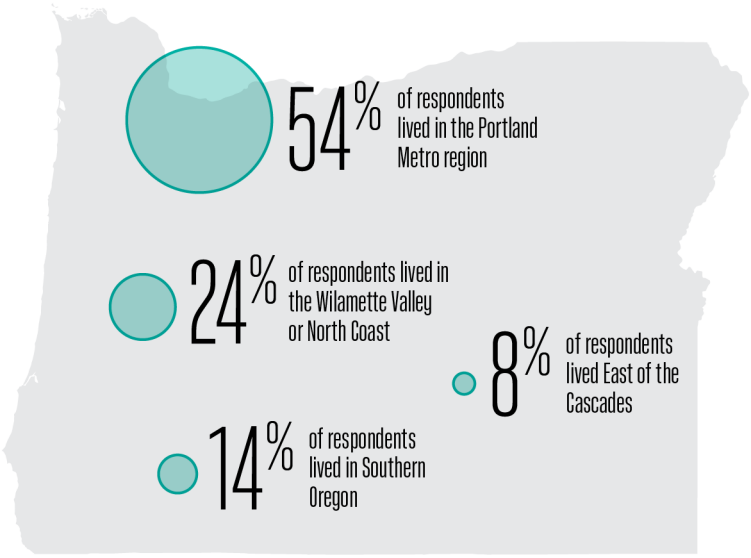
DEMOGRAPHIC CATEGORY	RESPONSE CATEGORY	CORE SAMPLE COMPLETES (n)	CORE SAMPLE % (UNWEIGHTED)	TARGET COMPLETES (n) (ENERGY TRUST POPULATION)	TARGET % (ENERGY TRUST POPULATION)
Urbanization Level	Urban areas	1308	80%	1215	81%
	Small cities and suburbs	243	15%	214	14%
	Small towns and rural areas	93	6%	71	5%
Participation Quintile	Q1	259	16%	174	12%
	Q2	418	25%	280	19%
	Q3	369	22%	357	24%
	Q4	328	20%	357	24%
	Q5	270	16%	332	22%

We provide additional detail on respondent demographics and characteristics below.

Geographical and Census Characteristics

Most customers in Energy Trust's service territory live in the Portland Metro region, followed by the Willamette Valley and North Coast. Respondents are also concentrated in urban areas, with less than 20% living in small cities or rural areas.

As noted above, respondent data was weighted to reflect participation at the quintile level. Census tracts were compiled into quintiles, based on the percent of household who participated in Energy Trust programs.



82% living in urban areas	13% living in small cities and suburbs	5% living in small towns and rural areas

Demographics

Overall, just over three-quarters of respondents in the core only sample identify as white, with the next most common racial identities including Latino or Hispanic and Asian or Pacific Islander respondents. The "Other race" category included respondents who identified as mixed race with specific racial identities not classifiable into the existing analysis categories (including responses such as American, Chicano, European, Jewish, Mediterranean, Middle Eastern/North African, and Russian). This category also includes respondents who selected other but did not specify a racial identity.

77% White	8% Latino or Hispanic	6% Asian or Pacific Islander	4% Two or more races	2% Black or African American	1% Native American or Indigenous	2% Other race

Overall, 94% of respondents primarily spoke English and 3% spoke Spanish, with the remaining 3% speaking another language, including Arabic, Amharic, Cantonese, Chuuk, Cutchhi, Dinka, French, German, Hindi, Japanese, Laotian, Korean, Mandarin, Mien, Moldovian, Pampango, Persian, Portuguese, Russian, Sign Language, Sinhala, Somali, Swahili, Tagalog, Telugu, Thai, Tongan, Turkish, Ukrainian, and Vietnamese. The survey was completed in English by 98% of respondents, in Spanish by 2% of respondents, in Vietnamese by less than 1% of respondents, and in Mandarin by less than 1% of respondents.

Based on household income in 2021, 27% of respondents experienced low incomes, 15% experienced moderate incomes, 30% experienced moderate-high incomes, and 28% experienced high incomes. Energy Trust offers services to income-qualified customers, including the Savings Within Reach (SWR) program, which offers customers incentives and on-bill financing for HVAC and weatherization upgrades. This program is available to customers at 200 – 400% FPL. Customers with incomes below 200% FPL may qualify for additional weatherization services offered through Oregon Housing and Community Services, although this is not reflected in Energy Trust data. An average of 2.5 occupants lived in each household in Energy Trust's service territory, with 29% of households having at least one child under 18 living at home full-time and 35% of households having at least one senior over 65 living in the home full-time. Over one-half of respondents had completed a college or postgraduate degree (55%), 9% had completed technical or trade school or community college, 19% completed some college, 12% were high school graduates, and 4% had completed less than a high school degree.

Home and Building Characteristics

About two-thirds of respondents owned their homes, while around one-third rented. One percent of respondents indicated some other type of arrangement, including living in their home and not paying rent. Almost all respondents reported that the home they responded for was the home where they lived most of the time, with less than 1% reporting that they were responding for a second home.

Overall, 65% of respondents lived in single family detached homes, 13% lived in small multifamily homes with two to four units, 15% lived in multifamily homes with five or more units, 5% lived in mobile or manufactured homes, and 1% lived in some other home type including RVs and accessory dwelling units (ADUs). Most respondents had lived in their home for five years or more (60%), with 40% having lived in their home for fewer than five years.

Among multifamily respondents, 27% lived in buildings with 5 to 10 units, 46% lived in buildings with 10 to 49 units, and 27% lived in buildings with 50 units or more.

Among renters, 53% reported they lived in market rate housing, 23% reported they lived in public, subsidized, or affordable housing, 5% reported living in senior housing, and 6% reported living in some other type of housing. Less than 1% of respondents reported living in tribal housing and 13% were not sure about their housing type.

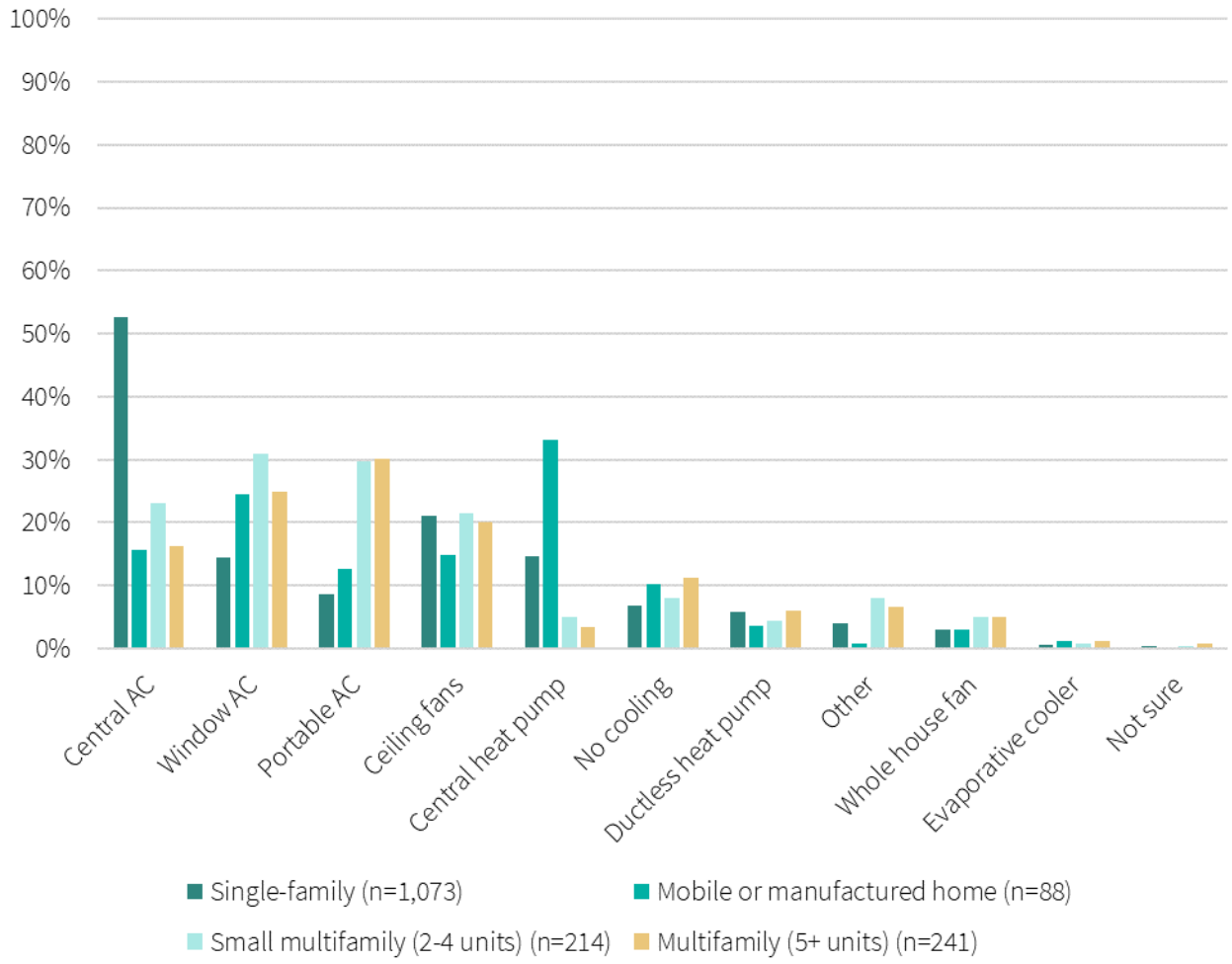
Respondents were asked about the types of systems they used to heat and cool their homes. Central AC (41%), ceiling fans (21%), and window ACs (19%) were the most common cooling systems overall. Twenty five percent of respondents indicated that they used more than one type of cooling equipment. Looking across categories of cooling equipment, 85% of respondents reported using some type of AC (central AC, window AC, portable AC, central heat pump, ductless heat pump), 22% of respondents reported using mechanical cooling (ceiling fans, whole house fans, or evaporative coolers), 5% of respondents reported using another cooling type (opening windows and doors, portable fans, geothermal cooling, shade trees, other passive cooling), and 8% reported having no cooling. Air conditioning was most common in single-family buildings, followed by small multifamily and manufactured homes, and least common in small multifamily (Table 8).

Table 8. Air conditioning usage by building type

BUILDING TYPE	AC COOLING	MECHANICAL COOLING	ANOTHER COOLING TYPE	NO COOLING
Single-family	88%	23%	4%	7%
Mobile and manufactured homes	85%	16%	1%	10%
Small multifamily (2-4 units)	85%	25%	8%	8%
Multifamily (5+ units)	74%	24%	7%	11%
Overall	**85%**	**22%**	**5%**	**8%**

Central AC was most common in single family homes (53%), while window ACs (31% small multifamily, 25% multifamily) and portable ACs (30% small multifamily, 30% multifamily) were more common in small multifamily and multifamily buildings. Central heat pumps (33%) were the most common cooling type for manufactured homes (Figure 2). Additional data on this can be found in the Appendix.

Figure 2. Cooling systems by building type

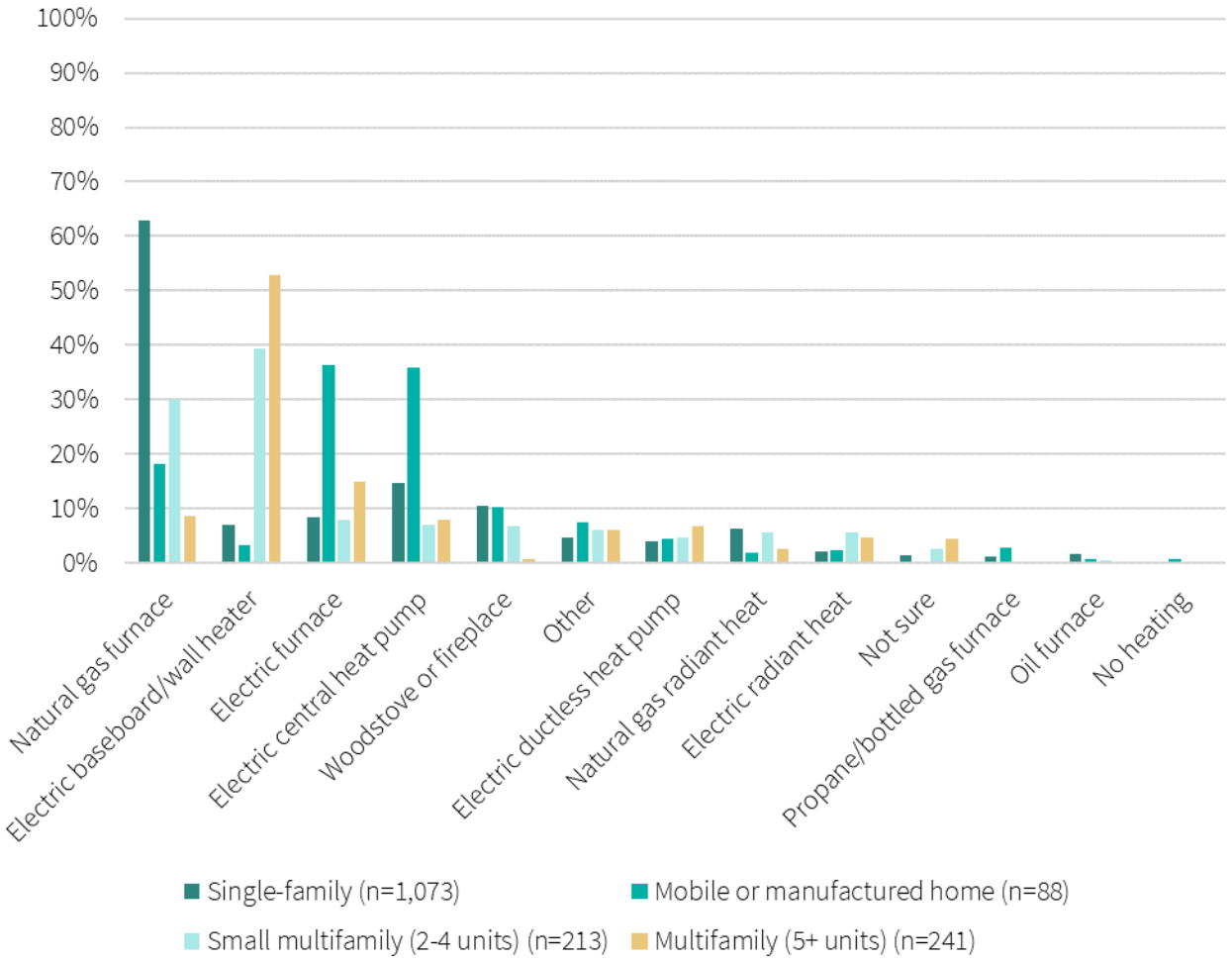


Source: CAP Survey. Question: "How do you primarily cool this home/building? Select all that apply." Multiple responses allowed. See Appendix F for percentage of homes with cooling systems installed by building type.

Relatedly, the most common cooling types for homeowners were central AC (53%), ceiling fans (21%), and central heat pumps (17%), while the most common cooling types for renters are window AC (32%), portable AC (30%), and ceiling fans (21%).

Natural gas furnaces (48%), baseboard and wall heaters (18%), and electric central heat pumps (14%) were the most common heating systems overall. Eighteen percent of respondents indicated they used more than one type of heating equipment. Natural gas furnaces were most common in single family homes (63%), electric baseboard and wall heaters (39% small multifamily, 53% multifamily) were most common in small multifamily and multifamily homes, and electric furnaces (36%) and electric central heat pumps (36%) were most common in mobile or manufactured homes (Figure 3). Additional data on this can be found in the Appendix.

Figure 3. Heating systems by building type



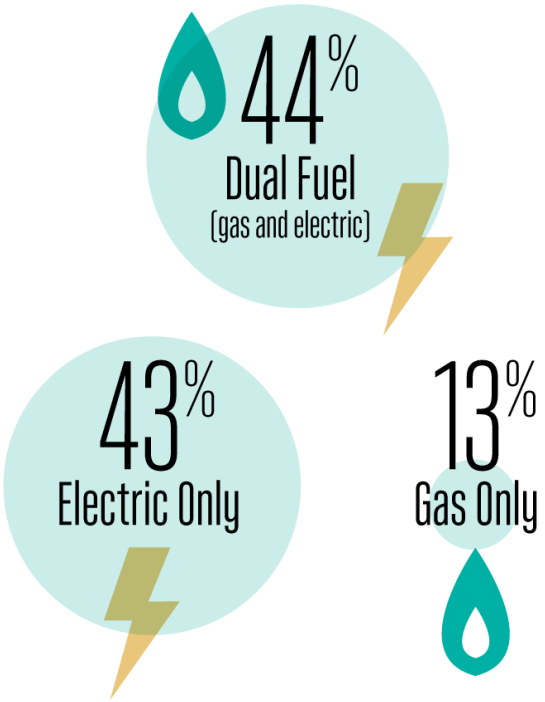
Source: CAP Survey. Question: "How do you primarily heat this home/building? Select all that apply." Multiple responses allowed. See Appendix F for percentage of homes with heating systems installed by building type.

Most owners had natural gas furnaces (61%), followed by central heat pumps (17%) and woodstoves or fireplaces (11%). Among renters, the most common heating system types were electric baseboard or wall heaters (42%), natural gas furnaces (21%), and electric furnaces (14%).

Utility Relationship

Overall, most respondents received either dual fuel or electric service from an Energy Trust sponsor utility, while a small portion received only gas service from an Energy Trust sponsor utility. Almost all respondents (99%) respondents reported paying for electricity for their property, 61% reported paying for natural gas, and less than 10% reported paying for oil or propane (4%), none of these (<1%), or some other arrangement (6%). Only 8% of respondents reported receiving fuel assistance in 2021.

Among respondents receiving electric service, 56% received service from PGE, 34% received service from Pacific Power, and 10% received service through a non-Energy Trust utility. 48% received service from Northwest Natural Gas, 7% received service from Avista, 4% received service from Cascade Natural Gas, and 41% did not receive natural gas service.



Awareness Of Energy Trust and Participation in Programs

To assess the awareness of and participation in Energy Trust programs over time, the Energy Trust team developed six outcome indicator variables. These are shown below in Table 9.

Table 9. Outcome indicator variables

INDICATOR VARIABLE	DEFINITION	SOURCE
Participation Rate	Percent of eligible households that received an Energy Trust funded measure resulting in energy savings from 2015 – 2021, including both direct (participant-driven) participation and indirect participation (participation at the building level).[2]	Energy Trust tracking data (linked to survey respondent data)
Participation Level	Average aggregate benefits of program services to customers from 2015 – 2021. This is calculated by summing first year bill savings accumulated through Energy Trust funded measures from 2015 –2021 and calculating a household average that includes participants and nonparticipants.	Energy Trust tracking data (linked to survey respondent data)
Awareness of Energy Trust	Percent of respondents that have ever heard of Energy Trust	CAP Survey question F1
Knowledge of Energy Trust	Percent of respondent that know at least a little about Energy Trust	CAP Survey question F2
Awareness of Energy Trust Energy Efficiency Services	Percent of respondents who said they had heard of at least one energy efficiency services provided by Energy Trust	CAP Survey question F3
Awareness of Energy Trust Solar Services	Percent of respondents who said they had heard of at least one of the solar PV services offered by Energy Trust	CAP Survey question F5

Where possible and appropriate in this report, the ILLUME team compares results to 2020. We also provide results by key demographics including race, for which we used the core and oversample results, as well as income, homeownership status, urban or rural, and building type, for which we used the core sample only.

[2] These are measures where the benefits may accrue indirectly to tenants. An example would be a new boiler, insulation, or common area lighting. These will reduce energy costs for the building and may indirectly benefit tenants. In addition, tenants may or may not be aware of building level "indirect" measures.

Awareness and Participation Across Outcome Indicator Variables

Overall, the 2022 CAP study found lower rates of awareness, knowledge, and participation than in 2020. Some of these differences may be attributable to differences in survey, sample, and weighting design and methodology. The prior survey was also fielded during initial COVID-19 shutdowns, which may have impacted responses. In addition to these factors, changes to Energy Trust program offerings and overall changes in economic climate may also explain the decline in these metrics. Specifically, some offerings from Energy Trust were discontinued between the 2013 – 2019 period analyzed in the previous study and the 2015 – 2021 period as markets transformed, the delivery channel changed, or the offerings were no longer cost effective. These included:

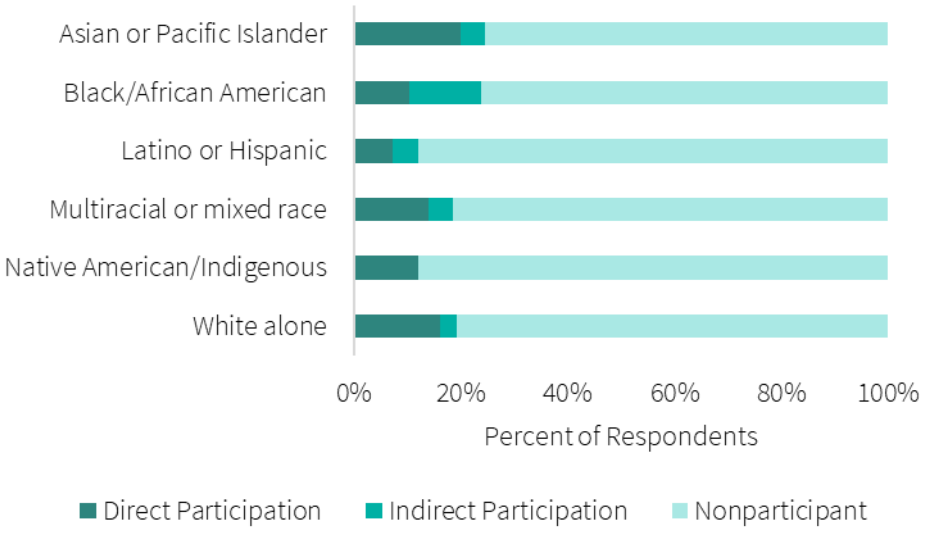
- Free Energy Saver Kits (including aerators, showerheads, and LEDs) declined in volume and were eventually discontinued.
- Downstream appliance incentives moved upstream and therefore no longer appear in the residential dataset analyzed for this study.
- Appliance recycling was discontinued during the beginning of the study period.
- Heat pump upgrades were discontinued and later replaced with a very high efficiency cold climate heat pump upgrade, which has a higher upfront cost.
- Broadly, many incentive amounts went down as savings went down and costs increased, reducing volume of some measures.

Looking at patterns across all outcome indicator variables, certain groups consistently participate at higher rates, accrue more benefits, and have higher rates of awareness about Energy Trust programs and services. Below we highlight some key findings from this analysis.

Looking across racial groups, white respondents had the highest participation rates, received the greatest financial benefits from participation, and had the highest awareness and knowledge of Energy Trust of Oregon and its offerings. Some other groups, including Asian/Pacific Islander and Black/African American respondents, had comparably high rates of participation to white respondents, but received fewer benefits and had lower rates of awareness and knowledge. For these groups, while they are being reached by and participating in Energy Trust offerings, they are not realizing the same financial benefit as white respondents. This is likely attributable to the types of offerings Asian/Pacific Islander and Black/African American respondents are accessing.

For example, Asian/Pacific Islander, white, and multiracial respondents had higher rates of participation in direct program offerings than indirect program offerings, while Black/African American had similar rates of direct and indirect participation. Indirect participation refers to respondents who receive benefits from measures not installed within their unit, such as lighting installed in an apartment common area or a building HVAC system. Since the savings for these upgrades are divided among all residents in a building, indirect participants realize lower financial benefits than direct participants. They also may not be aware that their building has participated. Therefore, while Black/African American respondents participate at a similar rate to white respondents, they receive fewer financial benefits and have lower awareness due to higher rates of indirect participation (Figure 4). Black/African American respondents also had similar participation rates among both owners and renters, while most other racial groups had higher participation rates among owners. See Appendix E for more information.

Figure 4. Direct and indirect participation by race



Source: Participation type is from the Energy Trust residential customer data. Race/ethnicity data is based on CAP survey question D1. See Appendix for full survey instrument.

For Asian/Pacific Islander respondents, measure type may help to explain difference in benefits between groups. Asian/Pacific Islander respondents participated at the highest rates in free and low-cost measures and appliances, compared to white respondents who participated at higher rates in capital measures, although differences were not statistically significant between groups.

Latino/Hispanic customers are the most underserved compared to the other racial groups, with the some of the lowest participation rates, levels, awareness, and knowledge across all analyses. Native American/Indigenous respondents had similarly low, or in some cases lower, rates of participation awareness and knowledge as Latino/Hispanic respondents. However, they had higher participation levels indicating that when they do participate, they receive more benefits than Latino/Hispanic respondents, who received the lowest benefits in terms of participation level. Latino/Hispanic owners participated in Energy Trust offerings at similar rates as Latino/Hispanic renters, but Latino/Hispanic owners had higher levels of awareness of Energy Trust than Latino/Hispanic renters. See Appendix E for more information.

Across all variables, owners are served at higher rates than renters. Both single-family and mobile or manufactured homes have higher participation rates, participation level, and higher levels of awareness and knowledge than respondents in small multifamily and multifamily buildings. While renters have lower rates of participation than owners across housing types, small multifamily renters have the lowest rates. As context for how this intersects with other demographic variables, white respondents had the highest rates of homeownership (70%), while the majority of Latino or Hispanic and Black or African American respondents indicated that they were renters (50% and 69%, respectively). This can help explain some of the observed differences between these groups in participation level, awareness, and knowledge, as renters tend to participate as indirect participants. Indirect participants typically have lower participation levels, awareness, and knowledge, as the customer who receives benefits does not always initiate participation.

There were no statistically significant differences in participation rate or financial benefits received by income; however, low-income customers were significantly less likely to be aware of or have knowledge of Energy Trust and its services/offerings. Participation rates were very similar across income levels, and while financial benefits received were lower for low-income customers, the difference was not statistically significant. However, awareness and knowledge of Energy Trust and Energy Trust services generally increase with income, often with awareness and knowledge being significantly lower among low-income respondents than among other income groups.

Rates of home ownership are positively correlated with income, so it is likely that low-income customers more commonly receive services through indirect participation than customers with higher incomes. Because indirect participants have lower levels of awareness and receive lower financial benefits than direct participants, this helps explain the differences in participation levels between low-income and high-income customers. It should also be noted that there is a specific carve-out from public purpose funds in Oregon for low-income weatherization programs delivered by community action agencies and administered by Oregon Housing and Community Services. Those low-income services are generally provided at no cost and are not captured in Energy Trust's tracking data. Historically, Energy Trust did not attempt to target low-income households in any manner other than through the multifamily program that works with building owners and managers. However, in recent years, Energy Trust has added offers including Savings Within Reach and Community Partner Funding that target this segment.

Respondents across urban areas, suburban areas/small cities, and rural areas participate in Energy Trust programs at similar rates and have similar levels of awareness and knowledge. While there were some differences in participation levels, these were not statistically significant.

Respondents in the Portland Metro region have the highest rates of participation, awareness, and knowledge, and receive the highest financial benefits from Energy Trust. Rates of participation, awareness, and knowledge and participation levels were highest next for Southern Oregon, followed by the Willamette Valley/North Coast region. Respondents East of the Cascades consistently reported the lowest participation, awareness, and knowledge rates and the lowest participation levels.

Dual fuel customers had the highest rates of participation, awareness, and knowledge and the highest participation levels. Electric only customers had the highest participation levels, while gas only customers had the lowest participation levels. This is likely due to fewer gas measures than electric measures being available through Energy Trust programs and services.

The next sections provide additional detail on these findings.

Participation Rate and Participation Level

The team calculated participation rate and participation level for the population overall, as well as for specific groups. From 2015 – 2021, 19% of respondents participated in Energy Trust offerings, which resulted in average annual bill savings of $19.60 per home, accrued across all respondents (both participants and nonparticipants) and $103.06 annual savings for participants only. Average annual bill savings were $116.25 per home for direct participants, significantly higher than the $33.01 annual savings per home for indirect participants (Table 10).

Table 10. Overall Participation Rate and Participation Level

OVERALL PARTICIPATION RATE	OVERALL PARTICIPATION LEVEL (PARTICIPANTS AND NONPARTICIPANTS)	OVERALL PARTICIPATION LEVEL (PARTICIPANTS ONLY)	OVERALL PARTICIPATION LEVEL (DIRECT PARTICIPANTS ONLY)	OVERALL PARTICIPATION LEVEL (INDIRECT PARTICIPANTS ONLY)
19%	$19.60	$103.06	$116.25	$33.01

Participation rates declined overall from the 2020 study to the 2022 survey, with a 37% participation rate measured in 2020. However, the 2020 participation rate included an estimate of participation in upstream LED offerings, which was not accounted for in 2022 (both years captured both direct and indirect participation). For this reason, as well as the methodological differences described in the previous section, we recommend comparing these metrics for directional differences in participation, but not magnitude.

We reviewed comparisons of participation rates for statistically significant differences between groups. Participation rates were significantly higher among owners than renters. Asian/Pacific Islander and white respondents also participated at significantly higher rates than Latino/Hispanic respondents, who participated in Energy Trust programs at the lowest rates. Respondents living in single-family or mobile/manufactured homes participated at significantly higher rates than small multifamily respondents. Respondents in the Portland Metro area and Southern Oregon participated at higher rates than respondents East of the Cascades. Dual fuel customers participated at significantly higher rates than electric or gas only customers; electric only customers also participated at significantly higher rates than gas only customers. Comparisons by income and by urban/rural status did not yield any statistically significant differences in participation rate (Table 11).

Looking at participation rate by income and own/rent status, low-income renters have higher participation rates than moderate income renters, likely because they are being served through Energy Trust's multifamily offerings. Low-income respondents living in multifamily buildings had higher rates of participation (23%) compared to some other groups. By contrast, moderate income owners are being served at higher rates (potentially through the Savings Within Reach program), while low-income owners have lower participation rates. This may help explain some of the observed similarities in participation rate between income groups. Renters in the small multifamily segment also had some of the lowest participation rates (8%), as compared to other renters, indicating an opportunity to better serve these customers. More information on this analysis can be found in Appendix E.

Table 11. Participation rate by race/ethnicity, income, own/rent, building type, and urban/rural status

GROUP	NUMBER OF RESPONDENTS	PARTICIPATION RATE	STD ERROR	STASTICALLY DIFFERENT FROM *(90% confidence level)*
Race/Ethnicity				
Asian/Pacific Islander (AP)	110	25%	4.1%	LH
Black/African American (BA)	67	24%	5.2%	None
Latino/Hispanic (LH)	150	12%	2.7%	AP, WH
Multiracial/mixed race (MR)	86	19%	4.2%	None
Native American/Indigenous (NI)	66	12%	4.0%	None
White Alone (not Hispanic or Latino) (WH)	1400	19%	1.1%	LH
Income Grouping				
Low-income (LI)	428	17%	1.8%	None
Moderate-income (MI)	225	21%	2.8%	None
Moderately High-income (MH)	449	18%	1.9%	None
High-income (HI)	398	22%	2.1%	None
Own/Rent				
Own (incl. resident landlord) (OW)	1055	22%	1.3%	RE
Rent (& other non-owners) (RE)	554	13%	4.8%	OW
Building Type				
Single-family (detached) (SF)	1035	20%	1.3%	SM
Mobile or manufactured home (MO)	88	25%	4.8%	SM
Small multifamily (2-4 units) (SM)	223	13%	2.4%	MO, SF
Multifamily (5+ units) (MF)	269	17%	2.3%	None
Urban/Rural Status				
Urban areas (UR)	1308	19%	1.1%	None
Small cities and suburbs (SU)	243	18%	2.6%	None
Small towns and rural areas (RU)	93	15%	3.8%	None
Geographic Region				
Portland Metro (PM)	842	22%	1.5%	EC, WN
Willamette Valley/North Coast (WN)	425	15%	1.9%	PM
Southern Oregon (SO)	234	20%	2.7%	EC
East of the Cascades (EC)	143	10%	2.6%	PM, SO
Utility Service Type				
Dual Fuel (DF)	726	23%	1.6%	EL, GA
Electric (EL)	708	17%	1.4%	DF, GA
Gas (GA)	210	8%	1.9%	DF, EL

Source: Awareness of Energy Trust is calculated from CAP survey question F1. Demographic variables are assessed based on CAP survey questions H2, H5, C4, and D1, and Energy Trust residential customer data. See Appendix for full survey instrument.

Results from groups with small sample sizes (less than 70 responses) should be interpreted with caution in consideration of associated error, and results from very small sample sizes (less than 30 respondents) should be considered qualitative.

Like participation rate, participation level was significantly higher among owners than renters and not significantly different for different income or urban/rural groups. Participation level was significantly higher for single-family and manufactured homes than small multifamily or multifamily homes. Across race/ethnicity, white respondents participated at the highest level, differing significantly from Asian/Pacific Islander, Black/African American, Latino/Hispanic, and multiracial respondents.

Latino/Hispanic respondents had the lowest participation levels, significantly lower than white and Asian/Pacific Islander respondents. Electric and dual fuel customers participated at significantly higher levelsthan gas customers. There were no significant differences in participation level across the various geographic regions (Table 12).

Table 12. Participation level including participants and nonparticipants by race/ethnicity, income, own/rent, building type, and urban/rural status

GROUP	NUMBER OF RESPONDENTS	PARTICIPATION LEVEL (PARTICIPANTS AND NONPARTICIPANTS)	STD ERROR	STASTICALLY DIFFERENT FROM *(90% confidence level)*
Race/Ethnicity				
Asian/Pacific Islander (AP)	110	$10.71	$2.61	LH, WH
Black/African American (BA)	67	$9.41	$4.38	WH
Latino/Hispanic (LH)	150	$3.37	$1.07	AP, WH
Multiracial/mixed race (MR)	86	$6.84	$2.45	WH
Native American/Indigenous (NI)	66	$10.85	$6.77	None
White Alone (not Hispanic or Latino) (WH)	1400	$22.67	$3.17	AP, BA, LH, MR
Income Grouping				
Low-income (LI)	428	$11.93	$3.50	None
Moderate-income (MI)	225	$20.16	$6.07	None
Moderately High-income (MH)	449	$21.49	$5.77	None
High-income (HI)	398	$23.45	$5.47	None
Own/Rent				
Own (incl. resident landlord) (OW)	1055	$25.26	$3.92	RE
Rent (& other non-owners) (RE)	554	$7.59	$2.02	OW
Building Type				
Single-family (detached) (SF)	1035	$22.67	$3.81	SM, MF
Mobile or manufactured home (MO)	88	$44.96	$16.98	SM, MF
Small multifamily (2-4 units) (SM)	223	$10.70	$3.34	SF, MO
Multifamily (5+ units) (MF)	269	$5.37	$1.29	SF, MO
Urban/rural status				
Urban areas (UR)	1308	$17.12	$2.63	None
Small cities and suburbs (SU)	243	$27.17	$10.01	None
Small towns and rural areas (RU)	93	$41.25	$20.40	None
Geographic Region				
Portland Metro (PM)	842	$17.34	$2.91	None
Willamette Valley/North Coast (WN)	425	$18.91	$5.64	None
Southern Oregon (SO)	234	$35.65	$12.15	None
East of the Cascades (EC)	143	$8.80	$5.01	None
Utility Service Type				
Dual Fuel (DF)	726	$20.92	$4.16	GA
Electric (EL)	708	$21.99	$4.33	GA
Gas (GA)	210	$3.06	$0.92	EL, DF

Source: Participation Level is calculated from Energy Trust residential customer data. Demographic variables are assessed based on CAP survey questions H2, H5, C4, and D1, and Energy Trust residential customer data. See Appendix for full survey instrument.

Results from groups with small sample sizes (less than 70 responses) should be interpreted with caution in consideration of associated error, and results from very small sample sizes (less than 30 respondents) should be considered qualitative.

When looking at participation level for participants only, owners participated at higher levels than renters and multifamily homes participate at significantly lower levels than other building types. Dual fuel and electric only customers had significantly higher levels than gas only customers. While group sizes are too small to draw meaningful conclusions by race and ethnicity, white respondents directionally have higher participation levels than other racial groups, consistent with similar metrics (Table 13).

Table 13. Participation level including participants only by race/ethnicity, income, own/rent, building type, and urban/rural status

GROUP	NUMBER OF RESPONDENTS	PARTICIPATION LEVEL (PARTICIPANTS ONLY)	STD ERROR	STASTICALLY DIFFERENT FROM *(90% confidence level)*
Race/Ethnicity				
Asian/Pacific Islander (AP)	*27*	*$43.65*	*$7.75*	*WH*
Black/African American (BA)	*16*	*$39.41*	*$16.23*	*WH*
Latino/Hispanic (LH)	*18*	*$28.05*	*$6.37*	*WH*
Multiracial/mixed race (MR)	*16*	*$36.75*	*$10.26*	*WH*
Native American/Indigenous (NI)	*8*	*$89.53*	*$47.33*	*None*
White Alone (not Hispanic or Latino) (WH)	269	$117.97	$15.17	AP, BA, LH, MR
Income Grouping				
Low-income (LI)	72	$71.71	$19.30	None
Moderate-income (MI)	45	$98.30	$26.53	None
Moderately High-income (MH)	74	$119.62	$29.97	None
High-income (HI)	85	$106.86	$22.80	None
Own/Rent				
Own (incl. resident landlord) (OW)	216	$116.60	$16.82	RE
Rent (& other non-owners) (RE)	77	$56.88	$13.72	OW
Building Type				
Single-family (detached) (SF)	195	$113.74	$17.86	MF
Mobile or manufactured home (MO)	*21*	*$176.97*	*$57.45*	*MF*
Small multifamily (2-4 units) (SM)	*27*	*$79.70*	*$20.27*	*MF*
Multifamily (5+ units) (MF)	51	$31.45	$6.52	SF, MO, SM
Urban/Rural Status				
Urban areas (UR)	247	$88.37	$12.61	None
Small cities and suburbs (SU)	39	$151.87	$51.32	None
Small towns and rural areas (RU)	*14*	*$270.70*	*$107.72*	*None*
Geographic Region				
Portland Metro (PM)	181	$80.05	$12.41	None
Willamette Valley/North Coast (WN)	60	$123.28	$33.36	None
Southern Oregon (SO)	45	$179.18	$56.04	None
East of the Cascades (EC)	*14*	*$87.44*	*$46.54*	*None*
Utility Service Type				
Dual Fuel (DF)	165	$89.50	$16.89	GA
Electric (EL)	120	$132.48	$23.16	GA
Gas (GA)	*15*	*$40.59*	*$6.15*	*EL, DF*

Source: Participation Level is calculated from Energy Trust residential customer data. Demographic variables are assessed based on CAP survey questions H2, H5, C4, and D1, and Energy Trust residential customer data. See Appendix for full survey instrument.

Results from groups with small sample sizes (less than 70 responses) should be interpreted with caution in consideration of associated error, and results from very small sample sizes (less than 30 respondents) should be considered qualitative.

English-speaking respondents had significantly higher participation levels than non-English speaking respondents when looking at both participants and non-participants and participants alone. However, participation rates were similar between these groups. This may indicate that English-speaking respondents are accessing program and measure types resulting in higher savings. More information on participation by language spoken may be found in Appendix C.

Participation Rate by Measure Type

We examined participation rate by measure type across various demographic variables to understand any significant trends in the types of programs that different groups participate in.

Energy Trust categorizes participation into three measure types: free and low-cost measures, capital measures, and appliance measures. These categories describe the types of measures installed and offer insight into differences between participation rate and participation level for different groups. All types of participation results in an equal participation rate (the customer did or did not participate) but yield different participation levels (a customers who receives a free or low-cost measure, such as a faucet aerator or LED bulb, realizes fewer savings over time than a customer who participates in a capital measure like attic insulation). Measure type may also yield different savings by building type, based on how savings accrue to individual customers living in a multifamily building. If an upgrade is installed in a common area, bill savings are divided among all residents in the building. Therefore, capital measures for multifamily customers will generally yield lower levels of participation than for single family customers because the savings are split among building residents.

Overall, respondents participated at the highest rate in free and low-cost measures (12%), followed by capital measures (8%), and at the lowest rates in appliance measures (4%). Energy Trust primarily distributes appliance measures through midstream offerings, which offer discounts to customers at the point of sale. These offerings are tracked separately from Energy Trust's residential participation data and therefore are not reflected in this research, so that may help explain why participation rate for these measure types appears low. Among direct participants participation rates were highest in free and low-cost measures (68%) and among indirect participants participation was highest in capital measures (80%) (Table 14).

Table 14. Participation Rate by Measure Type

PARTICIPATION RATE	FREE AND LOW-COST MEASURES	CAPITAL MEASURES	APPLIANCE MEASURES
Overall (direct, indirect, and nonparticipants)	12%	8%	4%
PROPORTIONAL PARTICIPATION BY MEASURE TYPE WITHIN GROUPS	**FREE AND LOW-COST MEASURES**	**CAPITAL MEASURES**	**APPLIANCE MEASURES**
Direct participants only	68%	37%	19%
Indirect participants only	43%	80%	40%

Rates of participation in free and low-cost measures were significantly higher among owners than renters. Respondents in mobile and manufactured homes participated at the highest rates in free and low-cost measures, followed by single family homes, small multifamily, and multifamily homes. Historically, Energy Trust has provided free duct and air sealing services to manufactured homes and has seen high participation in this service, which may be driving these results. Differences in participation were significant between manufactured homes and small multifamily and multifamily buildings and between single family homes and multifamily buildings. Respondents in Southern Oregon and the Portland metro region participated in free and low-cost measures at higher rates than the Willamette Valley/North Coast and East of the Cascades regions, with significant differences between Southern Oregon and the Willamette Valley/North Coast. Participation in these measures was also significantly higher for dual fuel customers, who participated at the highest rate, and gas only customers, who participated at the lowest rate. Electric only customers also participated at significantly higher rates than gas only customers. There were no significant differences across other demographic variables.

Rates of participation in capital measures varied significantly across race/ethnicity, building type, region, and fuel type. Participation in capital measures was highest for multifamily buildings (13%), followed by mobile and manufactured homes, followed by single-family, and small multifamily buildings, with significant differences between multifamily and single-family homes. For multifamily buildings, upgrades completed to shared building systems or completed in common areas were attributed to individuals living in the building by dividing savings evenly across all dwelling units; thus, this building type has high participation rates in capital measures. Across race/ethnicity, participation in capital measures was highest for Black/African American respondents followed by white respondents and lowest for Native American/Indigenous and Latino/Hispanic respondents. Participation rates for white respondents were significantly higher than the two lowest participating groups, and participation rates for Latino/Hispanic respondents was significantly lower than the two highest participating groups. Respondents in the Portland metro area participated in capital measures at the highest rate, followed by Southern Oregon, Willamette Valley/North Coast, and East of the Cascades, with significant differences between the Portland Metro region and Willamette Valley/North Coast and East of the Cascade regions, likely reflecting a lower number of trade allies to complete capital upgrades and the presence of fewer multifamily buildings (which have higher rates of participation in capital measures) in the East of the Cascades region. Dual fuel and electric only customers participated in capital measures at significantly higher rates than gas only customers.

There were no significant differences in rates of participation for appliances other than by urban/rural status, region, and fuel type. Urban respondents participated in appliance measures at significantly higher rates than suburban or rural respondents, and Portland Metro respondents also participated in appliance measures at significantly higher rates than any other region (Table 15). This gap in participation is likely attributable to the delivery mechanism for appliance rebate: point-of-sale discounts at big box retailers. Because suburban and rural respondents have more limited access to these types of stores, they are less able to access these incentives.

Table 15. Participation by measure type by race/ethnicity, income, own/rent, building type, and urban/rural status

GROUP	FREE/LOW COST MEASURE PARTICIPATION (2015 - 2021)	CAPITAL MEASURE PARTICIPATION (2015 - 2021)	APPLIANCE MEASURE PARTICIPATION (2015 - 2021)
Race/Ethnicity			
Asian/Pacific Islander (AP)	15%	6%	7%
Black/African American (BA)*	12%	15%	10%
Latino/Hispanic (LH)	10%	2%	3%
Multiracial/mixed race (MR)	14%	5%	2%
Native American/Indigenous (NI)*	9%	3%	0%
White Alone (not Hispanic or Latino) (WH)	12%	9%	4%
Other (OT)*	8%	3%	0%
Income Grouping			
Low-income (LI)	11%	7%	4%
Moderate-income (MI)	13%	9%	6%
Moderately High-income (MH)	11%	7%	5%
High-income (HI)	13%	11%	4%
Own/Rent			
Own (incl. resident landlord) (OW)	14%	8%	4%
Rent (& other non-owners) (RE)	7%	9%	4%
Building Type			
Single-family (detached) (SF)	13%	7%	4%
Mobile or manufactured home (MO)	21%	10%	2%
Small multifamily (2-4 units) (SM)	9%	7%	4%
Multifamily (5+ units) (MF)	8%	13%	5%
Urban/Rural Status			
Urban areas (UR)	12%	8%	5%
Small cities and suburbs (SU)	14%	8%	1%
Small towns and rural areas (RU)	9%	10%	1%
Geographic Region			
Portland Metro (PM)	13%	10%	6%
Willamette Valley/North Coast (WN)	10%	7%	3%
Southern Oregon (SO)	17%	7%	2%
East of the Cascades (EC)	9%	3%	1%
Utility Service Type			
Dual Fuel (DF)	16%	8%	5%
Electric (EL)	10%	10%	4%
Gas (GA)	3%	4%	2%

*Note that starred groups have small sample sizes. See the Appendices for sample size, standard errors, and information on statistically significant differences between groups.

Source: Participation Rate is calculated from Energy Trust residential customer data. Demographic variables are assessed based on CAP survey questions H2, H5, C4, and D1, and Energy Trust residential customer data. See Appendix for full survey instrument.

Participation Rate for 2015 – 2019 and 2020 – 2021

We looked at participation rates over time to see how participation changed across different groups. Respondents were only counted once for their participation in each period analyzed. For example, if a respondent participated once in 2016 and once in 2020, they would be captured once in the 2015 – 2021 period, once in the 2015 – 2019 period, and once in the 2020 – 2021 period. A respondent who participated in 2016 and 2018 would be captured once in the 2015 – 2021 period, once in the 2015 – 2019 period, and not at all in 2020 – 2021.

The overall participation rate was higher in 2020 – 2021 (10%) than in 2015-2019 (9%) both at the population level and within many demographic groups. Because 2020 – 2021 is a two-year period, this indicates higher participation rates than the 2015 – 2019 portion of the study period, which spans a five-year period. Participation rates across many groups were comparable or higher in 2020 – 2021, indicating that participation rates increased during the latter half of the study period. Table 16 shows overall participation rates for the entire study period, as well as the percent of direct and indirect participants who participated in each period. As shown, a slightly higher percentage of direct participants participated in the 2015-2019 period than the percentage of indirect participants who participated during that period.

Table 16. Participation Rate by Measure Type

PARTICIPATION RATE	2015-2021	2015-2019	2020-2021
Overall (direct, indirect, and nonparticipants)	19%	9%	10%
PROPORTIONAL PARTICIPATION BY MEASURE TYPE WITHIN GROUPS	**2015-2021**	**2015-2019**	**2020-2021**
Direct participants only	NA	46%	54%
Indirect participants only	NA	42%	58%

The team reviewed participation over the two time periods for directional changes in participation. Because a five-year period is compared to a two-year period, groups that appear to decrease in participation during the two time periods, such as Black/African American respondents, more likely had consistent participation rates across the two time periods. Some groups showing large increases in participation rate from the 2015 – 2019 to the 2020 – 2021 period include multiracial respondents, high income respondents and mobile/manufactured homes (Table 17).

Table 17. Participation in 2015-2021, 2015-2019, and 2020-2021 by race/ethnicity, income, own/rent, building type, and urban/rural status

GROUP	PARTICIPATION RATE (2015 - 2021)	PARTICIPATION RATE (2015 - 2019)	PARTICIPATION RATE (2020 - 2021)
Race/Ethnicity			
Asian/Pacific Islander (AP)	25%	13%	12%
Black/African American (BA)*	24%	16%	7%
Latino/Hispanic (LH)	12%	5%	7%
Multiracial/mixed race (MR)	19%	7%	12%
Native American/Indigenous (NI)*	12%	6%	6%
White Alone (not Hispanic or Latino) (WH)	19%	9%	10%
Income Grouping			
Low-income (LI)	17%	9%	8%
Moderate-income (MI)	21%	9%	11%
Moderately High-income (MH)	18%	7%	11%
High-income (HI)	22%	9%	13%
Own/Rent			
Own (incl. resident landlord) (OW)	22%	10%	12%
Rent (& other non-owners) (RE)	13%	5%	8%
Building Type			
Single-family (detached) (SF)	20%	9%	11%
Mobile or manufactured home (MO)	25%	8%	17%
Small multifamily (2-4 units) (SM)	13%	7%	7%
Multifamily (5+ units) (MF)	17%	7%	10%
Urban/Rural Status			
Urban areas (UR)	19%	9%	10%
Small cities and suburbs (SU)	18%	7%	11%
Small towns and rural areas (RU)	15%	6%	9%
Geographic Region			
Portland Metro (PM)	22%	10%	12%
Willamette Valley/North Coast (WN)	15%	7%	8%
Southern Oregon (SO)	20%	10%	10%
East of the Cascades (EC)	10%	4%	6%
Utility Service Type			
Dual Fuel (DF)	23%	11%	12%
Electric (EL)	17%	6%	10%
Gas (GA)	8%	4%	4%

*Note that starred groups have small sample sizes. See the Appendices for sample size, standard errors, and information on statistically significant differences between groups.

Source: Participation Rate is calculated from Energy Trust residential customer data. Demographic variables are assessed based on CAP survey questions H2, H5, C4, and D1, and Energy Trust residential customer data. See Appendix for full survey instrument.

Awareness, Knowledge, and Perception of Energy Trust

In addition to understanding participation rate and levels, respondents were also asked several questions to assess their awareness and knowledge of Energy Trust and its services/offerings. Most surveyed customers had heard of Energy Trust before taking the survey (60%), with one-third of customers not having heard of Energy Trust (32%) and 7% being unsure. Awareness was lower for customers in 2022, as compared to 2020, when 65% of customers reported having heard of Energy Trust before taking the survey.

Looking across racial groups, white and multiracial respondents reported significantly higher rates of awareness than Asian/Pacific Islander, Black/African American, Latino/Hispanic, and Native American/Indigenous respondents. Awareness was also significantly higher among owners than renters and among those living in single-family homes than other home types. There were also significantly higher rates of awareness among direct participants (79%) than indirect participants (43%). Non-participants (57%) also had significantly higher rates of awareness than indirect participants. Awareness was significantly lower for low-income respondents than those in higher income categories. There were no significant differences in awareness between urban, suburban, and rural respondents, but respondents in the Portland Metro area had significantly higher awareness than the two lowest awareness regions, Southern Oregon, and East of the Cascades. Dual fuel customers had significantly higher awareness than electric only and gas only customers (Table 18). English speakers had significantly higher awareness than non-English speakers.

Table 18. Awareness by race/ethnicity, income, own/rent, building type, and urban/rural status

GROUP	NUMBER OF RESPONDENTS	AWARENESS OF ENERGY TRUST	STD ERROR	STASTICALLY DIFFERENT FROM *(90% confidence level)*
Race/Ethnicity				
Asian/Pacific Islander (AP)	110	40%	4.7%	MR, WH
Black/African American (BA)	67	34%	5.8%	MR, WH
Latino/Hispanic (LH)	150	29%	3.7%	MR, WH
Multiracial/mixed race (MR)	85	59%	5.3%	AP, BA, LH, NI
Native American/Indigenous (NI)	66	29%	5.6%	MR, WH
White Alone (not Hispanic or Latino) (WH)	1394	64%	1.3%	AP, BA, LH, NI
Income Grouping				
Low-income (LI)	425	39%	2.4%	MI, MH, HI
Moderate-income (MI)	223	64%	3.3%	LI
Moderately High-income (MH)	447	67%	2.2%	LI
High-income (HI)	398	72%	2.3%	LI
Own/Rent				
Own (incl. resident landlord) (OW)	1049	71%	1.4%	RE
Rent (& other non-owners) (RE)	552	37%	2.1%	OW
Building Type				
Single-family (detached) (SF)	1031	69%	1.5%	SM, MF, MO
Mobile or manufactured home (MO)	87	52%	5.5%	SF
Small multifamily (2-4 units) (SM)	223	42%	3.4%	SF
Multifamily (5+ units) (MF)	268	43%	3.1%	SF
Urban/rural status				
Urban areas (UR)	1305	61%	1.4%	None
Small cities and suburbs (SU)	239	56%	3.3%	None
Small towns and rural areas (RU)	92	61%	5.2%	None
Geographic Region				
Portland Metro (PM)	842	64%	1.7%	SO, EC
Willamette Valley/North Coast (WN)	418	59%	2.5%	None
Southern Oregon (SO)	233	53%	3.3%	PM
East of the Cascades (EC)	143	51%	4.3%	PM
Utility Service Type				
Dual Fuel (DF)	723	72%	1.7%	EL, GA
Electric (EL)	705	49%	1.9%	DF
Gas (GA)	208	50%	3.5%	DF

Source: Awareness of Energy Trust is calculated from CAP survey question F1. Demographic variables are assessed based on CAP survey questions H2, H5, C4, and D1, and Energy Trust residential customer data. See Appendix for full survey instrument.

Results from groups with small sample sizes (less than 70 responses) should be interpreted with caution in consideration of associated error, and results from very small sample sizes (less than 30 respondents) should be considered qualitative.

Respondents who said they had heard of Energy Trust were asked how much they knew about Energy Trust, with options including 1) I've heard the name "Energy Trust of Oregon," 2) I know a little bit about Energy Trust services, and 3) I know a lot about Energy Trust services. Considering all survey respondents (and not only those who answered the question), 34% of respondents reported knowing at least a little bit about Energy Trust, which was lower than the 40% of respondents who reported this in 2020.

Like awareness, reported knowledge was significantly higher among white respondents than among all other participating groups. Knowledge was also higher for owners than renters and single-family homes than other building types. Low-income respondents were less likely to report at least a little knowledge of Energy Trust than higher income households. There was little variation in awareness across urban, suburban, and rural households, but Portland Metro respondents had higher knowledge than Southern Oregon or East of the Cascades. Dual fuel customers had significantly higher knowledge than electric-only or gas only customers (Table 19). English speaking respondents had significantly higher knowledge of Energy Trust than non-English speaking respondents.

Table 19. Knowledge by race/ethnicity, income, own/rent, building type, and urban/rural status

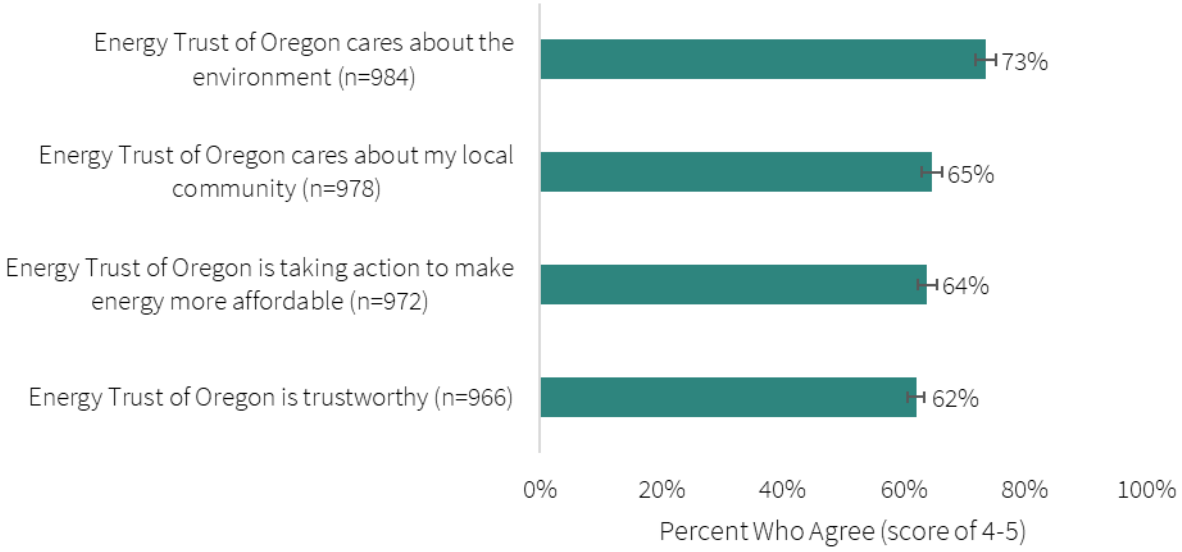
GROUP	NUMBER OF RESPONDENTS	KNOWLEDGE OF ENERGY TRUST	STD ERROR	STASTICALLY DIFFERENT FROM *(90% confidence level)*
Race/Ethnicity				
Asian/Pacific Islander (AP)	110	22%	3.9%	NI, WH
Black/African American (BA)	67	18%	4.7%	WH
Latino/Hispanic (LH)	150	13%	2.8%	WH
Multiracial/mixed race (MR)	85	24%	4.6%	NI, WH
Native American/Indigenous (NI)	66	9%	3.5%	AP, MR, WH
White Alone (not Hispanic or Latino) (WH)	1394	36%	1.3%	AP, BA, LH, MR, NI
Income Grouping				
Low-income (LI)	425	18%	1.9%	MI, MH, HI
Moderate-income (MI)	223	32%	3.3%	LI, HI
Moderately High-income (MH)	447	37%	2.4%	LI, HI
High-income (HI)	398	47%	2.6%	MI, MH, HI
Own/Rent				
Own (incl. resident landlord) (OW)	1049	44%	1.6%	RE
Rent (& other non-owners) (RE)	552	14%	1.6%	OW
Building Type				
Single-family (detached) (SF)	1031	43%	1.6%	MO, SM, MF
Mobile or manufactured home (MO)	87	21%	4.4%	SF
Small multifamily (2-4 units) (SM)	223	19%	2.7%	SF
Multifamily (5+ units) (MF)	268	16%	2.3%	SF
Urban/Rural Status				
Urban areas (UR)	1305	35%	1.4%	None
Small cities and suburbs (SU)	239	31%	3.1%	None
Small towns and rural areas (RU)	92	33%	5.0%	None
Geographic Region				
Portland Metro (PM)	842	38%	1.7%	SO, EC
Willamette Valley/North Coast (WN)	418	33%	2.4%	None
Southern Oregon (SO)	233	27%	2.9%	PM
East of the Cascades (EC)	143	27%	3.9%	PM
Utility Service Type				
Dual Fuel (DF)	723	45%	1.9%	EL, GA
Electric (EL)	705	23%	1.7%	DF
Gas (GA)	208	28%	3.2%	DF

Source: Knowledge of Energy Trust is calculated from CAP survey question F2. Demographic variables are assessed based on CAP survey questions H2, H5, C4, and D1, and Energy Trust residential customer data. See Appendix for full survey instrument.

Results from groups with small sample sizes (less than 70 responses) should be interpreted with caution in consideration of associated error, and results from very small sample sizes (less than 30 respondents) should be considered qualitative.

Respondents who had heard of Energy Trust were asked to rate their agreement with several statements about the organization. Overall, customers displayed positive attitudes towards Energy Trust. Almost three-fourths agreed that Energy Trust cares about the environment, and roughly two-thirds agreed that Energy Trust cares about their local community, is taking action to make energy more affordable and is trustworthy (Figure 5).

Figure 5. Respondent attitudes towards Energy Trust

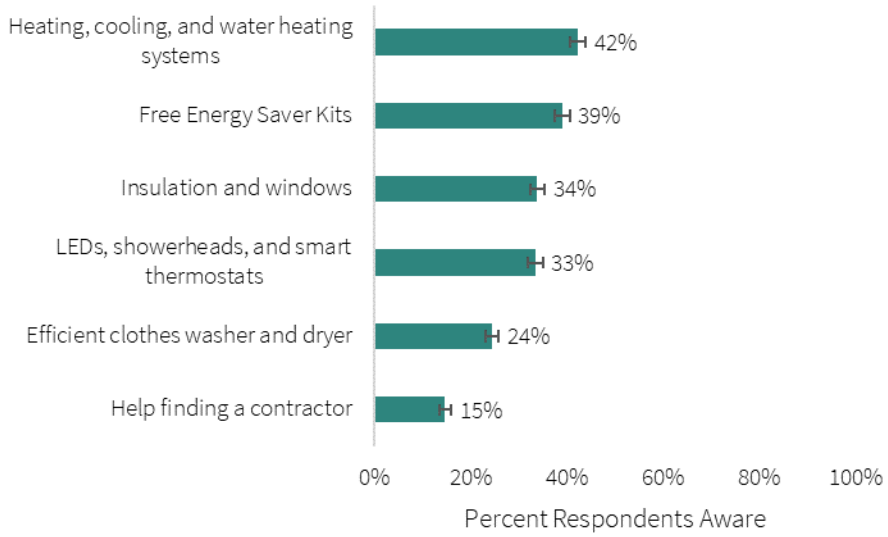


Source: CAP Survey. Question: "How much do you agree or disagree with the following statements?" on a scale from 1 to 5 where 1 is "strongly disagree" and 5 is "strongly agree."

Awareness of Energy Efficiency and Solar Services

Diving deeper into customer knowledge of Energy Trust, respondents who were aware of Energy Trust were asked if they had heard of any of the energy efficiency or solar offerings available from Energy Trust. When asked if they had ever heard of any energy efficiency services or offerings, 43% of respondents indicated that they had heard of one or more services that Energy Trust offers. Among those that had heard of Energy Trust as an organization, 42% of respondents were familiar with heating, cooling, and water heating system offerings, 39% were familiar with Free Energy Saver Kits, 34% were familiar with insulation and window offerings, and 33% were familiar with LEDs, showerheads, and smart thermostats (Figure 6).

Figure 6. Respondent awareness of Energy Trust offerings



Source: CAP Survey. Question: "Before today, which of the following Energy Trust of Oregon energy efficiency services were you aware of?"

The level of awareness of Energy Trust energy efficiency offerings followed similar patterns as overall awareness and knowledge of Energy Trust, with significantly higher rates of awareness among white and multiracial respondents than other racial groups. Homeowners and single-family respondents had higher rates of awareness, and low-income respondents had lower rates of awareness than other groups. Lower rates of awareness among the low-income group may occur as this population is largely served through indirect participation, and indirect participants have lower overall awareness of Energy Trust and its services than direct participants. There was higher awareness in the Portland Metro region than Southern Oregon and East of the Cascades and little difference in awareness between urban, suburban, and rural areas. Dual fuel customers had significantly higher awareness than electric only or gas only customers (Table 20). English speakers had significantly higher awareness than non-English speakers.

Table 20. Awareness of energy efficiency services by race/ethnicity, income, own/rent, building type, and urban/rural status

GROUP	NUMBER OF RESPONDENTS	AWARENESS OF ENERGY EFFICIENCY SERVICES	STD ERROR	STASTICALLY DIFFERENT FROM *(90% confidence level)*
Race/Ethnicity				
Asian/Pacific Islander (AP)	110	27%	4.2%	LH, WH
Black/African American (BA)	67	25%	5.3%	WH
Latino/Hispanic (LH)	150	15%	2.9%	AP, MR
Multiracial/mixed race (MR)	85	40%	5.3%	LH, NI
Native American/Indigenous (NI)	66	15%	4.4%	MR, WH
White Alone (not Hispanic or Latino) (WH)	1394	45%	1.3%	AP, BA, LH, NI
Income Grouping				
Low-income (LI)	425	24%	2.1%	MI, MH, HI
Moderate-income (MI)	223	42%	3.4%	LI, HI
Moderately High-income (MH)	447	48%	2.4%	LI, HI
High-income (HI)	398	57%	2.5%	LI, MI, MH
Own/Rent				
Own (incl. resident landlord) (OW)	1049	53%	1.6%	RE
Rent (& other non-owners) (RE)	552	21%	1.8%	OW
Building Type				
Single-family (detached) (SF)	1031	52%	1.6%	MO, SM, MF
Mobile or manufactured home (MO)	87	37%	5.3%	SF, MF
Small multifamily (2-4 units) (SM)	223	27%	3.1%	SF
Multifamily (5+ units) (MF)	268	23%	2.7%	SF, MO
Urban/Rural Status				
Urban areas (UR)	1305	43%	1.4%	None
Small cities and suburbs (SU)	239	42%	3.3%	None
Small towns and rural areas (RU)	92	42%	5.2%	None
Geographic Region				
Portland Metro (PM)	842	47%	1.8%	SO, EC
Willamette Valley/North Coast (WN)	418	41%	2.5%	None
Southern Oregon (SO)	233	37%	3.2%	PM
East of the Cascades (EC)	143	36%	4.1%	PM
Utility Service Type				
Dual Fuel (DF)	723	54%	1.9%	EL, GA
Electric (EL)	705	33%	1.8%	DF
Gas (GA)	208	31%	3.3%	DF

Source: Awareness of Energy Efficiency Services is calculated from CAP survey question F3. Demographic variables are assessed based on CAP survey questions H2, H5, C4, and D1, and Energy Trust residential customer data. See Appendix for full survey instrument.

Results from groups with small sample sizes (less than 70 responses) should be interpreted with caution in consideration of associated error, and results from very small sample sizes (less than 30 respondents) should be considered qualitative.

When asked if they had ever participated in an Energy Trust program, 21% of respondents said they participated in their current home and 9% participated at a previous property.

Five percent of respondents had never participated but had investigated Energy Trust programs or services previously, and 23% of respondents had never considered participating. The remaining 42% either did not know, gave an "other" verbatim response, or were not asked the question (as they had indicated earlier in the survey, they were not aware of Energy Trust).

The ILLUME team also asked homeowners familiar with Energy Trust about their awareness of solar services offered by Energy Trust. Renters were not asked this question because there are no solar services available to renters. Overall, 21% of homeowners were aware of solar services. Among homeowners, respondents were most aware of cash incentives for installing solar panels (22%), a free assessment of the home's solar potential (14%), a list of contractors who install solar panels (10%), and a customized bid for the cost of installing solar panels (7%).

Across race/ethnicity, awareness of solar services was relatively similar across groups for everyone except Latino/Hispanic and Native American/Indigenous respondents who reported relatively low levels of awareness. Like other metrics, single-family respondents reported higher levels of awareness than other groups and low-income respondents reported lower levels of awareness than other groups. There was less variation in awareness across urban, suburban, and rural areas (Table 21). It should be noted that because this analysis only includes homeowners, some sample sizes within groups are small and should be interpreted with caution.

Table 21. Awareness of solar services by race/ethnicity, income, building type, and urban/rural status

GROUP	NUMBER OF RESPONDENTS	AWARENESS OF SOLAR SERVICES	STD ERROR	STASTICALLY DIFFERENT FROM *(90% confidence level)*
Race/Ethnicity				
Asian/Pacific Islander (AP)	72	18%	4.5%	NI
Black/African American (BA)	*21*	*19%*	*8.6%*	*None*
Latino/Hispanic (LH)	75	11%	3.6%	WH
Multiracial/mixed race (MR)	51	22%	5.8%	NI
Native American/Indigenous (NI)	38	3%	2.6%	AP, MR, WH
White Alone (not Hispanic or Latino) (WH)	1005	22%	1.3%	LH, NI
Income Grouping				
Low-income (LI)	170	8%	2.1%	MH, HI
Moderate-income (MI)	148	15%	3.1%	MH, HI
Moderately High-income (MH)	335	25%	2.5%	LI, MI
High-income (HI)	338	26%	2.5%	LI, MI
Building Type				
Single-family (detached) (SF)	907	23%	1.5%	MO, MF
Mobile or manufactured home (MO)	75	6%	2.5%	SF
Small multifamily (2-4 units) (SM)	64	18%	4.8%	None
Multifamily (5+ units) (MF)	32	6%	3.8%	SF
Urban/Rural Status				
Urban areas (UR)	842	22%	1.5%	None
Small cities and suburbs (SU)	175	17%	2.9%	None
Small towns and rural areas (RU)	73	19%	4.9%	None
Geographic Region				
Portland Metro (PM)	513	24%	1.9%	EC
Willamette Valley/North Coast (WN)	295	21%	2.5%	None
Southern Oregon (SO)	178	18%	2.9%	None
East of the Cascades (EC)	104	13%	3.3%	PM
Utility Service Type				
Dual Fuel (DF)	600	26%	1.8%	EL, GA
Electric (EL)	319	14%	2.0%	DF
Gas (GA)	171	15%	2.8%	DF

Source: Awareness of Energy Efficiency Services is calculated from CAP survey question F3. Demographic variables are assessed based on CAP survey questions H2, H5, C4, and D1, and Energy Trust residential customer data. See Appendix for full survey instrument.

Results from groups with small sample sizes (less than 70 responses) should be interpreted with caution in consideration of associated error, and results from very small sample sizes (less than 30 respondents) should be considered qualitative.

Comparison to 2020 Study

The team compared participation rate and knowledge of Energy Trust to the 2020 survey results across three key respondent variables: race/ethnicity, income, and rent/own status. Participation rate and knowledge as these were the only indicator variables analyzed by the key respondent variables in 2020. Due to differences in the survey questionnaire, sample design, weighting design and methodology caution should be exercised in interpreting these comparisons. Some differences may exist in groups of smaller sample sizes (Black/African American and Native American/Indigenous respondents due to variation in who responded to the survey in different years (sampling bias) as well as different survey methodologies. Also, the moderately high-income group was added in 2022. Due to these methodological differences, the team compared patterns in participation and knowledge based on how the participation and knowledge rates for specific groups varied from the overall participation and knowledge rates.

Looking across race, patterns in participation rate changed most for Black/African American, Native American/Indigenous, and Latino/Hispanic respondents, with increases in participation rates observed for Black/African American respondents and Latino/Hispanic respondents and a decrease observed for Native American/Indigenous respondents. Differences in knowledge between years were greatest for Native American/Indigenous respondents, Asian/Pacific Islander respondents, and Latino/Hispanic respondents, with decreases observed for all groups.

As explored earlier in the report, a higher percentage of Black/African American respondents participated in indirect programs than in other racial groups, so they were likely served through multifamily program offerings. For Native American/Indigenous respondents, more responses were captured in the 2022 survey from rural respondents, whereas the 2020 study captured more responses from urban respondents, so the change here may reflect the difference in the population surveyed. While participation rate increased for Latino/Hispanic respondents, it is important to note that they are still among the lowest served groups in terms of participation rate and knowledge compared to other racial groups in the 2022 study period. Likewise, while knowledge decreased for Asian/Pacific Islander respondents, they are among the higher rates of participation and knowledge compared to other racial groups in 2022 study period (Table 22).

Table 22. Comparison of participation rate and knowledge of Energy Trust between the 2020 and 2022 study periods by race

	Participation Rate (Difference from overall rate)		Knowledge of Energy Trust (Difference from overall rate)	
Race/Ethnicity	**2022**	**2020**	**2022**	**2020**
Asian or Pacific Islander	+6%	+9%	-12%	-4%
Black/African American	+5%	-13%	-16%	-17%
Latino or Hispanic	-7%	-12%	-21%	-18%
Multiracial or mixed race	+0%	NA	-11%	-10%
Native American/Indigenous	-7%	+6%	-25%	-1%
White alone (not Hispanic or Latino)	0%	-1%	+2%	+2%

Looking at differences by income, while participation rate increased with income in the 2020 study period, participation rates were more similar across incomes in the 2022 study period. This may point to successes in reaching low- and moderate-income customers through program offerings, such as multifamily and Savings Within Reach offerings in the 2015-2021 participation period. Knowledge increased with income in both study periods (Table 23).

Table 23. Comparison of participation rate and knowledge of Energy Trust between the 2020 and 2022 study periods by income

	Participation Rate (Difference from overall rate)		Knowledge of Energy Trust (Difference from overall rate)	
Income Grouping	**2022**	**2020**	**2022**	**2020**
Low-Income	-2%	-9%	-16%	-18%
Moderate Income	+2%	-3%	-2%	-8%
Moderate-High Income	-1%		+3%	
High Income	+3%	+3%	+13%	+7%

Patterns in participation between homeowners and renters were consistent between the 2020 study and 2022. In both study periods, owners participated at higher rates and reported higher rates of knowledge than renters (Table 24).

Table 24. Comparison of participation rate and knowledge of Energy Trust between the 2020 and 2022 study periods by income

	Participation Rate (Difference from overall rate)		Knowledge of Energy Trust (Difference from overall rate)	
Own/Rent	**2022**	**2020**	**2022**	**2020**
Own	+3%	+2%	+10%	+6%
Rent	-6%	-9%	-20%	-22%

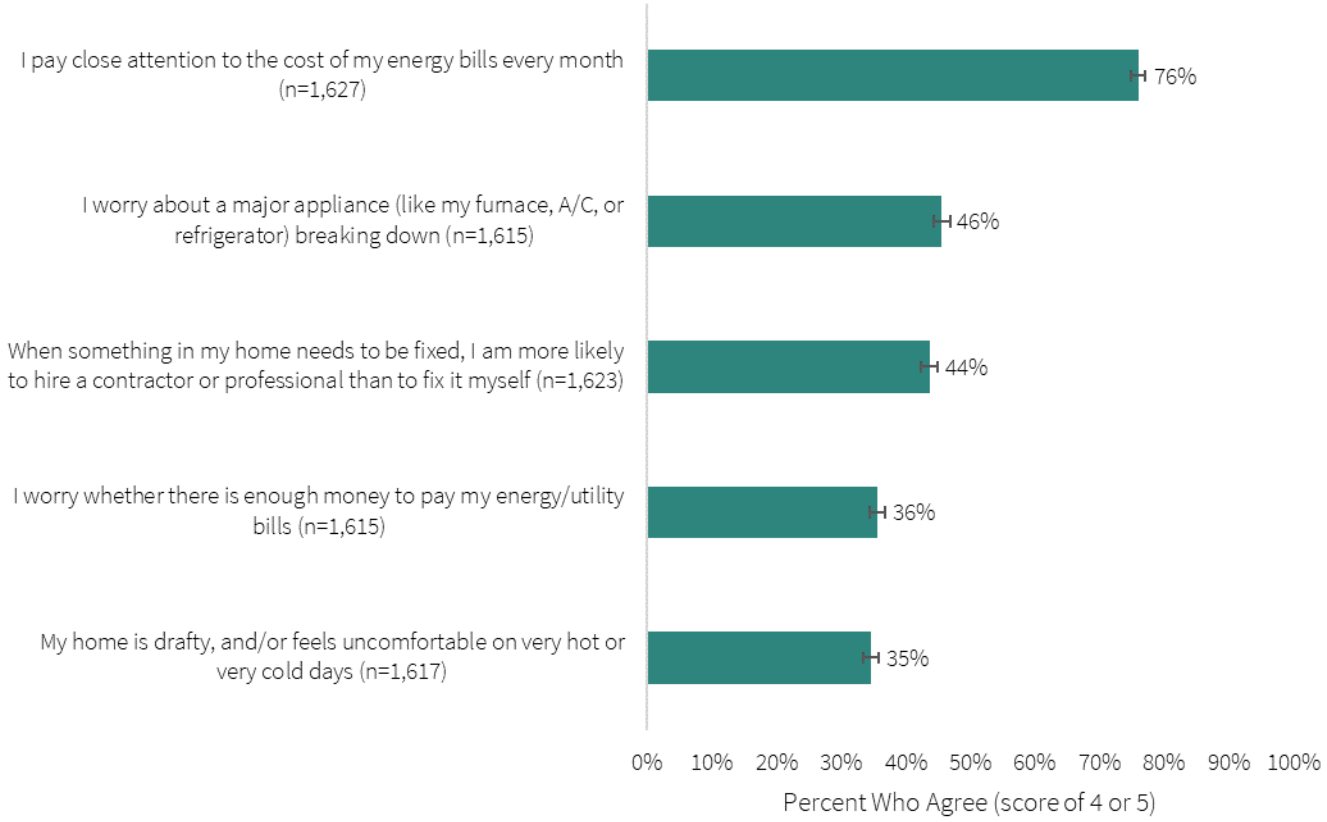
Orientation to Energy Efficiency

When asked how much respondents agreed or disagreed with various statements related to energy efficiency, about one third (36%) of respondents agreed that they worry whether there is enough money to pay their energy bills, which may be used as a proxy for energy burden.

Looking across other statements, three-fourths of respondents agreed that they pay close attention to the cost of their energy bills every month (76%). About one-half agreed that they worry about a major appliance

breaking down (46%). When something in their home needs to be fixed, about two out of five are more likely to hire a contractor or professional than try to fix it themselves (44%). About one-third of respondents agreed that their home is drafty or uncomfortable on very hot or very cold days (35%) (Figure 7).

Figure 7. Respondent orientation to energy efficiency



Source: CAP Survey. Question: "How much do you agree or disagree with the following statements?" on a scale from 1 to 5 where 1 is "strongly disagree" and 5 is "strongly agree."

Worry About Paying Bills

Renters were significantly more likely than homeowners to be worried about paying their energy bills, indicating that this group faces a higher energy burden. Among racial and ethnic groups, Latino/Hispanic, Black/African American, and Native American/Indigenous respondents were most likely to be worried about paying their bills, compared to white, multiracial/mixed race, and Asian/Pacific Islander respondents. Respondents living in multifamily or mobile/manufactured homes were more likely to worry about their bills than those living in single family homes. There was little difference in worry about paying bills between urban, suburban, and rural areas (Table 21).

Respondents who reported less concern about paying energy bills participated at significantly higher rates and received significantly higher financial benefits than those who did not. More information on respondents' concern about their energy bills across different customer, building, and geographic characteristics can be found in Appendix G.

Uncomfortable in Home

Like worrying about paying energy bills, renters were significantly more likely than homeowners to feel uncomfortable in their homes on very cold or hot days. Among ethnic groups, Latino/Hispanic, Black/African American, and multiracial/mixed race respondents were more likely to feel uncomfortable in their homes compared to White, Asian/Pacific Islander and Native American/Indigenous respondents. However, these differences were not as pronounced as they were for worrying about paying bills. Low-income respondents were the most likely to feel uncomfortable in their homes, compared to moderate, moderately high, and high-income respondents. Respondents living in multifamily or mobile/manufactured homes were more likely to be uncomfortable on very cold or hot days than those living in single family homes. Respondents living in urban areas were more likely to feel uncomfortable than those living in small towns and rural areas, likely due to higher concentrations of multifamily buildings (Table 21).

Hiring a Contractor

Homeowners were more likely than renters to hire a contractor to fix things in their home instead of doing it themselves. Among ethnic groups, Black/African American and Asian/Pacific Islander respondents were the most likely to hire a contractor. Respondents with moderate, moderately high, and high incomes were more likely than low-income respondents to hire a contractor to fix things in their home. There was little difference in the likelihood of hiring a contractor between building types, as well as between urban, suburban, and rural areas (Table 25).

Table 25. Orientation to energy efficiency by race/ethnicity, income, building type, and urban/rural status

GROUP	PERCENT WHO AGREE THEY WORRY ABOUT PAYING THEIR UTILITY BILLS	PERCENT WHO AGREE THEY WOULD RATHER HIRE A CONTRACTOR THAN DIY	PERCENT WHO AGREE THEIR HOME FEELS UNCOMFORTABLE OR DRAFTY
Race/Ethnicity			
Asian/Pacific Islander (AP)	35%	58%	34%
Black/African American (BA)*	60%	62%	45%
Latino/Hispanic (LH)	59%	38%	42%
Multiracial/mixed race (MR)	40%	34%	41%
Native American/Indigenous (NI)*	51%	41%	32%
White Alone (not Hispanic or Latino) (WH)	33%	46%	35%
Income Grouping			
Low-income	65%	38%	47%
Moderate-income	45%	47%	39%
Moderately High-income	28%	44%	28%
High-income	11%	47%	28%
Own/Rent			
Own (incl. resident landlord)	26%	46%	27%
Rent (& other non-owners)	56%	38%	51%
Building Type			
Single-family (detached)	28%	45%	29%
Mobile or manufactured home	54%	45%	40%
Small multifamily (2-4 units)	50%	42%	48%
Multifamily (5+ units)	48%	40%	47%
Urban/rural status			
Urban areas	35%	35%	35%
Small cities and suburbs	38%	38%	32%
Small towns and rural areas	40%	40%	28%
Geographic Region			
Portland Metro	34%	45%	37%
Willamette Valley/North Coast	39%	44%	32%
Southern Oregon	37%	38%	31%
East of the Cascades	35%	48%	34%
Utility Service Type			
Dual Fuel	27%	46%	31%
Electric	48%	40%	41%
Gas	28%	51%	27%

*Note that starred groups have small sample sizes. See the Appendices for sample size, standard errors, and information on statistically significant differences between groups.

Source: These metrics are calculated from CAP survey question G1 based on the percentage of respondents who agree (score of 4 or 5 on a 1 to 5 scale) with the statements. Demographic variables are assessed based on CAP survey questions H2, H5, C4, and D1, and Energy Trust residential customer data. See Appendix for full survey instrument.

APPENDIX

Appendix A. Methodology

Core Sample Approach

Below are the steps we took to clean, construct, and finalize the sample frame.

Energy Trust Population Data Cleaning and Preparation

Data intake and review

We took the following steps to ensure that the population data was complete and accurate before taking any cleaning and processing steps.

1. Confirmed that "SiteId" field uniquely identifies each record
2. Confirmed expected population size
3. Checked for duplicate records
4. Confirmed required fields were present, e.g., program participation status, contact information, census tract identifier, etc.
5. Developed a data dictionary in collaboration with Energy Trust of Oregon staff
6. Summarized all fields for:
    a. Missing data
    b. Distribution of numeric data (min, max, mean, and standard deviation)
    c. Counts of unique values for categorical data
7. Using these summaries, we flagged and inspected any unusual values. These checks did not reveal any issues.

Data processing

We took the following steps to remove records that would be either ineligible for the survey or would prevent merging census data at the tract-level.

1. Remove records where address or census tract is in Washington
2. Exclude records flagged as either "Do not contact", "Do not survey" and "Recently surveyed"
3. Remove records that were not geocoded to census tract
4. Exclude records where the utility customer name field contains phrases and words which indicate it is likely a business[3]

The outcome of these steps was the removal of 141,121 of the initial 1,496,227 records (9.43%) leaving a final cleaned sample file with 1,355,106 records (Table 22).

Table 26. Description of population processing steps and record attrition rates.

PROCESSING STEP	REMAINING (N)	REMOVED (N)	REMOVED (%)
Starting population	1,496,227	0	0.0%
Exclude sites in WA	1,411,669	84,558	5.7%
Exclude sites flagged as recently surveyed, do not survey, or do not contact	1,406,560	5,109	0.3%
Remove records with missing census tracts	1,389,820	16,740	1.1%
Exclude records that appear to be businesses based on utility's customer name field	1,355,106	34,714	2.3%
TOTAL	**1,355,106**	**141,121**	**9.4%**

Census Data Tract Cleaning and Matching

We stratified our sample by census tract-level program participation rate quintile. Based on prior research in Massachusetts, we expected participation rate to have a negative correlation with key target demographic groups and expected response rates. For example, we expect census tracts with *lower* participation to have a *higher* fraction of low-income, renter and BIPOC populations.

Before calculating participation rate quintiles, and examining the expected demographic groups within those quintiles, we took the following steps to match participants to tracts and append the relevant census data and create census tract-level population summaries of additional fields.

[3] This was done through an iterative string-matching process. The final filter excluded these strings: *ends with* " CO," " LLC," "L.L.C.," "AUTHORITY," "MGMT," "VILLAGE," "PARTNERSHIP," "INTERESTS," "HEALTH," "MEDICAL," "SOCIETY," "HOMES," "LIMITED," "FESTIVAL," "SERVICE," "ARCHDIOCESE," "#," "UNIVERSITY," "TRAILER," "CORPORATE," "PROPERTY," "PROPERTIES," "CITY," "ATPS," "APARTMENT," "REALTY," "ASSN," "CONDOS HOA," "CONDOMINIUM," *ends with* "INC.," "VALLEY MANOR," "DISTRICT," "PORTLAND," *contains two or more digits*, "INCORPORATED," "COMPANY," "CONDO A," "CONDOS$," "ASSOC," "ENTERPRISE," "HSE," "CONSTRUCT," "HOUSING," "FUNERAL," "ORTHODOX," "BAPTIST," "METHODIST," "LUTHERAN," "OF GOD," "CATHOLIC," "KOREAN," "NAZARENE," "MARTYRS," "QUEEN OF, " "HEIGHTS," "VISITATION," "BIBLE," *starts with* "ST," "MORNING STAR," "APOSTOLIC," "GOOD SHEPHERD," "COMMUNITY," "CHURCH OF," "COUNTY," "HOLY TRINITY," "UNITED," "NEIGHBORHOOD," "CHRISTIAN CHURCH," "PRESBYTERIAN," "LDS," "EVANGELICAL," "PENTECOSTAL," " MHC," " GROUP," " LTD," " REPAIR," "CONTRACT," "IMPROVEMENT," "MANAGE," "LP."

1. Records either without a 2010 census block ID or with a census block ID that located in Washington state were removed as discussed in the previous section.
2. Each record's 2010 census tract ID (11-digit code) was extracted from the census block ID field. Although 2020 census geographies are available, we opted to use the existing 2010 geographies in the Energy Trust population file. This is because only some of the needed 2020 census demographic data was publicly available when prepping this sample file and there are some known inaccuracies with the 2020 census under-sampling minority populations.
3. We confirmed that all census tract IDs were valid and matched those Oregon IDs published by the US Census Bureau
4. We pulled the following 2015-2019 ACS tables from the US Census API and extracted/constructed the target demographic variables listed below.
    a. Hispanic or Latino Origin by Race (Population): Table B03002
        i. White alone
        ii. Hispanic or Latino (non-white)
        iii. Black
        iv. Native American
        v. Asian or Pacific Islander
        vi. Mixed race
        vii. Other race
    b. Household Income in Last 12 Months (Households): Table B19001
        i. Low income ($0-$29,999)
        ii. Moderate income ($30,000-$59,999)
        iii. Moderate-to-high income ($60,000-$149,999)
        iv. High income ($150,000 or more)
    c. Tenure (Households): Table B25003
        i. Owner occupied
        ii. Renter occupied
    d. Units in Structure (Dwelling units): Table B2504
        i. Single-family (attached or detached)
        ii. Small multifamily (2-4 units)
        iii. Medium-to-large multifamily (5 or more units)
        iv. Manufactured home
5. We then calculated tract-level summaries of the relevant fields from the population file as shown below:
    a. Total number of records (N customers per tract)
    b. Participation rate (N participants / N customers)
    c. Participation rate quintile (1-5 where 1 is lowest and 5 highest participation rate)
    d. Counts by gas/electric utility, Energy Trust of Oregon Region[4] and urbanization category.[5]

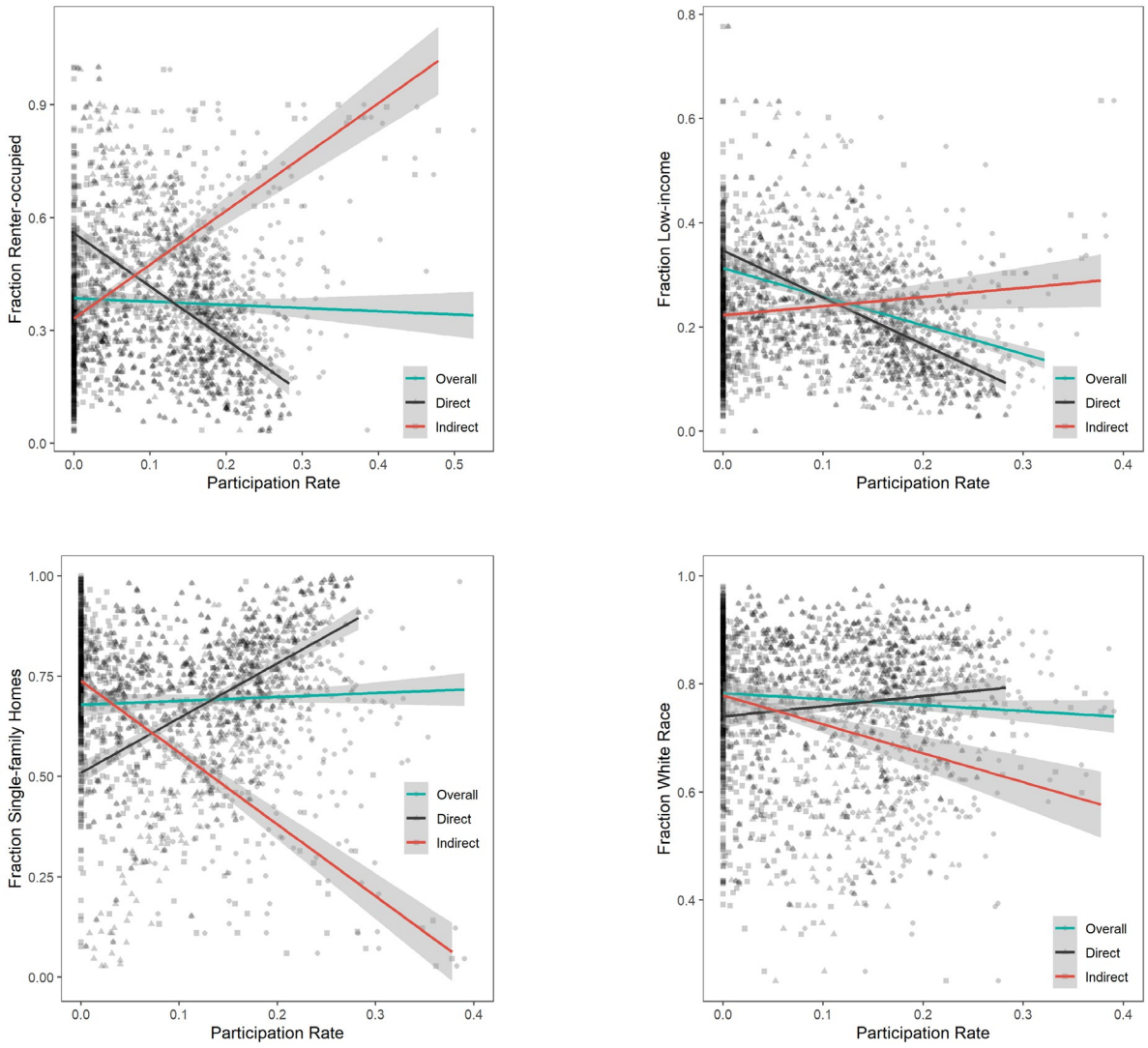
[4] We found a small subset of census tracts that were assigned to multiple regions. In these cases, we picked the region that was most often paired with the tract.

[5] We combined the Energy Trust urbanization codes to three levels: Urban area (code 1-2), small city (code 3), and small towns and rural areas (code 4-5).

Develop Participation Quintiles

The population file included three participation options: “Direct”, “Indirect” or “Nonparticipant”. Direct participation refers to customers who actively sign-up for a program and receive benefits from the program directly in their house, apartment, or unit. Indirect participation refers to who live in a building that participated but someone else, like a landlord, participated on their behalf and upgrades or services were installed in a building common area. Through exploratory analysis, we found that direct and indirect participation rates often have opposite relationships with target demographic groups. For example, tracts with higher fractions of renters have lower direct participation rates and higher indirect participation rates. For this reason, we stratified the sample only based on direct participation rate (Figure 1).

Figure 8. Relationship between participation rate and fraction of population in demographic groups.



We then assigned each tract to one of five quintiles based on the direct participation rate. The rate ranges and counts are shown in Table 2. We then estimated participant and nonparticipant response rates based on data from a similar survey we completed in Massachusetts. Using this Massachusetts data, we fit a simple linear model to predict response rate as a function of census tract program participation rate and respondent participation status. We then used this model to predict the response rates for participants and nonparticipants in each participation quintile in the Energy Trust population.

We then adjusted these rates uniformly downward by 0.04 to account for the fact that we expect the response rates in this study to be on average lower due to different incentive levels and other factors. These estimated response rates are shown in Table 23.

Table 27. Summary of direct participation rate quintile ranges and sizes by tracts and sample population.

QUINTILE	RANGE	TRACTS (N)	POPULATION (N)	RESPONSE RATE (PARTICIPANT)	RESPONSE RATE (NONPARTICIPANT)
1	0-6%	158	161,233	22%	12%
2	6-12%	158	260,431	23%	13%
3	12-16%	158	331,762	23%	14%
4	16-19%	158	332,293	24%	15%
5	>19%	159	309,202	25%	16%

Select Stratified Random Sample

Using the estimated response rates by participation quintile, we calculated the expected number of participants and nonparticipants needed in each participation quintile to achieve the target 1,500 responses (Table 24). Based on sampling assuming the predicted response rates, the team expects that the proportion of participants and nonparticipants in each participation quintile who complete the survey will reflect the overall population as closely as possible. The breakdown of target sample size for each strata is shown in. A core sample of 10,204 was pulled by randomly sampling within each of the ten strata (2 participation status categories x 5 participation quintiles). In case response rates are lower than expected we also pulled five additional "hold-out" samples of 1,000.

Table 28. Expected number of sampled customers and expected number of completes by participation quintile and past participation status

GROUP	SAMPLE	QTILE 1	QTILE 2	QTILE 3	QTILE 4	QTILE 5	TOTALS
Participants	Sampled	32	116	208	251	286	892
	Expected Completes	*7*	*26*	*48*	*60*	*71*	*212*
Nonparticipants	Sampled	1,416	1,963	2,228	2,048	1,656	9,311
	Expected Completes	*167*	*254*	*309*	*297*	*261*	*1,288*
Totals	Sampled	1,448	2,078	2,436	2,299	1,942	10,204
	Expected Completes	*174*	*280*	*357*	*357*	*332*	*1,500*

Appending Contact Information and Final Cleaning

Prior to distribution, a third-party vendor appended emails, when available, to the sample. Overall, 4,783 of the 12,004 records in the sample had emails appended (39%). However, the append rate was higher in the core sample (42%) than over sample (23%). Prior to distribution, we completed a series of final QC steps that included visual confirmation that email addresses matched customer names, checking for duplicates, and confirming that all customer IDs can be traced back to the master population file. For survey mail distribution we used the physical address of the residence (site address) unless the customer lived in a rural region and had a P.O. box for their utility billing address. In those cases, we used the utility address, (P.O. Box), because some customers in very rural parts of the state do not have mail delivery to their homes.

Oversample Approach

To reach our target 90/10 target precision with demographic groups that are less common in the Energy Trust territory, we worked with a vendor to append email and demographic identifiers for an additional 26,000 customers. Specifically, we aimed to identify an additional 2,000 survey recipients in the following groups:

- Black/African American
- Asian or Pacific Islander
- Native American/Indigenous
- Middle Eastern/North African
- Multiracial or mixed race

To target most effectively our appends, our team removed tracts from our available population that were primarily white. Our team carefully reviewed the distribution of demographics across Census tracts to understand whether these populations were spread across many Census tracts or clustered in fewer to decide our tract screening approach. Ultimately, we sampled from tracts that had greater than 3.5% Black/African American, 2.5% Asian or Pacific Islander, or 3.5% Native American populations. Census data does not track Middle Eastern/North African race/ethnicity. Additionally, the vendor data was not able to identify "multiracial" individuals, however our team determined that given considerable overlap in the prevalence and overlap of multiracial demographic groups with other targeted demographic groups within Census tracts, the current plan would likely allow us to reach enough multiracial individuals to meet our targets.

Overall, the email and target demographic data append rate was somewhat lower than we expected for this sample with 35% of the 26,000 customers having appended ethnicity/race information and only 1,084 identified in our target groups. Through surname analysis we were able to identify an additional 123 customers of probable Middle Eastern/North African ancestry. Only 45 customers were flagged as likely Native American/Indigenous from the sample append. To supplement this group, we pulled an additional 1,214 sampled from the five census tracts with the highest fraction of Native Americans based on the 2015-2019 American Community Survey. Assuming that the Energy Trust customers in these tracts are representative of the population, we estimate that approximately 425 customers in this sample (35%) would be Native American. The final estimated demographic composition of the 2,000-record oversample is shown in Table 25.

Table 29. Demographic breakdown of oversample

GROUP	COUNT	INFO SOURCE	TARGET RESPONSES
Black/African American	417	Vendor data	60
Asian or Pacific Islander	127	Vendor data	20
Native American/Indigenous	1,259*	Vendor / census data	60
Middle Eastern/North Africa	197	Vendor data / Surname analysis	70
Multiracial or Mixed race	Unknown**	N/A	30
Total	2,000		240

*Includes 45 records identified from 3rd-party vendor data and 1,214 from census tracts with highest fraction of Native American households

**This group was not specifically identified in the vendor data.

Weights Applied

The following table shows the weights applied to the core sample analysis.

QUINTILE	POPULATION	EXPECTED RESPONSES (CORE SAMPLE)	ACTUAL RESPONSES (CORE SAMPLE)	WEIGHTS
Q1	161,233	175	228	0.77
Q2	260,431	282	353	0.80
Q3	331,762	359	333	1.08
Q4	332,293	360	327	1.10
Q5	309,202	335	270	1.24

Appendix B. Survey Frequencies

All results showing Core data only are weighted. Results showing race/ethnicity analysis will indicate if it includes core only or all respondents (including oversample, which are shown unweighted).

Demographics

H2. Which categories describe your race, ethnicity, or origin?

	All Respondents			
response	**n**	**percent**	**n_valid**	**percent_valid**
Black or African American	78	3.8%	1920	4.1%
Chinese	39	1.9%	1920	2.0%
Filipino	26	1.3%	1920	1.4%
Hispanic, Latino or Spanish	144	6.9%	1920	7.5%
Japanese	27	1.3%	1920	1.4%
Korean	20	1.0%	1920	1.0%
Middle Eastern or North African	18	0.9%	1920	0.9%
Native American or Alaska Native	81	3.9%	1920	4.2%
Native Hawaiian or Pacific Islander not listed here	13	0.6%	1920	0.7%
South Asian or Indian	21	1.0%	1920	1.1%
Vietnamese	27	1.3%	1920	1.4%
Asian Origin not listed here	17	0.8%	1920	0.9%
White, Caucasian, or European	1529	73.8%	1920	79.6%
Other	33	1.6%	1920	1.7%
Total	*2073*	*100.0%*	*1920*	

H3. What is the primary language spoken in your home?

	Core only	
response	**n**	**percent**
Arabic	1	0.1%
Chinese - Cantonese	4	0.2%
Chinese - Mandarin	7	0.4%
English	1525	93.5%
French	1	0.1%
German	1	0.1%
Hindi	0	0.0%
Japanese	3	0.2%
Korean	3	0.2%
Persian (include Farsi)	1	0.1%
Russian	3	0.2%
Spanish	51	3.1%
Tagalog (including Filipino)	1	0.1%
Vietnamese	7	0.4%
Other	23	1.4%
Total	*1631*	*100.0%*

H4. How many people in each age group live in your home full-time?			
	Core only		
response	**n_group**	**percent**	**n_valid**
Children under 5	171	11%	1603
Children 5-17	378	24%	1603
Adults 18 - 24	190	12%	1603
Adults 25 - 44	639	40%	1603
Adults 45 - 64	638	40%	1603
Adults aged 65 or older	555	35%	1603

H5. Which of the following ranges describes your total 2021 household income before taxes?		
	Core only	
response	**n**	**percent**
Less than $25,000	239	14.9%
$25,000 - $34,999	159	9.9%
$35,000 - $49,999	189	11.8%
$50,000 - $74,999	275	17.1%
$75,000 - $99,999	216	13.5%
$100,000 - $149,999	246	15.3%
$150,000 - $199,999	107	6.7%
$200,000 or more	93	5.8%
Don't know	80	5.0%
Total	*1604*	*100.0%*

H6. What is the highest level of education you have completed?		
	Core only	
response	**n**	**percent**
Elementary	21	1.3%
Some high school	48	2.9%
High school graduate	201	12.3%
Some college	314	19.2%
Technical / trade school / community college graduate	141	8.6%
College graduate	557	34.1%
Postgraduate degree	340	20.8%
Don't know	13	0.8%
Total	*1635*	*100.0%*

Home and Building Characteristics

C4. Do you(or someone in your household) rent or own the home at <ADDRESS>?		
	Core only	
response	**n**	**percent**
Rent	508	31.1%
Own	1093	66.9%
Live there but don't pay rent	9	0.6%
Other	20	1.2%
Not sure	5	0.3%
Total	*1635*	*100.0%*

C5. What best describes the home at <ADDRESS>?		
	Core only	
response	**n**	**percent**
Home where I live most of the time	1624	99.0%
Second home where I live some of the time	14	0.9%
Property that I rent out to others	0	0.0%
Business address where nobody lives	0	0.0%
Home where I used to live but no longer have any connection to	0	0.0%
Other	3	0.2%
Don't know - Not my address	0	0.0%
Total	*1641*	*100.0%*

C6. Who lives at <ADDRESS>?				
	Core only			
response	**n**	**percent**	**n_valid**	**percent_valid**
Year-round tenants/renters	0	0.0%	13	0.0%
Short-term tenants/renters	0	0.0%	13	0.0%
A business	0	0.0%	13	0.0%
I use it as a second/vacation home	11	78.6%	13	84.6%
It is vacant all/most of the time	0	0.0%	13	0.0%
Other	3	21.4%	13	23.1%
Total	*14*	*100.0%*	*13*	

D1. What best describes the building at <ADDRESS>?		
	Core only	
response	**n**	**percent**
Single-family detached home	1074	65.4%
Single-family attached home	82	5.0%
Duplex	55	3.3%
Building with 3 or more units	325	19.8%
Guest house or accessory dwelling unit	5	0.3%
Mobile or manufactured home	88	5.4%
Other	13	0.8%
Total	*1642*	*100.0%*

D2. About how many units are in the building?		
	Core only	
response	**n**	**percent**
3-4	77	23.4%
5-9	63	19.1%
10-19	61	18.5%
20-49	48	14.6%
50+	65	19.8%
Other	15	4.6%
Total	*329*	*100.0%*

D3. Approximately how many years have you lived at <ADDRESS>?		
	Core only	
response	**n**	**percent**
Less than 1 year	146	8.9%
1-2 years	283	17.3%
3-4 years	225	13.7%
5-7 years	231	14.1%
8-10 years	129	7.9%
More than 10 years	626	38.2%
Total	*1640*	*100.0%*

E2. How do you primarily heat this home/building?				
	Core only			
response	**n**	**percent**	**n_valid**	**percent_valid**
Natural gas forced air furnace	780	38.9%	1638	47.6%
Natural as radiant heat	91	4.5%	1638	5.6%
Electric forced air furnace	179	8.9%	1638	10.9%
Electric central heat pump	228	11.4%	1638	13.9%
Electric ductless heat pump	77	3.8%	1638	4.7%
Electric baseboards or wall heaters	300	15.0%	1638	18.3%
Electric radiant heat	51	2.5%	1638	3.1%
Oil furnace	21	1.0%	1638	1.3%
Propane/bottled gas furnace	16	0.8%	1638	1.0%
Woodstove or fireplace	140	7.0%	1638	8.5%
No heating	3	0.1%	1638	0.2%
Other	89	4.4%	1638	5.4%
Not sure	31	1.5%	1638	1.9%
Total	*2006*	*100.0%*	*1638*	

E3. How do you primarily cool this home/building?				
	Core only			
response	**n**	**percent**	**n_valid**	**percent_valid**
Central air conditioner	673	31.3%	1641	41.0%
Central heat pump	210	9.8%	1641	12.8%
Ductless heat pump	90	4.2%	1641	5.5%
Window air conditioner	310	14.4%	1641	18.9%
Portable air conditioner	244	11.3%	1641	14.9%
Ceiling fans	338	15.7%	1641	20.6%
Whole house fan	57	2.6%	1641	3.5%
Evaporative / swamp cooler	13	0.6%	1641	0.8%
No cooling	128	6.0%	1641	7.8%
Other	79	3.7%	1641	4.8%
Not sure	9	0.4%	1641	0.5%
Total	*2151*	*100.0%*	*1641*	

H1. Which of the following describes the property at <ADDRESS>?		
	Core only	
response	**n**	**percent**
Public, subsidized, or affordable housing	119	23.2%
Tribal housing	1	0.2%
Housing for seniors or people with disabilities	25	4.9%
Market-rate or conventional housing	274	53.4%
Other	29	5.7%
Not sure	65	12.7%
Total	*513*	*100.0%*

Utility Relationship

E1. What utility bills do you pay for this home/building?				
	Core only			
response	**n**	**percent**	**n_valid**	**percent_valid**
Electricity	1623	58.0%	1638	99.1%
Natural gas	993	35.5%	1638	60.6%
Oil or propane	70	2.5%	1638	4.3%
None of those	6	0.2%	1638	0.4%
Other	104	3.7%	1638	6.3%
Total	2796	100.0%	1638	

E4. Did you receive any energy or fuel assistance in 2021?		
	Core only	
response	**n**	**percent**
Yes	134	8.2%
No	1478	90.2%
Not sure	27	1.6%
Total	*1639*	*100.0%*

Awareness and Participation – Energy Trust

F1. Before today, had you ever heard of Energy Trust of Oregon?		
	Core only	
response	**n**	**percent**
Yes	987	60.3%
No	531	32.4%
Not sure	120	7.3%
Total	*1638*	*100.0%*

F2. How familiar are you with Energy Trust of Oregon?		
	Core only	
response	**n**	**percent**
I've heard the name "Energy Trust of Oregon," but that's about it	416	42.1%
I know a little about the discounts, money back, and services that Energy Trust offers	499	50.6%
I know a lot about the discounts, money back and services Energy Trust offers	62	6.3%
Other	10	1.0%
Total	*987*	*100.0%*

F3. Before today, which of the following Energy Trust of Oregon energy efficiency services were you aware of?

	Core only			
response	**n**	**percent**	**n_valid**	**percent_valid**
Heating, cooling, and water heating systems	412	19.7%	974	42%
Free Energy Saver Kits	379	18.1%	974	39%
Insulation and windows	329	15.7%	974	34%
LEDs, showerheads, and smart thermostats	326	15.6%	974	33%
No, I was not aware of any of these before today	268	12.8%	974	28%
Efficient clothes washer and dryer	238	11.4%	974	24%
Help finding a contractor	142	6.8%	974	15%
Total	*2094*	*100.0%*	*974*	

F4. Have you ever participated in an Energy Trust of Oregon program?

	Core only			
response	**n**	**percent**	**n_valid**	**percent_valid**
Yes, I participated in my current home	346	34.3%	980	35.3%
Yes, I participated in a previous home that I owned or rented	138	13.7%	980	14.1%
No, but I looked into Energy Trust programs or services	87	8.6%	980	8.9%
No, I have never participated or looked into participating	372	36.9%	980	38.0%
Other	22	2.2%	980	2.2%
Not sure	43	4.3%	980	4.4%
Total	1008	100.0%	980	

F5. Before today, which of the following Energy Trust of Oregon solar services were you aware of?

	Core only			
response	**n**	**percent**	**n_valid**	**percent_valid**
Free assessment of your home's solar potential	110	11.5%	783	14%
A customized bid for installing solar panels	52	5.4%	783	7%
Cash incentives for installing solar panels	176	18.4%	783	22%
A list of contractors who install solar panels	77	8.0%	783	10%
No, I was not aware of any of these before today	544	56.7%	783	69%
Total	*959*	*100.0%*	*783*	

F6. How much do you agree or disagree with the following statements?

	Core only	
statement	**% Agree (rating of 4 or 5)**	**n**
Energy Trust of Oregon cares about the environment (n=984)	73%	984
Energy Trust of Oregon cares about my local community (n=978)	65%	978
Energy Trust of Oregon is taking action to make energy more affordable (n=972)	64%	972
Energy Trust of Oregon is trustworthy (n=966)	62%	966

Orientation to Energy Efficiency

G1. How much do you agree or disagree with the following statements?		
	Core only	
statement	**% Agree**	**n**
My home is drafty, and/or feels uncomfortable on very hot or very cold days (n=1,617)	35%	1617
I worry whether there is enough money to pay my energy/utility bills (n=1,615)	36%	1615
When something in my home needs to be fixed, I am more likely to hire a contractor or professional than to fix it myself (n=1,623)	44%	1623
I worry about a major appliance (like my furnace, A/C, or refrigerator) breaking down (n=1,615)	46%	1615
I pay close attention to the cost of my energy bills every month (n=1,627)	76%	1627

Appendix C. Key Indicator Variables – Full Analyses

Participation Rate

Own/Rent	Participation Rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Own (incl. resident landlord)	21.7%	1.3%	1055	OWN	RENT
Rent (& other non-owners)	13.3%	1.5%	554	RENT	OWN
Other	*28.0%*	*10.1%*	*20*	*OTH*	
Not sure	*15.3%*	*14.6%*	*5*	*NS*	
Building Type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	19.9%	1.3%	1035	SF	SMF
Mobile or manufactured home	25.4%	4.8%	88	MH	SMF
Small multifamily (2-4 units)	13.4%	2.4%	223	SMF	MH, SF
Multifamily (5+ units)	17.1%	2.3%	269	LGMF	
Other	*23.8%*	*8.7%*	*26*	*OTH*	
Income Grouping	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Low-income	16.6%	1.8%	428	LOW	
Moderate-income	20.5%	2.8%	225	MOD	
Moderately High-income	18.0%	1.9%	449	MODHIGH	
High-income	21.9%	2.1%	398	HIGH	
Race/Ethnicity	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	24.5%	4.1%	110	ASIAN	LATNX, OTH
Black/African American	23.9%	5.2%	67	BLACK	OTH
Latino or Hispanic	12.0%	2.7%	150	LATNX	ASIAN, WHITE
Multiracial or mixed race	18.6%	4.2%	86	MULTI	
Native American/Indigenous	12.1%	4.0%	66	NATAM	
White Alone (not Hispanic or Latino)	19.2%	1.1%	1400	WHITE	LATNX, OTH
Other	7.7%	4.3%	39	OTH	ASIAN, BLACK, WHITE
Education level	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
HS grad or less	16.8%	2.3%	283	HSLESS	
Some college or trade school	17.0%	1.8%	464	SMECOLL	
College graduate	21.7%	1.8%	547	COLLGRAD	

Postgraduate degree	19.0%	2.3%	326	POSTGRAD	
Don't know	31.6%	13.7%	12	DK	
Primarily Language English	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
English	19.3%	1.1%	1520	ENG	
Non-English	16.3%	3.6%	109	NONENG	
Energy or fuel assistance in 2021	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Yes	16.2%	3.1%	141	Y	
No	19.4%	1.1%	1470	N	
Not sure	*16.3%*	*7.6%*	*27*	*NS*	
Worried about energy bills	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	14.2%	1.5%	585	NOWRRYY	WRRY
Not worried about paying energy bills	22.1%	1.3%	1030	WRRY	NOWRRYY
Energy Trust Regions (combined)	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	21.7%	1.5%	842	PORTMET	ECSD, WLMTNC
Willamette Valley/North Coast	15.3%	1.9%	425	WLMTNC	PORTMET
Southern Oregon	19.9%	2.7%	234	SOR	ECSD
East of the Cascades	10.1%	2.6%	143	ECSD	PORTMET, SOR
Urban / rural status	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Urban areas	19.4%	1.1%	1308	URB	
Small cities and suburbs	17.9%	2.6%	243	SBURB	
Small towns and rural areas	15.2%	3.8%	93	RURAL	
Utility service type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	23.4%	1.6%	726	DUAL	ELE, GAS
Electric	16.6%	1.4%	708	ELE	DUAL, GAS
Gas	7.5%	1.9%	210	GAS	DUAL, ELE
Program participation type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	100.0%	0.0%	241	DP	
Indirect Participant	100.0%	0.0%	59	IP	
Nonparticipant	0.0%	0.0%	1344	NP	

Rental Property Type	Participation Rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Public, subsidized, or affordable housing	14.4%	3.1%	131	PUBHSNG	
Tribal housing	*0.0%*	*0.0%*	*1*	*TRIBHSGN*	
Housing for seniors or people with disabilities	*30.9%*	*9.2%*	*27*	*DISBHSNG*	*MKTHSNG*
Market-rate or conventional housing	12.3%	2.0%	291	MKTHSNG	DISBHSNG
Other	10.0%	5.5%	31	OTH	
Not sure	11.3%	3.7%	68	NS	

Participation Level

Own/Rent	Participation Level ($)	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Own (incl. resident landlord)	$ 25.26	$ 3.92	1055	OWN	NS, RENT
Rent (& other non-owners)	$ 7.59	$ 2.02	554	RENT	NS, OWN
Other	*$ 31.56*	*$ 24.43*	*20*	*OTH*	
Not sure	*$ 0.32*	*$ 0.30*	*5*	*NS*	*OWN, RENT*
Building Type	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	$ 22.67	$ 3.81	1035	SF	LGMF, SMF
Mobile or manufactured home	$ 44.96	$ 16.98	88	MH	LGMF, SMF
Small multifamily (2-4 units)	$ 10.70	$ 3.34	223	SMF	MH, SF
Multifamily (5+ units)	$ 5.37	$ 1.29	269	LGMF	MH, SF
Other	*$ 11.06*	*$ 7.32*	*26*	*OTH*	
Income Grouping	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Low-income	$ 11.93	$ 3.50	428	LOW	
Moderate-income	$ 20.16	$ 6.07	225	MOD	
Moderately High-income	$ 21.49	$ 5.77	449	MODHIGH	
High-income	$ 23.45	$ 5.47	398	HIGH	
Race/Ethnicity	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	$ 10.71	$ 2.61	110	ASIAN	LATNX, OTH, WHITE
Black/African American	$ 9.41	$ 4.38	67	BLACK	WHITE

Latino or Hispanic	$ 3.37	$ 1.07	150	LATNX	ASIAN, WHITE
Multiracial or mixed race	$ 6.84	$ 2.45	86	MULTI	WHITE
Native American/Indigenous	$ 10.85	$ 6.77	66	NATAM	
White Alone (not Hispanic or Latino)	$ 22.67	$ 3.17	1400	WHITE	ASIAN, BLACK, LATNX, MULTI, OTH
Other	$ 2.98	$ 1.98	39	OTH	ASIAN, WHITE
Education level	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
HS grad or less	$ 17.59	$ 7.10	283	HSLESS	
Some college or trade school	$ 10.13	$ 2.83	464	SMECOLL	COLLGRAD
College graduate	$ 28.50	$ 5.80	547	COLLGRAD	DK, SMECOLL
Postgraduate degree	$ 20.13	$ 5.85	326	POSTGRAD	
Don't know	*$ 6.98*	*$ 3.72*	*12*	*DK*	*COLLGRAD*
Primarily Language English	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
English	$ 20.68	$ 2.91	1520	ENG	NONENG
Non-English	$ 6.03	$ 2.57	109	NONENG	ENG
Energy or fuel assistance in 2021	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Yes	$ 7.41	$ 3.12	141	Y	N
No	$ 21.07	$ 3.00	1470	N	NS, Y
Not sure	*$ 1.27*	*$ 0.97*	*27*	*NS*	*N*
Worried about energy bills	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	$ 9.66	$ 2.16	585	WRRY	NOWRRYY
Not worried about paying energy bills	$ 25.56	$ 4.10	1030	NOWRRYY	WRRY
Energy Trust Regions (combined)	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	$ 17.34	$ 2.91	842	PORTMET	
Willamette Valley/North Coast	$ 18.91	$ 5.64	425	WLMTNC	
Southern Oregon	$ 35.65	$ 12.15	234	SOR	
East of the Cascades	$ 8.80	$ 5.01	143	ECSD	
Urban / rural status	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Urban areas	$ 17.12	$ 2.63	1308	URB	

Small cities and suburbs	$ 27.17	$ 10.01	243	SBURB	
Small towns and rural areas	$ 41.25	$ 20.40	93	RURAL	
Utility service type	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	$ 20.92	$ 4.16	726	DUAL	GAS
Electric	$ 21.99	$ 4.33	708	ELE	GAS
Gas	$ 3.06	$ 0.92	210	GAS	DUAL, ELE
Program participation type	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	$ 116.25	$ 15.51	241	DP	IP
Indirect Participant	$ 33.01	$ 8.85	59	IP	DP
Nonparticipant	$ -	$ -	1344	NP	
Rental Property Type	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Public, subsidized, or affordable housing	$ 3.45	$ 1.12	131	PUBHSNG	
Tribal housing	*$ -*	*$ -*	*1*	*TRIBHSGN*	
Housing for seniors or people with disabilities	*$ 19.42*	*$ 14.60*	*27*	*DISBHSNG*	
Market-rate or conventional housing	$ 6.67	$ 2.10	291	MKTHSNG	
Other	$ 32.34	$ 26.39	31	OTH	
Not sure	$ 4.22	$ 2.19	68	NS	

Awareness of Energy Trust

Own/Rent	**Awareness rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Own (incl. resident landlord)	71.2%	1.4%	1049	OWN	RENT
Rent (& other non-owners)	37.1%	2.1%	552	RENT	OTH, OWN
Other	*69.6%*	*10.6%*	*20*	*OTH*	*RENT*
Not sure	*0.0%*	*0.0%*	*5*	*NS*	
Building Type	**Awareness rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	68.8%	1.5%	1031	SF	MH, LGMF, SMF
Mobile or manufactured home	52.4%	5.5%	87	MH	SF
Small multifamily (2-4 units)	41.6%	3.4%	223	SMF	SF
Multifamily (5+ units)	42.8%	3.1%	268	LGMF	SF
Other	*51.6%*	*10.1%*	*26*	*OTH*	

Income Grouping	Awareness rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Low-income	38.7%	2.4%	425	LOW	HIGH, MOD, MODHIGH
Moderate-income	63.6%	3.3%	223	MOD	LOW
Moderately High-income	67.4%	2.2%	447	MODHIGH	LOW
High-income	72.2%	2.3%	398	HIGH	LOW
Race/Ethnicity	**Awareness rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	40.0%	4.7%	110	ASIAN	MULTI, OTH, WHITE
Black/African American	34.3%	5.8%	67	BLACK	MULTI, OTH, WHITE
Latino or Hispanic	29.3%	3.7%	150	LATNX	MULTI, OTH, WHITE
Multiracial or mixed race	58.8%	5.3%	85	MULTI	ASIAN, BLACK, LATNX, NATAM
Native American/Indigenous	28.8%	5.6%	66	NATAM	MULTI, OTH, WHITE
White Alone (not Hispanic or Latino)	63.6%	1.3%	1394	WHITE	ASIAN, BLACK, LATNX, NATAM
Other	66.7%	7.6%	39	OTH	ASIAN, BLACK, LATNX, NATAM
Education level	**Awareness rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
HS grad or less	41.1%	3.0%	278	HSLESS	COLLGRAD, POSTGRAD, SMECOLL
Some college or trade school	57.8%	2.3%	462	SMECOLL	COLLGRAD, HSLESS, POSTGRAD
College graduate	66.3%	2.1%	547	COLLGRAD	HSLESS, SMECOLL
Postgraduate degree	69.9%	2.6%	326	POSTGRAD	HSLESS, SMECOLL
Don't know	*50.6%*	*14.8%*	*12*	*DK*	
Primarily Language English	**Awareness rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
English	62.5%	1.3%	1516	ENG	NONENG
Non-English	31.1%	4.6%	109	NONENG	ENG
Energy or fuel assistance in 2021	**Awareness rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Yes	38.1%	4.2%	140	Y	N
No	62.8%	1.3%	1466	N	NS, Y
Not sure	*32.7%*	*9.5%*	*27*	*NS*	*N*
Worried about energy bills	**Awareness rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	47.2%	2.1%	583	WRRY	NOWRRYY

Not worried about paying energy bills	67.6%	1.5%	1026	NOWRRYY	WRRY
Energy Trust Regions (combined)	**Awareness rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	63.7%	1.7%	842	PORTMET	ECSD, SOR
Willamette Valley/North Coast	59.4%	2.5%	418	WLMTNC	
Southern Oregon	53.3%	3.3%	233	SOR	PORTMET
East of the Cascades	51.1%	4.3%	143	ECSD	PORTMET
Urban / rural status	**Awareness rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Urban areas	60.9%	1.4%	1305	URB	
Small cities and suburbs	55.6%	3.3%	239	SBURB	
Small towns and rural areas	61.4%	5.2%	92	RURAL	
Utility service type	**Awareness rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	71.9%	1.7%	723	DUAL	ELE, GAS
Electric	49.0%	1.9%	705	ELE	DUAL
Gas	50.2%	3.5%	208	GAS	DUAL
Program participation type	**Awareness rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	79%	2.7%	240	DP	IP, NP
Indirect Participant	43%	6.6%	59	IP	DP, NP
Nonparticipant	57%	1.4%	1337	NP	DP, IP
Rental Property Type	**Awareness rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Public, subsidized, or affordable housing	25.7%	3.9%	131	PUBHSNG	MKTHSNG, OTH
Tribal housing	*0.0%*	*0.0%*	*1*	*TRIBHSGN*	
Housing for seniors or people with disabilities	*45.3%*	*9.9%*	*27*	*DISBHSNG*	
Market-rate or conventional housing	41.6%	3.0%	291	MKTHSNG	PUBHSNG
Other	56.6%	9.3%	30	OTH	NS, PUBHSNG
Not sure	27.4%	5.7%	68	NS	OTH

Knowledge of Energy Trust

Own/Rent	**Knowledge rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Own (incl. resident landlord)	43.8%	1.6%	1049	OWN	RENT

Rent (& other non-owners)	14.4%	1.6%	552	RENT	OTH, OWN
Other	*39.3%*	*11.1%*	*20*	*OTH*	*RENT*
Not sure	*0.0%*	*0.0%*	*5*	*NS*	
Building Type	**Knowledge rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	42.8%	1.6%	1031	SF	MH, LGMF, SMF
Mobile or manufactured home	20.7%	4.4%	87	MH	SF
Small multifamily (2-4 units)	18.9%	2.7%	223	SMF	SF
Multifamily (5+ units)	15.7%	2.3%	268	LGMF	SF
Other	*25.8%*	*9.1%*	*26*		
Income Grouping	**Knowledge rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Low-income	18.0%	1.9%	425	LOW	HIGH, MOD, MODHIGH
Moderate-income	32.1%	3.3%	223	MOD	HIGH, LOW
Moderately High-income	37.5%	2.4%	447	MODHIGH	HIGH, LOW
High-income	46.8%	2.6%	398	HIGH	LOW, MOD, MODHIGH
Race/Ethnicity	**Knowledge rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	21.8%	3.9%	110	ASIAN	NATAM, OTH, WHITE
Black/African American	17.9%	4.7%	67	BLACK	OTH, WHITE
Latino or Hispanic	13.3%	2.8%	150	LATNX	OTH, WHITE
Multiracial or mixed race	23.5%	4.6%	85	MULTI	NATAM, OTH, WHITE
Native American/Indigenous	9.1%	3.5%	66	NATAM	ASIAN, MULTI, OTH, WHITE
White Alone (not Hispanic or Latino)	36.3%	1.3%	1394	WHITE	ASIAN, BLACK, LATNX, MULTI, NATAM
Other	46.2%	8.0%	39	OTH	ASIAN, BLACK, LATNX, MULTI, NATAM
Education level	**Knowledge rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
HS grad or less	16.7%	2.3%	278	HSLESS	COLLGRAD, POSTGRAD, SMECOLL
Some college or trade school	29.5%	2.2%	462	SMECOLL	COLLGRAD, HSLESS, POSTGRAD
College graduate	40.5%	2.2%	547	COLLGRAD	HSLESS, SMECOLL
Postgraduate degree	44.7%	2.8%	326	POSTGRAD	HSLESS, SMECOLL
Don't know	*32.8%*	*14.0%*	*12*	*DK*	
Primarily Language English	**Knowledge rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
English	35.9%	1.3%	1516	ENG	NONENG
Non-English	12.0%	3.3%	109	NONENG	ENG

Energy or fuel assistance in 2021	Knowledge rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Yes	17.3%	3.3%	140	Y	N
No	36.0%	1.3%	1466	N	NS, Y
Not sure	*19.1%*	*7.9%*	*27*	*NS*	*N*
Worried about energy bills	**Knowledge rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	22.3%	1.8%	583	WRRY	NOWRRYY
Not worried about paying energy bills	41.3%	1.6%	1026	NOWRRYY	WRRY
Energy Trust Regions (combined)	**Knowledge rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	37.6%	1.7%	842	PORTMET	ECSD, SOR
Willamette Valley/North Coast	33.0%	2.4%	418	WLMTNC	
Southern Oregon	27.2%	2.9%	233	SOR	PORTMET
East of the Cascades	27.4%	3.9%	143	ECSD	PORTMET
Urban / rural status	**Knowledge rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Urban areas	34.8%	1.4%	1305	URB	
Small cities and suburbs	31.0%	3.1%	239	SBURB	
Small towns and rural areas	33.0%	5.0%	92	RURAL	
Utility service type	**Knowledge rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	44.8%	1.9%	723	DUAL	ELE, GAS
Electric	23.4%	1.7%	705	ELE	DUAL
Gas	27.5%	3.2%	208	GAS	DUAL
Program participation type	**Knowledge rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	57.6%	3.3%	240	DP	IP, NP
Indirect Participant	18.3%	5.3%	59	IP	DP, NP
Nonparticipant	30.2%	1.3%	1337	NP	DP, IP
Rental Property Type	**Knowledge rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Public, subsidized, or affordable housing	6.6%	2.2%	131	PUBHSNG	DISBHSNG, MKTHSNG
Tribal housing	*0.0%*	*0.0%*	*1*	*TRIBHSGN*	
Housing for seniors or people with disabilities	*29.6%*	*9.0%*	*27*	*DISBHSNG*	*PUBHSNG*

Market-rate or conventional housing	16.3%	2.3%	291	MKTHSNG	PUBHSNG
Other	19.8%	7.4%	30	OTH	
Not sure	12.1%	4.3%	68	NS	

Awareness of Energy Trust Energy Efficiency Services

Own/Rent	Aware of EE Services Rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Own (incl. resident landlord)	53.4%	1.6%	1049	OWN	RENT
Rent (& other non-owners)	20.8%	1.8%	552	RENT	OTH, OWN
Other	*62.3%*	*11.0%*	*20*	*OTH*	*RENT*
Not sure	*0.0%*	*0.0%*	*5*	*NS*	
Building Type	**Aware of EE Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	51.6%	1.6%	1031	SF	MH, LGMF, OTH, SMF
Mobile or manufactured home	37.3%	5.3%	87	MH	LGMF, SF
Small multifamily (2-4 units)	26.9%	3.1%	223	SMF	SF
Multifamily (5+ units)	23.2%	2.7%	268	LGMF	MH, SF
Other	*30.8%*	*9.6%*	*26*	*OTH*	*SF*
Income Grouping	**Aware of EE Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Low-income	23.6%	2.1%	425	LOW	HIGH, MOD, MODHIGH
Moderate-income	41.9%	3.4%	223	MOD	HIGH, LOW
Moderately High-income	47.7%	2.4%	447	MODHIGH	HIGH, LOW
High-income	57.0%	2.5%	398	HIGH	LOW, MOD, MODHIGH
Race/Ethnicity	**Aware of EE Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	27.3%	4.2%	110	ASIAN	LATNX, OTH, WHITE
Black/African American	25.4%	5.3%	67	BLACK	OTH, WHITE
Latino or Hispanic	14.7%	2.9%	150	LATNX	ASIAN, MULTI, OTH, WHITE
Multiracial or mixed race	40.0%	5.3%	85	MULTI	LATNX, NATAM
Native American/Indigenous	15.2%	4.4%	66	NATAM	MULTI, OTH, WHITE
White Alone (not Hispanic or Latino)	45.1%	1.3%	1394	WHITE	ASIAN, BLACK, LATNX, NATAM

Other	48.7%	8.0%	39	OTH	ASIAN, BLACK, LATNX, NATAM
Education level	**Aware of EE Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
HS grad or less	26.9%	2.8%	278	HSLESS	COLLGRAD, POSTGRAD, SMECOLL
Some college or trade school	40.6%	2.4%	462	SMECOLL	COLLGRAD, HSLESS, POSTGRAD
College graduate	48.3%	2.2%	547	COLLGRAD	HSLESS, SMECOLL
Postgraduate degree	51.2%	2.8%	326	POSTGRAD	HSLESS, SMECOLL
Don't know	*41.2%*	*14.6%*	*12*	*DK*	
Primarily Language English	**Aware of EE Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
English	44.9%	1.3%	1516	ENG	NONENG
Non-English	19.0%	3.9%	109	NONENG	ENG
Energy or fuel assistance in 2021	**Aware of EE Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Yes	23.6%	3.7%	140	Y	N
No	45.0%	1.3%	1466	N	Y
Not sure	*32.7%*	*9.5%*	*27*	*NS*	
Worried about energy bills	**Aware of EE Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	29.1%	2.0%	583	WRRY	NOWRRYY
Not worried about paying energy bills	51.3%	1.6%	1026	NOWRRYY	WRRY
Energy Trust Regions (combined)	**Aware of EE Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	46.6%	1.8%	842	PORTMET	ECSD, SOR
Willamette Valley/North Coast	40.8%	2.5%	418	WLMTNC	
Southern Oregon	37.2%	3.2%	233	SOR	PORTMET
East of the Cascades	36.3%	4.1%	143	ECSD	PORTMET
Urban / rural status	**Aware of EE Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Urban areas	43.3%	1.4%	1305	URB	
Small cities and suburbs	42.0%	3.3%	239	SBURB	
Small towns and rural areas	42.0%	5.2%	92	RURAL	

Utility service type	Aware of EE Services Rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Dual	54.5%	1.9%	723	DUAL	ELE, GAS
Electric	32.8%	1.8%	705	ELE	DUAL
Gas	30.6%	3.3%	208	GAS	DUAL
Program participation type	**Aware of EE Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	67.5%	3.1%	240	DP	IP, NP
Indirect Participant	16.0%	5.3%	59	IP	DP, NP
Nonparticipant	39.3%	1.4%	1337	NP	DP, IP
Rental Property Type	**Aware of EE Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Public, subsidized, or affordable housing	13.7%	3.1%	131	PUBHSNG	MKTHSNG, OTH
Tribal housing	*0.0%*	*0.0%*	*1*	*TRIBHSGN*	
Housing for seniors or people with disabilities	*25.3%*	*8.5%*	*27*	*DISBHSNG*	
Market-rate or conventional housing	24.1%	2.7%	291	MKTHSNG	NS, PUBHSNG
Other	37.0%	9.1%	30	OTH	NS, PUBHSNG
Not sure	11.9%	4.3%	68	NS	MKTHSNG, OTH

Awareness of Energy Trust Solar Services (Homeowners Only)

Own/Rent	Aware of Solar Services Rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Own (incl. resident landlord)	21.6%	1.3%	1055	OWN	OTH
Other	*3.6%*	*3.6%*	*20*	*OTH*	*OWN*
Not sure	*0.0%*	*0.0%*	*5*	*NS*	
Building Type	**Aware of Solar Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	23.3%	1.5%	907	SF	MH, LGMF
Mobile or manufactured home	5.6%	2.5%	75	MH	SF
Small multifamily (2-4 units)	17.6%	4.8%	64	SMF	
Multifamily (5+ units)	5.5%	3.8%	32	LGMF	SF
Other	*12.4%*	*11.5%*	*10*	*OTH*	
Income Grouping	**Aware of Solar Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**

Low-income	8.2%	2.1%	170	LOW	HIGH, MODHIGH
Moderate-income	14.8%	3.1%	148	MOD	HIGH, MODHIGH
Moderately High-income	25.5%	2.5%	335	MODHIGH	LOW, MOD
High-income	26.2%	2.5%	338	HIGH	LOW, MOD
Race/Ethnicity	**Aware of Solar Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	18.1%	4.5%	72	ASIAN	NATAM
Black/African American	19.0%	8.6%	21	BLACK	
Latino or Hispanic	10.7%	3.6%	75	LATNX	WHITE
Multiracial or mixed race	21.6%	5.8%	51	MULTI	NATAM
Native American/Indigenous	2.6%	2.6%	38	NATAM	ASIAN, MULTI, OTH, WHITE
White Alone (not Hispanic or Latino)	22.0%	1.3%	1005	WHITE	LATNX, NATAM
Other	*28.0%*	*9.0%*	*25*	*OTH*	*NATAM*
Education level	**Aware of Solar Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
HS grad or less	10.8%	2.8%	133	HSLESS	COLLGRAD, POSTGRAD
Some college or trade school	15.1%	2.2%	285	SMECOLL	COLLGRAD, POSTGRAD
College graduate	26.9%	2.3%	388	COLLGRAD	HSLESS, SMECOLL
Postgraduate degree	24.9%	2.7%	269	POSTGRAD	HSLESS, SMECOLL
Don't know	*15.9%*	*14.3%*	*8*	*DK*	
Primarily Language English	**Aware of Solar Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
English	21.9%	1.3%	1030	ENG	NONENG
Non-English	10.7%	4.5%	52	NONENG	ENG
Energy or fuel assistance in 2021	**Aware of Solar Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Yes	8.2%	4.7%	37	Y	N
No	21.6%	1.3%	1037	N	Y
Not sure	*21.9%*	*13.4%*	*11*	*NS*	
Worried about energy bills	**Aware of Solar Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	11.6%	1.9%	286	WRRY	NOWRRYY

Not worried about paying energy bills	24.7%	1.6%	784	NOWRRYY	WRRY
Energy Trust Regions (combined)	**Aware of Solar Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	23.9%	1.9%	513	PORTMET	ECSD
Willamette Valley/North Coast	20.8%	2.5%	295	WLMTNC	
Southern Oregon	17.7%	2.9%	178	SOR	
East of the Cascades	13.1%	3.3%	104	ECSD	PORTMET
Urban / rural status	**Aware of Solar Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Urban areas	22.1%	1.5%	842	URB	
Small cities and suburbs	17.1%	2.9%	175	SBURB	
Small towns and rural areas	19.3%	4.9%	73	RURAL	
Utility service type	**Aware of Solar Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	25.8%	1.8%	600	DUAL	ELE, GAS
Electric	14.5%	2.0%	319	ELE	DUAL
Gas	14.9%	2.8%	171	GAS	DUAL
Program participation type	**Aware of Solar Services Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	26.5%	3.1%	218	DP	
Indirect Participant	*0.0%*	*0.0%*	*5*	*IP*	
Nonparticipant	19.9%	1.4%	867	NP	

Appendix D. Additional Participation Rate and Awareness Sub-Analyses

Participation Rate – Free and Low-Cost Measures Only

Own/Rent	Participation Rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Own (incl. resident landlord)	14%	1.1%	1055	OWN	RENT
Rent (& other non-owners)	7%	1.1%	554	RENT	OWN
Other	*18%*	*8.6%*	*20*	*OTH*	
Not sure	*15%*	*14.6%*	*5*	*NS*	
Building Type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Mobile or manufactured home	21%	4.6%	88	MH	LGMF, SMF
Multifamily (5+ units)	8%	1.5%	269	LGMF	MH, SF
Single-family (detached)	13%	1.1%	1035	SF	LGMF
Small multifamily (2-4 units)	9%	2.1%	223	SMF	MH
Other	*13%*	*7.2%*	*26*	*OTH*	
Income Grouping	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Low-income	11%	1.6%	428	LOW	
Moderate-income	13%	2.4%	225	MOD	
Moderately High-income	11%	1.6%	449	MODHIGH	
High-income	13%	1.7%	398	HIGH	
Race/Ethnicity	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	15%	3.4%	110	ASIAN	
Black/African American	12%	4.0%	67	BLACK	
Latino or Hispanic	10%	2.5%	150	LATNX	
Multiracial or mixed race	14%	3.7%	86	MULTI	
Native American/Indigenous	9%	3.5%	66	NATAM	
White Alone (not Hispanic or Latino)	12%	0.9%	1400	WHITE	
Other	8%	4.3%	39	OTH	
Education level	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
HS grad or less	11%	1.9%	283	HSLESS	
Some college or trade school	12%	1.6%	464	SMECOLL	
College graduate	13%	1.5%	547	COLLGRAD	
Postgraduate degree	11%	1.9%	326	POSTGRAD	
Don't know	*22%*	*12.0%*	*12*	*DK*	

Primarily Language English	Participation Rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
English	12%	0.9%	1520	ENG	
Non-English	9%	2.9%	109	NONENG	
Energy or fuel assistance in 2021	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Yes	8%	2.3%	141	Y	
No	12%	0.9%	1470	N	
Not sure	*16%*	*7.6%*	*27*	*NS*	
Worried about energy bills	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	10%	1.3%	585	WRRY	
Not worried about paying energy bills	13%	1.1%	1030	NOWRRYY	
Energy Trust Regions (combined)	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	13%	1.2%	842	PORTMET	
Southern Oregon	17%	2.5%	234	SOR	WLMTNC
Willamette Valley/North Coast	10%	1.5%	425	WLMTNC	SOR
East of the Cascades	9%	2.5%	143	ECSD	
Urban / rural status	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Urban areas	12%	0.9%	1308	URB	
Small cities and suburbs	14%	2.4%	243	SBURB	
Small towns and rural areas	9%	2.9%	93	RURAL	
Utility service type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	16%	1.4%	726	DUAL	ELE, GAS
Electric	10%	1.1%	708	ELE	DUAL, GAS
Gas	3%	1.2%	210	GAS	DUAL, ELE
Program participation type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	67%	3.1%	241	DP	IP
Indirect Participant	43%	6.6%	59	IP	DP
Nonparticipant	0%	0.0%	1344	NP	
Rental Property Type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**

Public, subsidized, or affordable housing	10%	2.6%	131	PUBHSNG
Tribal housing	*0%*	*0.0%*	*1*	*TRIBHSGN*
Housing for seniors or people with disabilities	*15%*	*6.9%*	*27*	*DISBHSNG*
Market-rate or conventional housing	7%	1.5%	291	MKTHSNG
Other	3%	2.5%	31	OTH
Not sure	6%	2.8%	68	NS

Participation Rate – Appliance Measures Only

Own/Rent	Participation Rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Own (incl. resident landlord)	4%	0.7%	1055	OWN	
Rent (& other non-owners)	4%	0.8%	554	RENT	
Other	*0%*	*0.0%*	*20*	*OTH*	
Not sure	*15%*	*14.6%*	*5*	*NS*	
Building Type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	4%	0.7%	1035	SF	
Mobile or manufactured home	2%	1.5%	88	MH	
Small multifamily (2-4 units)	4%	1.4%	223	SMF	
Multifamily (5+ units)	5%	1.2%	269	LGMF	
Other	*12%*	*6.6%*	*26*	*OTH*	
Income Grouping	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Low-income	4%	1.0%	428	LOW	
Moderate-income	6%	1.7%	225	MOD	
Moderately High-income	5%	1.1%	449	MODHIGH	
High-income	4%	1.0%	398	HIGH	
Race/Ethnicity	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	7%	2.5%	110	ASIAN	
Black/African American	10%	3.7%	67	BLACK	
Latino or Hispanic	3%	1.3%	150	LATNX	
Multiracial or mixed race	2%	1.6%	86	MULTI	
Native American/Indigenous	0%	0.0%	66	NATAM	
White Alone (not Hispanic or Latino)	4%	0.5%	1400	WHITE	
Other	0%	0.0%	39	OTH	

Education level	Participation Rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
HS grad or less	5%	1.3%	283	HSLESS	
Some college or trade school	4%	1.0%	464	SMECOLL	
College graduate	4%	0.9%	547	COLLGRAD	
Postgraduate degree	4%	1.2%	326	POSTGRAD	
Don't know	*6%*	*5.7%*	*12*	*DK*	
Primarily Language English	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
English	4%	0.5%	1520	ENG	
Non-English	5%	2.2%	109	NONENG	
Energy or fuel assistance in 2021	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Yes	8%	2.3%	141	Y	
No	4%	0.5%	1470	N	
Not sure	*3%*	*2.7%*	*27*	*NS*	
Worried about energy bills	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	3%	0.7%	585	WRRY	
Not worried about paying energy bills	5%	0.7%	1030	NOWRRYY	
Energy Trust Regions (combined)	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	6%	0.8%	842	PORTMET	ECSD, SOR, WLMTNC
Willamette Valley/North Coast	3%	0.9%	425	WLMTNC	PORTMET
Southern Oregon	2%	1.0%	234	SOR	PORTMET
East of the Cascades	1%	0.6%	143	ECSD	PORTMET
Urban / rural status	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Small cities and suburbs	1%	0.7%	243	SBURB	URB
Small towns and rural areas	1%	1.4%	93	RURAL	URB
Urban areas	5%	0.6%	1308	URB	SBURB, RURAL
Utility service type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	5%	0.8%	726	DUAL	GAS
Gas	2%	1.1%	210	GAS	DUAL
Electric	4%	0.7%	708	ELE	

Program participation type	Participation Rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Direct Participant	19%	2.6%	241	DP	IP
Indirect Participant	40%	6.6%	59	IP	DP
Nonparticipant	0%	0.0%	1344	NP	
Rental Property Type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Public, subsidized, or affordable housing	6%	1.8%	131	PUBHSNG	DISBHSNG
Tribal housing	*0%*	*0.0%*	*1*	*TRIBHSGN*	
Housing for seniors or people with disabilities	*23%*	*8.4%*	*27*	*DISBHSNG*	*MKTHSNG, NS, PUBHSNG*
Market-rate or conventional housing	2%	1.0%	291	MKTHSNG	DISBHSNG
Not sure	3%	2.0%	68	NS	DISBHSNG
Other	0%	0.0%	31	OTH	

Participation Rate – Capital Measures Only

Own/Rent	Participation Rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Own (incl. resident landlord)	8%	0.9%	1055	OWN	
Rent (& other non-owners)	9%	1.2%	554	RENT	
Other	*10%*	*6.6%*	*20*	*OTH*	
Not sure	*0%*	*0.0%*	*5*	*NS*	
Building Type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	7%	0.8%	1035	SF	LGMF
Mobile or manufactured home	10%	3.3%	88	MH	
Small multifamily (2-4 units)	7%	1.8%	223	SMF	
Multifamily (5+ units)	13%	2.0%	269	LGMF	SF
Other	*12%*	*6.7%*	*26*	*OTH*	
Income Grouping	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Low-income	7%	1.2%	428	LOW	
Moderate-income	9%	1.9%	225	MOD	
Moderately High-income	7%	1.2%	449	MODHIGH	
High-income	11%	1.6%	398	HIGH	
Race/Ethnicity	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**

Asian or Pacific Islander	6%	2.3%	110	ASIAN	
Black/African American	15%	4.4%	67	BLACK	LATNX
Latino or Hispanic	2%	1.1%	150	LATNX	BLACK, WHITE
Multiracial or mixed race	5%	2.3%	86	MULTI	
Native American/Indigenous	3%	2.1%	66	NATAM	WHITE
White Alone (not Hispanic or Latino)	9%	0.8%	1400	WHITE	LATNX, NATAM, OTH
Other	3%	2.5%	39	OTH	WHITE
Education level	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
HS grad or less	8%	1.6%	283	HSLESS	
Some college or trade school	6%	1.1%	464	SMECOLL	COLLGRAD
College graduate	11%	1.4%	547	COLLGRAD	SMECOLL
Postgraduate degree	8%	1.5%	326	POSTGRAD	
Don't know	*20%*	*12.5%*	*12*	*DK*	
Primarily Language English	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
English	9%	0.7%	1520	ENG	
Non-English	6%	2.3%	109	NONENG	
Energy or fuel assistance in 2021	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Yes	10%	2.5%	141	Y	
No	8%	0.7%	1470	N	
Not sure	*0%*	*0.0%*	*27*	*NS*	
Worried about energy bills	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	6%	1.0%	585	WRRY	NOWRRYY
Not worried about paying energy bills	10%	1.0%	1030	NOWRRYY	WRRY
Energy Trust Regions (combined)	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	10%	1.0%	842	PORTMET	ECSD
Willamette Valley/North Coast	7%	1.3%	425	WLMTNC	ECSD
Southern Oregon	7%	1.7%	234	SOR	
East of the Cascades	3%	1.3%	143	ECSD	PORTMET, WLMTNC

Urban / rural status	Participation Rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Urban areas	8%	0.8%	1308	URB	
Small cities and suburbs	8%	1.8%	243	SBURB	
Small towns and rural areas	10%	3.2%	93	RURAL	
Utility service type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	8%	1.0%	726	DUAL	GAS
Electric	10%	1.1%	708	ELE	GAS
Gas	4%	1.3%	210	GAS	DUAL, ELE
Program participation type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	37%	3.2%	241	DP	IP
Indirect Participant	79%	5.4%	59	IP	DP
Nonparticipant	0%	0.0%	1344	NP	
Rental Property Type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Public, subsidized, or affordable housing	8%	2.2%	131	PUBHSNG	
Tribal housing	*0%*	*0.0%*	*1*	*TRIBHSGN*	
Housing for seniors or people with disabilities	*18%*	*7.5%*	*27*	*DISBHSNG*	
Market-rate or conventional housing	9%	1.7%	291	MKTHSNG	
Other	7%	5.0%	31	OTH	
Not sure	6%	2.5%	68	NS	

Participation Rate – 2015-2019

Own/Rent	Participation Rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Own (incl. resident landlord)	10%	1.0%	1055	OWN	RENT
Rent (& other non-owners)	5%	0.9%	554	RENT	OWN
Other	*13%*	*7.0%*	*20*	*OTH*	
Not sure	*15%*	*14.6%*	*5*	*NS*	
Building Type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	9%	0.9%	1035	SF	
Mobile or manufactured home	8%	2.9%	88	MH	
Small multifamily (2-4 units)	7%	1.7%	223	SMF	
Multifamily (5+ units)	7%	1.5%	269	LGMF	

Other	*9%*	*6.1%*	*26*	*OTH*	
Income Grouping	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Low-income	9%	1.4%	428	LOW	
Moderate-income	9%	2.0%	225	MOD	
Moderately High-income	7%	1.3%	449	MODHIGH	
High-income	9%	1.5%	398	HIGH	
Race/Ethnicity	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	13%	3.2%	110	ASIAN	LATNX
Black/African American	16%	4.5%	67	BLACK	LATNX
Latino or Hispanic	5%	1.8%	150	LATNX	ASIAN, BLACK, WHITE
Multiracial or mixed race	7%	2.7%	86	MULTI	
Native American/Indigenous	6%	2.9%	66	NATAM	
White Alone (not Hispanic or Latino)	9%	0.8%	1400	WHITE	LATNX
Other	5%	3.5%	39	OTH	
Education level	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
HS grad or less	9%	1.7%	283	HSLESS	
Some college or trade school	7%	1.2%	464	SMECOLL	
College graduate	10%	1.3%	547	COLLGRAD	
Postgraduate degree	8%	1.6%	326	POSTGRAD	
Don't know	*26%*	*13.1%*	*12*	*DK*	
Primarily Language English	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
English	9%	0.7%	1520	ENG	
Non-English	9%	2.8%	109	NONENG	
Energy or fuel assistance in 2021	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Yes	8%	2.2%	141	Y	
No	9%	0.8%	1470	N	
Not sure	*5%*	*4.9%*	*27*	*NS*	
Worried about energy bills	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	7%	1.1%	585	WRRY	

Not worried about paying energy bills	9%	0.9%	1030	NOWRRYY	
Energy Trust Regions (combined)	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	10%	1.0%	842	PORTMET	ECSD
Willamette Valley/North Coast	7%	1.3%	425	WLMTNC	
Southern Oregon	10%	2.0%	234	SOR	
East of the Cascades	4%	1.7%	143	ECSD	PORTMET
Urban / rural status	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Urban areas	9%	0.8%	1308	URB	
Small cities and suburbs	7%	1.8%	243	SBURB	
Small towns and rural areas	6%	2.6%	93	RURAL	
Utility service type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	11%	1.2%	726	DUAL	ELE, GAS
Electric	6%	0.9%	708	ELE	DUAL
Gas	4%	1.3%	210	GAS	DUAL
Program participation type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	46%	3.3%	241	DP	
Indirect Participant	42%	6.6%	59	IP	
Nonparticipant	0%	0.0%	1344	NP	
Rental Property Type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Public, subsidized, or affordable housing	6%	2.1%	131	PUBHSNG	
Tribal housing	*0%*	*0.0%*	*1*	*TRIBHSGN*	
Housing for seniors or people with disabilities	*11%*	*6.1%*	*27*	*DISBHSNG*	
Market-rate or conventional housing	5%	1.3%	291	MKTHSNG	
Other	3%	2.5%	31	OTH	
Not sure	3%	1.9%	68	NS	

Participation Rate – 2020-2021

Own/Rent	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**

Own (incl. resident landlord)	12%	1.0%	1055	OWN	RENT
Rent (& other non-owners)	8%	1.2%	554	RENT	OWN
Other	*15%*	*8.4%*	*20*	*OTH*	
Not sure	*0%*	*0.0%*	*5*	*NS*	
Building Type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	11%	1.0%	1035	SF	
Mobile or manufactured home	17%	4.3%	88	MH	SMF
Small multifamily (2-4 units)	7%	1.9%	223	SMF	MH
Multifamily (5+ units)	10%	1.8%	269	LGMF	
Other	*15%*	*7.1%*	*26*	*OTH*	
Income Grouping	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Low-income	8%	1.3%	428	LOW	HIGH
Moderate-income	11%	2.2%	225	MOD	
Moderately High-income	11%	1.6%	449	MODHIGH	
High-income	13%	1.8%	398	HIGH	LOW
Race/Ethnicity	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	12%	3.1%	110	ASIAN	
Black/African American	7%	3.2%	67	BLACK	
Latino or Hispanic	7%	2.0%	150	LATNX	
Multiracial or mixed race	12%	3.5%	86	MULTI	
Native American/Indigenous	6%	2.9%	66	NATAM	
White Alone (not Hispanic or Latino)	10%	0.8%	1400	WHITE	OTH
Other	3%	2.5%	39	OTH	WHITE
Education level	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
HS grad or less	8%	1.7%	283	HSLESS	
Some college or trade school	10%	1.5%	464	SMECOLL	
College graduate	12%	1.4%	547	COLLGRAD	
Postgraduate degree	11%	1.8%	326	POSTGRAD	
Don't know	*6%*	*5.7%*	*12*	*DK*	
Primarily Language English	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**

English	11%	0.8%	1520	ENG	
Non-English	7%	2.6%	109	NONENG	
Energy or fuel assistance in 2021	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Yes	8%	2.4%	141	Y	
No	11%	0.8%	1470	N	
Not sure	*11%*	*6.2%*	*27*	*NS*	
Worried about energy bills	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	7%	1.1%	585	WRRY	NOWRRYY
Not worried about paying energy bills	13%	1.1%	1030	NOWRRYY	WRRY
Energy Trust Regions (combined)	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	12%	1.2%	842	PORTMET	ECSD
Willamette Valley/North Coast	8%	1.5%	425	WLMTNC	
Southern Oregon	10%	2.0%	234	SOR	
East of the Cascades	6%	2.0%	143	ECSD	PORTMET
Urban / rural status	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Urban areas	10%	0.9%	1308	URB	
Small cities and suburbs	11%	2.1%	243	SBURB	
Small towns and rural areas	9%	3.1%	93	RURAL	
Utility service type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	12%	1.3%	726	DUAL	GAS
Electric	10%	1.2%	708	ELE	GAS
Gas	4%	1.4%	210	GAS	DUAL, ELE
Program participation type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	54%	3.3%	241	DP	
Indirect Participant	58%	6.6%	59	IP	
Nonparticipant	0%	0.0%	1344	NP	
Rental Property Type	**Participation Rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**

Public, subsidized, or affordable housing	8%	2.4%	131	PUBHSNG
Tribal housing	*0%*	*0.0%*	*1*	*TRIBHSGN*
Housing for seniors or people with disabilities	*20%*	*8.1%*	*27*	*DISBHSNG*
Market-rate or conventional housing	7%	1.6%	291	MKTHSNG
Other	7%	5.0%	31	OTH
Not sure	8%	3.2%	68	NS

Participation Level – Participants Only

Own/Rent	Participation Level ($)	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Own (incl. resident landlord)	$116.60	$16.82	216	OWN	RENT
Rent (& other non-owners)	$56.88	$13.72	77	RENT	OWN
Other	*$112.63*	*$74.01*	*6*	*OTH*	
Not sure	*$2.06*	*$0.00*	*1*	*NS*	
Building Type	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	$113.74	$17.86	195	SF	LGMF
Mobile or manufactured home	*$176.97*	*$57.45*	*21*	*MH*	*LGMF*
Small multifamily (2-4 units)	*$79.70*	*$20.27*	*27*	*SMF*	*LGMF*
Multifamily (5+ units)	$31.45	$6.52	51	LGMF	MH, SF, SMF
Other	*$46.37*	*$23.97*	*6*	*OTH*	
Income Grouping	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Low-income	$71.71	$19.30	72	LOW	
Moderate-income	$98.30	$26.53	45	MOD	
Moderately High-income	$119.62	$29.97	74	MODHIGH	
High-income	$106.86	$22.80	85	HIGH	
Race/Ethnicity - updated unweighted	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	*$43.65*	*$7.75*	*27*	*ASIAN*	*WHITE*
Black/African American	*$39.41*	*$16.23*	*16*	*BLACK*	*WHITE*
Latino or Hispanic	*$28.05*	*$6.37*	*18*	*LATNX*	*WHITE*

Multiracial or mixed race	*$36.75*	*$10.26*	*16*	*MULTI*	*WHITE*
Native American/Indigenous	*$89.53*	*$47.33*	*8*	*NATAM*	
White Alone (not Hispanic or Latino)	$117.97	$15.17	269	WHITE	ASIAN, BLACK, LATNX, MULTI, OTH
Other	*$38.78*	*$14.25*	*3*	*OTH*	*WHITE*
Education level	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
HS grad or less	$104.95	$40.09	46	HSLESS	DK
Some college or trade school	$59.77	$15.44	77	SMECOLL	COLLGRAD, DK
College graduate	$131.13	$24.60	115	COLLGRAD	DK, SMECOLL
Postgraduate degree	$105.78	$27.89	58	POSTGRAD	DK
Don't know	*$22.08*	*$7.08*	*4*	*DK*	*COLLGRAD, HSLESS, POSTGRAD, SMECOLL*
Primarily Language English	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
English	$106.94	$13.97	282	ENG	NONENG
Non-English	*$36.96*	*$12.72*	*18*	*NONENG*	*ENG*
Energy or fuel assistance in 2021	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Yes	*$45.74*	*$16.89*	*24*	*Y*	*N, NS*
No	$108.86	$14.34	272	N	NS, Y
Not sure	*$7.80*	*$4.32*	*4*	*NS*	*N, Y*
Worried about energy bills	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	$68.17	$13.34	81	WRRY	
Not worried about paying energy bills	$115.56	$17.28	218	NOWRRYY	
Energy Trust Regions (combined)	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	$80.05	$12.41	181	PORTMET	
Willamette Valley/North Coast	$123.28	$33.36	60	WLMTNC	
Southern Oregon	$179.18	$56.04	45	SOR	
East of the Cascades	*$87.44*	*$46.54*	*14*	*ECSD*	

Urban / rural status	Participation Level ($)	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Urban areas	$88.37	$12.61	247	URB	
Small cities and suburbs	$151.87	$51.32	39	SBURB	
Small towns and rural areas	*$270.70*	*$107.72*	*14*	*RURAL*	
Utility service type	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	$89.50	$16.89	165	DUAL	GAS
Electric	$132.48	$23.16	120	ELE	GAS
Gas	*$40.59*	*$6.15*	*15*	*GAS*	*DUAL, ELE*
Program participation type	**Participation Level ($)**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	$116.25	$15.53	241	DP	IP
Indirect Participant	$33.01	$8.86	59	IP	DP
Nonparticipant	$0.00	$0.00	1344	NP	

Appendix E. Additional Participation Rate and Awareness Multi-Level Crosstabulations

Within this section, results are shown for all groups; however, multi-level crosstabulations can contain small group sizes. Small sample sizes (less than n=70) and any calculation with high standard error should be interpreted with caution. Where race/ethnicity are included in crosstabs, data include the oversampled data are shown unweighted.

Participation Rate Multi-Level Crosstabulations

Race/Ethnicity Group by Ownership (Participation Rate) (Unweighted)				
Ownership	**Race/Ethnicity**	**Participation rate**	**Std. error**	**N (unweighted)**
Own (incl. resident landlord)	Asian or Pacific Islander	28%	5%	71
	Black/African American	*24%*	*9%*	*21*
	Latino or Hispanic	13%	4%	69
	Multiracial or mixed race	24%	6%	50
	Native American/Indigenous	16%	6%	37
	White Alone (not Hispanic or Latino)	21%	1%	979
	Other	*13%*	*7%*	*23*
Rent (& other non-owners)	Asian or Pacific Islander	18%	6%	38
	Black/African American	24%	6%	46
	Latino or Hispanic	11%	4%	75
	Multiracial or mixed race	11%	5%	35
	Native American/Indigenous	*7%*	*5%*	*28*
	White Alone (not Hispanic or Latino)	15%	2%	395
	Other	0%	0%	14
Other	*Asian or Pacific Islander*	*0%*	*0%*	*1*
	Latino or Hispanic	*0%*	*0%*	*3*
	Native American/Indigenous	*0%*	*0%*	*1*
	White Alone (not Hispanic or Latino)	*40%*	*13%*	*15*
	Other	*0%*	*0%*	*2*
Not sure	*Latino or Hispanic*	*33%*	*27%*	*3*
	Multiracial or mixed race	*0%*	*0%*	*1*
	White Alone (not Hispanic or Latino)	*0%*	*0%*	*1*

Ownership by Income-level (Participation Rate)

Ownership	Income level	Participation rate	Std. error	N (unweighted)
Own (incl. resident landlord)	Low-income	18%	3%	156
	Moderate-income	26%	4%	144
	Moderately High-income	21%	2%	327
	High-income	23%	2%	334
Rent (& other non-owners)	Low-income	15%	2%	258
	Moderate-income	10%	3%	77
	Moderately High-income	11%	3%	114
	High-income	17%	5%	60
Other	*Low-income*	*29%*	*18%*	*7*
	Moderate-income	*33%*	*27%*	*3*
	Moderately High-income	*0%*	*0%*	*6*
	High-income	*55%*	*30%*	*3*
Not sure	*Low-income*	*29%*	*25%*	*3*

Building type by Income-level (Participation Rate)

Ownership	Income level	Participation rate	Std. error	N (unweighted)
Single-family (detached)	Low-income	15%	3%	179
	Moderate-income	23%	4%	133
	Moderately High-income	20%	2%	311
	High-income	22%	2%	315
Mobile or manufactured home	Low-income	17%	6%	38
	Moderate-income	*23%*	*10%*	*18*
	Moderately High-income	*36%*	*11%*	*22*
	High-income	*57%*	*23%*	*5*
Small multifamily (2-4 units)	Low-income	13%	4%	90
	Moderate-income	19%	7%	36
	Moderately High-income	10%	5%	45
	High-income	20%	7%	35
Multifamily (5+ units)	Low-income	23%	4%	106
	Moderate-income	9%	4%	36
	Moderately High-income	8%	3%	66
	High-income	21%	6%	42
Other	*Low-income*	*24%*	*12%*	*14*
	Moderate-income	*100%*	*0%*	*1*

	Moderately High-income	*0%*	*0%*	*5*
	High-income	*0%*	*0%*	*1*

Building type by Ownership (Participation Rate)				
Ownership	**Building type**	**Participation rate**	**Std. error**	**N (unweighted)**
Own (incl. resident landlord)	Single-family (detached)	21%	1%	895
	Mobile or manufactured home	26%	6%	65
	Small multifamily (2-4 units)	24%	6%	60
	Multifamily (5+ units)	19%	7%	28
	Other	*35%*	*20%*	*6*
Rent (& other non-owners)	Single-family (detached)	12%	3%	128
	Mobile or manufactured home	*9%*	*9%*	*13*
	Small multifamily (2-4 units)	9%	2%	159
	Multifamily (5+ units)	17%	2%	237
	Other	*25%*	*11%*	*16*
Other	*Single-family (detached)*	*12%*	*12%*	*6*
	Mobile or manufactured home	*40%*	*16%*	*10*
	Multifamily (5+ units)	*100%*	*0%*	*1*
	Other	*0%*	*0%*	*3*
Not sure	*Single-family (detached)*	*0%*	*0%*	*2*
	Small multifamily (2-4 units)	*100%*	*0%*	*1*
	Multifamily (5+ units)	*0%*	*0%*	*2*

Income-level by Education-level (Participation Rate)				
Income level	**Education level**	**Participation rate**	**Std. error**	**N (unweighted)**
Low-income	HS grad or less	15%	3%	161
	Some college or trade school	14%	3%	149
	College graduate	20%	4%	95
	Postgraduate degree	*24%*	*10%*	*18*
	Don't know	*41%*	*25%*	*4*
	HS grad or less	19%	6%	45

Moderate-income	Some college or trade school	19%	5%	72
	College graduate	19%	5%	75
	Postgraduate degree	30%	8%	33
Moderately High-income	HS grad or less	21%	7%	44
	Some college or trade school	19%	4%	140
	College graduate	21%	3%	157
	Postgraduate degree	11%	3%	107
High-income	*HS grad or less*	*18%*	*12%*	*12*
	Some college or trade school	17%	5%	68
	College graduate	24%	3%	172
	Postgraduate degree	22%	4%	146

Income-level by Urban-rural status (Participation Rate)				
Income level	**Urbanization**	**Participation rate**	**Std. error**	**N (unweighted)**
Low-income	Small cities and suburbs	14%	4%	75
	Small towns and rural areas	18%	7%	33
	Urban areas	17%	2%	320
Moderate-income	Small cities and suburbs	18%	7%	37
	Small towns and rural areas	*23%*	*12%*	*12*
	Urban areas	21%	3%	176
Moderately High-income	Small cities and suburbs	18%	5%	68
	Small towns and rural areas	*8%*	*5%*	*26*
	Urban areas	19%	2%	355
High-income	Small cities and suburbs	21%	7%	40
	Small towns and rural areas	*23%*	*12%*	*13*
	Urban areas	22%	2%	345

Urban-rural status by Energy Trust Region (Participation Rate)				
Urbanization	**Region**	**Participation rate**	**Std. error**	**N (unweighted)**
Small cities and suburbs	East of the Cascades	6%	3%	62
	Portland Metro	*37%*	*29%*	*3*
	Southern Oregon	26%	5%	91

	Willamette Valley/North Coast	16%	4%	87
Small towns and rural areas	*East of the Cascades*	*0%*	*0%*	*19*
	Portland Metro	*0%*	*0%*	*2*
	Southern Oregon	*14%*	*7%*	*26*
	Willamette Valley/North Coast	23%	6%	46
Urban areas	East of the Cascades	16%	5%	62
	Portland Metro	22%	1%	837
	Southern Oregon	17%	4%	117
	Willamette Valley/North Coast	14%	2%	292

Energy Trust Region by Utility Service (Participation Rate)				
Utility service	**Region**	**Participation rate**	**Std. error**	**N (unweighted)**
Dual	East of the Cascades	13%	5%	48
	Portland Metro	25%	2%	453
	Southern Oregon	24%	4%	93
	Willamette Valley/North Coast	20%	4%	132
Electric	East of the Cascades	14%	5%	54
	Portland Metro	18%	2%	362
	Southern Oregon	19%	4%	118
	Willamette Valley/North Coast	14%	3%	174
Gas	East of the Cascades	0%	0%	41
	Portland Metro	*3%*	*3%*	*27*
	Southern Oregon	*10%*	*7%*	*23*
	Willamette Valley/North Coast	11%	3%	119

Awareness Multi-Level Crosstabulations

Race/Ethnicity Group by Ownership (Awareness Rate) (unweighted)				
Ownership	**Race/Ethnicity**	**Awareness rate**	**Std. error**	**N (unweighted)**
Own (incl. resident landlord)	Asian or Pacific Islander	52%	6%	71
	Black/African American	*67%*	*10%*	*21*
	Latino or Hispanic	39%	6%	69
	Multiracial or mixed race	69%	7%	49
	Native American/Indigenous	30%	8%	37
	White Alone (not Hispanic or Latino)	73%	1%	974
	Other	*78%*	*9%*	*23*
Rent (& other non-owners)	Asian or Pacific Islander	18%	6%	38
	Black/African American	20%	6%	46
	Latino or Hispanic	21%	5%	75
	Multiracial or mixed race	46%	8%	35
	Native American/Indigenous	*29%*	*9%*	*28*
	White Alone (not Hispanic or Latino)	40%	2%	394
	Other	*43%*	*13%*	*14*
Other	*Asian or Pacific Islander*	*0%*	*0%*	*1*
	Latino or Hispanic	*33%*	*27%*	*3*
	Native American/Indigenous	*0%*	*0%*	*1*
	White Alone (not Hispanic or Latino)	*73%*	*11%*	*15*
	Other	*100%*	*0%*	*2*
Not sure	*Latino or Hispanic*	*0%*	*0%*	*3*
	Multiracial or mixed race	*0%*	*0%*	*1*
	White Alone (not Hispanic or Latino)	*0%*	*0%*	*1*

Ownership by Income-level (Awareness Rate)				
Ownership	**Income level**	**Awareness rate**	**Std. error**	**N (unweighted)**
Own (incl. resident landlord)	Low-income	49%	4%	154
	Moderate-income	73%	4%	142
	Moderately High-income	76%	2%	326
	High-income	76%	2%	334
	Low-income	30%	3%	257
	Moderate-income	50%	6%	77

Rent (& other non-owners)	Moderately High-income	40%	5%	113
	High-income	47%	7%	60
Other	*Low-income*	*90%*	*9%*	*7*
	Moderate-income	*0%*	*0%*	*3*
	Moderately High-income	*67%*	*19%*	*6*
	High-income	*100%*	*0%*	*3*
Not sure	*Low-income*	*0%*	*0%*	*3*

Building type by Income-level (Awareness Rate)

Ownership	Income level	Awareness rate	Std. error	N (unweighted)
Single-family (detached)	Low-income	45%	4%	178
	Moderate-income	74%	4%	131
	Moderately High-income	76%	2%	310
	High-income	73%	3%	315
Mobile or manufactured home	Low-income	49%	8%	38
	Moderate-income	*49%*	*12%*	*18*
	Moderately High-income	*52%*	*11%*	*21*
	High-income	*77%*	*20%*	*5*
Small multifamily (2-4 units)	Low-income	29%	5%	90
	Moderate-income	50%	9%	36
	Moderately High-income	37%	7%	45
	High-income	77%	7%	35
Multifamily (5+ units)	Low-income	31%	5%	105
	Moderate-income	48%	9%	36
	Moderately High-income	49%	6%	66
	High-income	57%	8%	42
Other	*Low-income*	*37%*	*14%*	*14*
	Moderate-income	*100%*	*0%*	*1*
	Moderately High-income	*58%*	*22%*	*5*
	High-income	*100%*	*0%*	*1*

Building type by Ownership (Awareness Rate)

Ownership	Building type	Awareness rate	Std. error	N (unweighted)

Own (incl. resident landlord)	Single-family (detached)	72%	2%	892
	Mobile or manufactured home	60%	6%	64
	Small multifamily (2-4 units)	73%	6%	60
	Multifamily (5+ units)	*63%*	*9%*	*27*
	Other	*68%*	*20%*	*6*
Rent (& other non-owners)	Single-family (detached)	44%	5%	127
	Mobile or manufactured home	*15%*	*10%*	*13*
	Small multifamily (2-4 units)	28%	4%	159
	Multifamily (5+ units)	41%	3%	237
	Other	*37%*	*13%*	*16*
Other	*Single-family (detached)*	*100%*	*0%*	*6*
	Mobile or manufactured home	*49%*	*16%*	*10*
	Multifamily (5+ units)	*100%*	*0%*	*1*
	Other	*75%*	*23%*	*3*
Not sure	*Single-family (detached)*	*0%*	*0%*	*2*
	Small multifamily (2-4 units)	*0%*	*0%*	*1*
	Multifamily (5+ units)	*0%*	*0%*	*2*

Income-level by Education-level (Awareness Rate)

Income level	Education level	Awareness rate	Std. error	N (unweighted)
Low-income	HS grad or less	30%	4%	159
	Some college or trade school	43%	4%	148
	College graduate	42%	5%	95
	Postgraduate degree	*56%*	*12%*	*18*
	Don't know	*59%*	*25%*	*4*
Moderate-income	HS grad or less	56%	8%	44
	Some college or trade school	61%	6%	71
	College graduate	65%	6%	75
	Postgraduate degree	74%	7%	33
Moderately High-income	HS grad or less	68%	7%	42
	Some college or trade school	65%	4%	140
	College graduate	70%	4%	157
	Postgraduate degree	66%	5%	107
High-income	*HS grad or less*	*77%*	*12%*	*12*
	Some college or trade school	71%	6%	68
	College graduate	73%	3%	172

	Postgraduate degree	71%	4%	146

Income-level by Urban-rural status (Awareness Rate)				
Income level	**Urbanization**	**Awareness rate**	**Std. error**	**N (unweighted)**
Low-income	Small cities and suburbs	37%	6%	73
	Small towns and rural areas	38%	9%	33
	Urban areas	39%	3%	319
Moderate-income	Small cities and suburbs	50%	8%	37
	Small towns and rural areas	*62%*	*15%*	*11*
	Urban areas	66%	4%	175
Moderately High-income	Small cities and suburbs	73%	5%	67
	Small towns and rural areas	85%	7%	26
	Urban areas	65%	3%	354
High-income	Small cities and suburbs	63%	8%	40
	Small towns and rural areas	*80%*	*11%*	*13*
	Urban areas	73%	2%	345

Urban-rural status by Energy Trust Region (Awareness Rate)				
Urbanization	**Region**	**Awareness rate**	**Std. error**	**N (unweighted)**
Small cities and suburbs	East of the Cascades	47%	6%	62
	Portland Metro	*74%*	*23%*	*3*
	Southern Oregon	59%	5%	91
	Willamette Valley/North Coast	57%	6%	83
Small towns and rural areas	*East of the Cascades*	*33%*	*11%*	*19*
	Portland Metro	*100%*	*0%*	*2*
	Southern Oregon	*68%*	*9%*	*26*
	Willamette Valley/North Coast	68%	7%	45
Urban areas	East of the Cascades	59%	6%	62
	Portland Metro	64%	2%	837
	Southern Oregon	47%	5%	116
	Willamette Valley/North Coast	59%	3%	290

Energy Trust Region by Utility Service (Awareness Rate)				
Utility service	**Region**	**Awareness rate**	**Std. error**	**N (unweighted)**
Dual	East of the Cascades	70%	7%	48
	Portland Metro	75%	2%	453
	Southern Oregon	58%	5%	92
	Willamette Valley/North Coast	72%	4%	130
Electric	East of the Cascades	46%	7%	54
	Portland Metro	48%	3%	362
	Southern Oregon	49%	5%	118
	Willamette Valley/North Coast	51%	4%	171
Gas	East of the Cascades	31%	8%	41
	Portland Metro	*50%*	*10%*	*27*
	Southern Oregon	*56%*	*11%*	*23*
	Willamette Valley/North Coast	56%	5%	117

Appendix F. Heating and Cooling Systems – Additional Analysis

Heating Systems Crosstabulations

Heating System by Home Ownership Status				
Heating System	**Own (incl. resident landlord)**	**Rent (& other non-owners)**	**Other**	**Not sure**
Natural gas forced air furnace	61%	21%	37%	47%
Natural as radiant heat	6%	5%	0%	47%
Electric forced air furnace	9%	14%	22%	15%
Electric central heat pump	17%	7%	22%	22%
Electric ductless heat pump	5%	5%	4%	0%
Electric baseboards or wall heaters	7%	42%	9%	15%
Electric radiant heat	2%	5%	0%	0%
Oil furnace	2%	0%	0%	0%
Propane/bottled gas furnace	1%	1%	5%	0%
Woodstove or fireplace	11%	4%	0%	47%
No heating	0%	0%	0%	0%
Other	5%	5%	11%	0%
Not sure	0%	5%	0%	22%
VALID N (columns)	***1090***	***515***	***20***	***5***

Heating System by Building Type					
Heating System	**Single-family (detached)**	**Mobile or manufactured home**	**Small multifamily (2-4 units)**	**Multifamily (5+ units)**	**Other**
Natural gas forced air furnace	63%	18%	30%	9%	21%
Natural as radiant heat	6%	2%	6%	3%	9%
Electric forced air furnace	8%	36%	8%	15%	10%
Electric central heat pump	15%	36%	7%	8%	11%
Electric ductless heat pump	4%	5%	5%	7%	10%
Electric baseboards or wall heaters	7%	3%	39%	53%	40%
Electric radiant heat	2%	2%	6%	5%	3%
Oil furnace	2%	1%	1%	0%	0%
Propane/bottled gas furnace	1%	3%	0%	0%	5%
Woodstove or fireplace	11%	10%	7%	1%	9%
No heating	0%	1%	0%	0%	5%
Other	5%	8%	6%	6%	16%
Not sure	1%	0%	3%	5%	0%
VALID N (columns)	***1073***	***88***	***213***	***241***	***23***

Heating System by Income				
Heating System	**Low-income**	**Moderate-income**	**Moderately High-income**	**High-income**
Natural gas forced air furnace	25%	42%	53%	65%
Natural as radiant heat	6%	4%	5%	7%
Electric forced air furnace	13%	12%	7%	11%
Electric central heat pump	12%	15%	15%	16%
Electric ductless heat pump	5%	5%	5%	4%
Electric baseboards or wall heaters	35%	20%	15%	6%
Electric radiant heat	4%	3%	2%	1%
Oil furnace	1%	1%	2%	1%
Propane/bottled gas furnace	1%	1%	1%	0%
Woodstove or fireplace	9%	12%	8%	6%
No heating	0%	0%	0%	0%
Other	7%	6%	6%	3%
Not sure	3%	2%	1%	1%
VALID N (columns)	***411***	***220***	***448***	***415***

Heating System by Race/Ethnicity (unweighted)							
Heating System	**Asian or Pacific Islander**	**Black/ African American**	**Latino or Hispanic**	**Multi-racial or mixed race**	**Native American/ Indigenous**	**White Alone (not Hispanic or Latino)**	**Other**
Natural gas forced air furnace	51%	34%	29%	44%	23%	46%	46%
Natural as radiant heat	5%	3%	11%	8%	2%	4%	0%
Electric forced air furnace	13%	11%	12%	12%	17%	11%	13%
Electric central heat pump	11%	5%	11%	6%	24%	15%	5%
Electric ductless heat pump	4%	5%	7%	5%	2%	5%	8%
Electric baseboards or wall heaters	22%	41%	27%	21%	15%	17%	26%
Electric radiant heat	3%	5%	7%	3%	0%	3%	5%
Oil furnace	2%	0%	2%	1%	0%	2%	0%
Propane/bottled gas furnace	0%	0%	1%	5%	2%	2%	3%
Woodstove or fireplace	5%	3%	7%	13%	42%	10%	13%
No heating	0%	2%	1%	0%	0%	0%	0%
Other	6%	0%	5%	8%	8%	6%	8%
Not sure	1%	2%	8%	5%	2%	1%	0%
VALID N (columns)	***110***	***64***	***150***	***86***	***66***	***1397***	***39***

Heating System by Education					
Heating System	**HS grad or less**	**Some college**	**College graduate**	**Postgraduate degree**	**Don't know**

		or trade school			
Natural gas forced air furnace	27%	42%	54%	61%	66%
Natural as radiant heat	7%	4%	5%	6%	21%
Electric forced air furnace	16%	10%	11%	7%	22%
Electric central heat pump	14%	14%	14%	13%	15%
Electric ductless heat pump	7%	5%	4%	5%	6%
Electric baseboards or wall heaters	26%	22%	15%	11%	15%
Electric radiant heat	5%	3%	3%	3%	6%
Oil furnace	1%	2%	1%	2%	6%
Propane/bottled gas furnace	2%	1%	0%	1%	6%
Woodstove or fireplace	12%	9%	7%	8%	15%
No heating	0%	0%	0%	0%	0%
Other	6%	6%	6%	4%	0%
Not sure	2%	2%	2%	2%	14%
VALID N (columns)	***269***	***453***	***555***	***340***	***13***

Heating System by English/Non-English

Heating System	English	Non-English
Natural gas forced air furnace	49%	26%
Natural as radiant heat	5%	12%
Electric forced air furnace	11%	15%
Electric central heat pump	14%	14%
Electric ductless heat pump	5%	8%
Electric baseboards or wall heaters	17%	28%
Electric radiant heat	3%	5%
Oil furnace	1%	2%
Propane/bottled gas furnace	1%	1%
Woodstove or fireplace	9%	7%
No heating	0%	1%
Other	5%	4%
Not sure	2%	6%
VALID N (columns)	***1520***	***106***

Heating System by Worried About Paying Energy Bills

Heating System	Worried about paying energy bills	Not worried about paying energy bills
Natural gas forced air furnace	35%	55%

Natural as radiant heat	6%	5%
Electric forced air furnace	13%	10%
Electric central heat pump	13%	14%
Electric ductless heat pump	5%	5%
Electric baseboards or wall heaters	27%	13%
Electric radiant heat	4%	2%
Oil furnace	2%	1%
Propane/bottled gas furnace	2%	1%
Woodstove or fireplace	9%	8%
No heating	0%	0%
Other	6%	5%
Not sure	3%	1%
VALID N (columns)	***574***	***1035***

Heating System by Region

Heating System	**Portland Metro**	**Willamette Valley/North Coast**	**Southern Oregon**	**East of the Cascades**
Natural gas forced air furnace	52%	45%	36%	48%
Natural as radiant heat	5%	6%	5%	6%
Electric forced air furnace	10%	11%	15%	8%
Electric central heat pump	11%	15%	26%	11%
Electric ductless heat pump	3%	7%	7%	8%
Electric baseboards or wall heaters	20%	21%	9%	16%
Electric radiant heat	4%	2%	2%	3%
Oil furnace	1%	0%	3%	1%
Propane/bottled gas furnace	0%	0%	3%	3%
Woodstove or fireplace	6%	6%	16%	20%
No heating	0%	0%	0%	0%
Other	5%	5%	7%	10%
Not sure	3%	2%	0%	0%
VALID N (columns)	***891***	***391***	***227***	***129***

Heating System by Urban/Rural

Heating System	**Urban areas**	**Small cities and suburbs**	**Small towns and rural areas**
Natural gas forced air furnace	49%	46%	24%
Natural as radiant heat	5%	6%	7%
Electric forced air furnace	11%	10%	11%
Electric central heat pump	13%	15%	19%
Electric ductless heat pump	4%	8%	10%

Electric baseboards or wall heaters	18%	17%	23%
Electric radiant heat	3%	2%	4%
Oil furnace	1%	2%	3%
Propane/bottled gas furnace	1%	2%	6%
Woodstove or fireplace	7%	10%	27%
No heating	0%	0%	0%
Other	5%	8%	8%
Not sure	2%	1%	1%
VALID N (columns)	***1348***	***213***	***77***

Heating System by Fuel Service Type			
Heating System	**Dual**	**Electric**	**Gas**
Natural gas forced air furnace	80%	4%	69%
Natural as radiant heat	8%	2%	11%
Electric forced air furnace	7%	16%	6%
Electric central heat pump	9%	20%	14%
Electric ductless heat pump	2%	8%	5%
Electric baseboards or wall heaters	3%	40%	4%
Electric radiant heat	1%	6%	1%
Oil furnace	0%	3%	0%
Propane/bottled gas furnace	0%	2%	0%
Woodstove or fireplace	6%	12%	6%
No heating	0%	0%	0%
Other	3%	8%	6%
Not sure	2%	3%	0%
VALID N (columns)	***799***	***675***	***164***

Heating System by Participation Type			
Heating System	**Direct Participant**	**Indirect Participant**	**Nonparticipant**
Natural gas forced air furnace	64%	6%	46%
Natural as radiant heat	3%	6%	6%
Electric forced air furnace	11%	17%	11%
Electric central heat pump	17%	13%	13%
Electric ductless heat pump	5%	7%	4%
Electric baseboards or wall heaters	6%	40%	20%
Electric radiant heat	1%	7%	3%
Oil furnace	1%	0%	1%
Propane/bottled gas furnace	0%	0%	1%
Woodstove or fireplace	10%	2%	9%
No heating	0%	0%	0%
Other	3%	3%	6%
Not sure	0%	6%	2%
VALID N (columns)	***263***	***49***	***1326***

Heating System by Housing Type						
Heating System	**Public, subsidized, or affordable housing**	**Tribal housing**	**Housing for seniors or people with disabilities**	**Market-rate or conventional housing**	**Other**	**Not sure**
Natural gas forced air furnace	13%	0%	5%	28%	15%	15%
Natural as radiant heat	7%	0%	0%	4%	15%	6%
Electric forced air furnace	16%	100%	7%	14%	11%	16%
Electric central heat pump	6%	0%	29%	4%	18%	11%
Electric ductless heat pump	3%	0%	3%	6%	3%	5%
Electric baseboards or wall heaters	47%	0%	58%	40%	45%	36%
Electric radiant heat	5%	0%	0%	3%	11%	13%
Oil furnace	0%	0%	0%	0%	0%	0%
Propane/bottled gas furnace	1%	0%	0%	0%	0%	3%
Woodstove or fireplace	4%	0%	0%	5%	6%	1%
No heating	1%	0%	0%	0%	0%	2%
Other	7%	0%	3%	4%	7%	8%
Not sure	4%	0%	0%	4%	4%	12%
VALID N (columns)	***119***	***1***	***25***	***273***	***29***	***65***

Cooling Systems Crosstabulations

Cooling System by Home Ownership Status				
Cooling System	**Own (incl. resident landlord)**	**Rent (& other non-owners)**	**Other**	**Not sure**
Central air conditioner	53%	17%	27%	38%
Central heat pump	17%	3%	12%	0%
Ductless heat pump	6%	4%	4%	0%
Window air conditioner	12%	32%	29%	0%
Portable air conditioner	8%	30%	21%	0%
Ceiling fans	21%	21%	9%	22%
Whole house fan	3%	5%	0%	22%
Evaporative / swamp cooler	1%	1%	0%	0%
No cooling	7%	10%	13%	15%
Other	4%	6%	7%	0%
Not sure	0%	1%	0%	47%
VALID N (columns)	***1091***	***516***	***20***	***5***

Cooling System By Building Type					
Cooling System	**Single-family (detached)**	**Mobile or manufactured home**	**Small multifamily (2-4 units)**	**Multifamily (5+ units)**	**Other**
Central air conditioner	53%	16%	23%	16%	23%
Central heat pump	15%	33%	5%	3%	9%
Ductless heat pump	6%	4%	4%	6%	6%
Window air conditioner	14%	24%	31%	25%	28%
Portable air conditioner	9%	13%	30%	30%	12%
Ceiling fans	21%	15%	22%	20%	15%
Whole house fan	3%	3%	5%	5%	0%
Evaporative / swamp cooler	1%	1%	1%	1%	0%
No cooling	7%	10%	8%	11%	3%
Other	4%	1%	8%	7%	11%
Not sure	0%	0%	0%	1%	5%
VALID N (columns)	***1073***	***88***	***214***	***241***	***24***

Cooling System by Income				
Cooling System	**Low-income**	**Moderate-income**	**Moderately High-income**	**High-income**
Central air conditioner	21%	33%	43%	60%
Central heat pump	8%	15%	16%	14%

Ductless heat pump	4%	7%	7%	6%
Window air conditioner	32%	17%	15%	11%
Portable air conditioner	21%	19%	14%	10%
Ceiling fans	20%	22%	22%	19%
Whole house fan	4%	4%	3%	3%
Evaporative / swamp cooler	1%	0%	1%	1%
No cooling	9%	8%	8%	4%
Other	6%	6%	5%	4%
Not sure	1%	0%	0%	0%
VALID N (columns)	***410***	***221***	***450***	***416***

Cooling Systems by Race/Ethnicity

Cooling System	**Asian or Pacific Islander**	**Black/ African American**	**Latino or Hispanic**	**Multi-racial or mixed race**	**Native American/ Indigenous**	**White Alone (not Hispanic or Latino)**	**Other**
Central air conditioner	45%	31%	31%	33%	40%	39%	41%
Central heat pump	5%	0%	5%	9%	15%	15%	8%
Ductless heat pump	5%	3%	7%	3%	3%	6%	10%
Window air conditioner	7%	25%	37%	29%	29%	18%	18%
Portable air conditioner	19%	25%	18%	26%	12%	14%	15%
Ceiling fans	15%	25%	19%	33%	14%	20%	33%
Whole house fan	6%	6%	4%	6%	3%	4%	8%
Evaporative / swamp cooler	1%	0%	1%	3%	2%	1%	0%
No cooling	12%	7%	3%	3%	5%	8%	10%
Other	11%	7%	4%	5%	11%	5%	3%
Not sure	1%	1%	2%	2%	0%	0%	0%
VALID N (columns)	***110***	***67***	***150***	***86***	***65***	***1400***	***39***

Cooling System by Education

Cooling System	**HS grad or less**	**Some college or trade school**	**College graduate**	**Postgraduate degree**	**Don't know**
Central air conditioner	28%	32%	48%	52%	46%
Central heat pump	11%	16%	13%	11%	6%
Ductless heat pump	6%	5%	5%	5%	6%
Window air conditioner	29%	23%	15%	13%	21%
Portable air conditioner	17%	17%	14%	11%	12%
Ceiling fans	19%	20%	21%	22%	6%
Whole house fan	3%	4%	3%	5%	6%
Evaporative / swamp cooler	0%	1%	0%	1%	6%
No cooling	6%	8%	8%	8%	15%

Other	5%	5%	5%	4%	0%
Not sure	2%	0%	0%	0%	24%
VALID N (columns)	***269***	***454***	***557***	***340***	***13***

Cooling System by English/Non-English		
Cooling System	**English**	**Non-English**
Central air conditioner	41%	37%
Central heat pump	13%	3%
Ductless heat pump	6%	5%
Window air conditioner	18%	33%
Portable air conditioner	15%	18%
Ceiling fans	21%	16%
Whole house fan	3%	5%
Evaporative / swamp cooler	1%	1%
No cooling	8%	10%
Other	5%	4%
Not sure	0%	1%
VALID N (columns)	***1525***	***106***

Cooling System by Worried About Paying Energy Bills		
Cooling System	**Worried about paying energy bills**	**Not worried about paying energy bills**
Central air conditioner	32%	46%
Central heat pump	10%	15%
Ductless heat pump	5%	6%
Window air conditioner	27%	15%
Portable air conditioner	21%	12%
Ceiling fans	24%	19%
Whole house fan	3%	4%
Evaporative / swamp cooler	1%	1%
No cooling	8%	8%
Other	4%	5%
Not sure	0%	0%
VALID N (columns)	***575***	***1039***

Cooling System by Region				
Cooling System	**Portland Metro**	**Willamette Valley/North Coast**	**Southern Oregon**	**East of the Cascades**
Central air conditioner	43%	36%	42%	39%

Central heat pump	10%	14%	22%	10%
Ductless heat pump	4%	8%	7%	9%
Window air conditioner	18%	19%	15%	29%
Portable air conditioner	18%	13%	8%	9%
Ceiling fans	22%	17%	18%	28%
Whole house fan	4%	2%	3%	3%
Evaporative / swamp cooler	1%	0%	2%	2%
No cooling	7%	11%	8%	5%
Other	5%	6%	4%	3%
Not sure	1%	1%	0%	0%
VALID N (columns)	***893***	***392***	***227***	***130***

Cooling System by Urban/Rural			
Cooling System	**Urban areas**	**Small cities and suburbs**	**Small towns and rural areas**
Central air conditioner	44%	31%	16%
Central heat pump	12%	14%	17%
Ductless heat pump	5%	8%	11%
Window air conditioner	18%	21%	20%
Portable air conditioner	16%	12%	6%
Ceiling fans	21%	18%	21%
Whole house fan	4%	2%	2%
Evaporative / swamp cooler	1%	1%	2%
No cooling	6%	13%	19%
Other	5%	6%	7%
Not sure	0%	0%	1%
VALID N (columns)	***1351***	***214***	***77***

Cooling System by Fuel Service Type			
Cooling System	**Dual**	**Electric**	**Gas**
Central air conditioner	60%	15%	53%
Central heat pump	10%	15%	17%
Ductless heat pump	4%	7%	8%
Window air conditioner	15%	24%	14%
Portable air conditioner	10%	22%	8%
Ceiling fans	21%	21%	17%
Whole house fan	3%	5%	3%
Evaporative / swamp cooler	1%	1%	0%
No cooling	5%	12%	4%
Other	4%	6%	4%
Not sure	1%	1%	0%
VALID N (columns)	***799***	***677***	***165***

Cooling System by Participation Type			
Cooling System	**Direct Participant**	**Indirect Participant**	**Nonparticipant**
Central air conditioner	52%	15%	40%
Central heat pump	19%	7%	12%
Ductless heat pump	8%	7%	5%
Window air conditioner	12%	29%	20%
Portable air conditioner	8%	25%	16%
Ceiling fans	23%	17%	20%
Whole house fan	2%	12%	3%
Evaporative / swamp cooler	1%	0%	1%
No cooling	6%	10%	8%
Other	4%	1%	5%
Not sure	0%	1%	1%
VALID N (columns)	***263***	***49***	***1329***

Cooling System by Housing Type						
Cooling System	**Public, subsidized, or affordable housing**	**Tribal housing**	**Housing for seniors or people with disabilities**	**Market-rate or conventional housing**	**Other**	**Not sure**
Central air conditioner	17%	100%	11%	20%	16%	9%
Central heat pump	1%	0%	10%	3%	14%	0%
Ductless heat pump	2%	0%	7%	5%	0%	5%
Window air conditioner	31%	0%	34%	32%	29%	41%
Portable air conditioner	29%	0%	14%	31%	30%	32%
Ceiling fans	20%	0%	6%	24%	14%	20%
Whole house fan	7%	0%	6%	3%	0%	7%
Evaporative / swamp cooler	0%	0%	0%	2%	0%	2%
No cooling	10%	0%	13%	9%	7%	11%
Other	7%	0%	11%	5%	16%	3%
Not sure	1%	0%	0%	0%	0%	3%
VALID N (columns)	***119***	***1***	***25***	***274***	***29***	***65***

Appendix G. Orientation To Energy Efficiency – Additional Analysis

Worry About Paying Bills

Own/Rent	Bill-pay worry rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Own (incl. resident landlord)	26%	1%	1036	OWN	RENT
Rent (& other non-owners)	56%	2%	545	RENT	OWN
Other	*47%*	*11%*	*20*	*OTH*	
Not sure	*53%*	*23%*	*5*	*NS*	
Building Type	**Bill-pay worry rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	28%	1%	1016	SF	MH, LGMF, OTH, SMF
Mobile or manufactured home	54%	6%	86	MH	SF
Small multifamily (2-4 units)	50%	3%	221	SMF	SF
Multifamily (5+ units)	48%	3%	266	LGMF	SF
Other	*48%*	*10%*	*24*	*OTH*	
Income Grouping	**Bill-pay worry rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Low-income	65%	2%	417	LOW	HIGH, MOD, MODHIGH
Moderate-income	45%	3%	224	MOD	HIGH, LOW, MODHIGH
Moderately High-income	28%	2%	445	MODHIGH	HIGH, LOW, MOD
High-income	11%	2%	393	HIGH	LOW, MOD, MODHIGH
Race/Ethnicity - updated unweighted	**Bill-pay worry rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	35%	5%	110	ASIAN	BLACK, LATNX
Black/African American	60%	6%	65	BLACK	ASIAN, MULTI, WHITE
Latino or Hispanic	59%	4%	145	LATNX	ASIAN, MULTI, WHITE
Multiracial or mixed race	40%	5%	85	MULTI	BLACK, LATNX
Native American/Indigenous	51%	6%	65	NATAM	WHITE
White Alone (not Hispanic or Latino)	33%	1%	1380	WHITE	BLACK, LATNX, NATAM
Other	41%	8%	39	OTH	
Education level	**Bill-pay worry rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**

HS grad or less	59%	3%	271	HSLESS	COLLGRAD, POSTGRAD, SMECOLL
Some college or trade school	42%	2%	455	SMECOLL	COLLGRAD, HSLESS, POSTGRAD
College graduate	29%	2%	542	COLLGRAD	HSLESS, POSTGRAD, SMECOLL
Postgraduate degree	20%	2%	323	POSTGRAD	COLLGRAD, HSLESS, SMECOLL
Don't know	*40%*	*15%*	*12*	*DK*	
Primarily Language English	**Bill-pay worry rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
English	34%	1%	1498	ENG	NONENG
Non-English	59%	5%	105	NONENG	ENG
Energy or fuel assistance in 2021	**Bill-pay worry rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	
Yes	77%	4%	137	Y	N, NS
No	32%	1%	1448	N	Y
Not sure	*39%*	*10%*	*26*	*NS*	*Y*
Worried about energy bills	**Bill-pay worry rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	100%	0%	585	WRRY	
Not worried about paying energy bills	0%	0%	1030	NOWRRYY	
Energy Trust Regions (combined)	**Bill-pay worry rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	34%	2%	831	PORTMET	
Willamette Valley/North Coast	39%	2%	415	WLMTNC	
Southern Oregon	37%	3%	229	SOR	
East of the Cascades	35%	4%	140	ECSD	
Urban / rural status	**Bill-pay worry rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Urban areas	35%	1%	1287	URB	
Small cities and suburbs	38%	3%	236	SBURB	
Small towns and rural areas	40%	5%	92	RURAL	
Utility service type	**Bill-pay worry rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	27%	2%	710	DUAL	ELE
Electric	48%	2%	697	ELE	DUAL, GAS

Gas	28%	3%	208	GAS	ELE
Program participation type	**Bill-pay worry rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	22%	3%	241	DP	IP, NP
Indirect Participant	47%	7%	58	IP	DP
Nonparticipant	38%	1%	1316	NP	DP
Rental Property Type	**Bill-pay worry rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Public, subsidized, or affordable housing	72%	4%	128	PUBHSNG	MKTHSNG
Tribal housing	*0%*	*0%*	*1*	*TRIBHSGN*	
Housing for seniors or people with disabilities	*60%*	*10%*	*26*	*DISBHSNG*	
Market-rate or conventional housing	46%	3%	289	MKTHSNG	NS, PUBHSNG
Other	61%	9%	31	OTH	
Not sure	69%	6%	67	NS	MKTHSNG

Likely to Hire Contractor

Own/Rent	**Hires contractor rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Own (incl. resident landlord)	46%	2%	1043	OWN	RENT
Rent (& other non-owners)	38%	2%	544	RENT	OWN
Other	*50%*	*12%*	*19*	*OTH*	
Not sure	*22%*	*19%*	*5*	*NS*	
Building Type	**Hires contractor rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	45%	2%	1025	SF	OTH
Mobile or manufactured home	45%	5%	86	MH	
Small multifamily (2-4 units)	42%	3%	220	SMF	
Multifamily (5+ units)	40%	3%	265	LGMF	
Other	*25%*	*9%*	*23*	*OTH*	
Income Grouping	**Hires contractor rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Low-income	38%	2%	416	LOW	HIGH
Moderate-income	47%	3%	223	MOD	
Moderately High-income	44%	2%	446	MODHIGH	

High-income	47%	3%	396	HIGH	LOW
Race/Ethnicity - updated unweighted	**Hires contractor rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	58%	5%	108	ASIAN	NATAM, OTH, WHITE
Black/African American	62%	6%	65	BLACK	NATAM, OTH, WHITE
Latino or Hispanic	38%	4%	144	LATNX	
Multiracial or mixed race	34%	5%	85	MULTI	
Native American/Indigenous	41%	6%	64	NATAM	ASIAN, BLACK
White Alone (not Hispanic or Latino)	46%	1%	1390	WHITE	ASIAN, BLACK
Other	44%	8%	38	OTH	ASIAN, BLACK
Education level	**Hires contractor rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
HS grad or less	38%	3%	273	HSLESS	POSTGRAD
Some college or trade school	42%	2%	455	SMECOLL	
College graduate	45%	2%	546	COLLGRAD	
Postgraduate degree	48%	3%	324	POSTGRAD	HSLESS
Don't know	*27%*	*14%*	*11*	*DK*	
Primarily Language English	**Hires contractor rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
English	44%	1%	1505	ENG	
Non-English	46%	5%	104	NONENG	
Energy or fuel assistance in 2021	**Hires contractor rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Yes	39%	4%	138	Y	
No	44%	1%	1453	N	
Not sure	*34%*	*10%*	*26*	*NS*	
Worried about energy bills	**Hires contractor rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	43%	2%	581	WRRY	
Not worried about paying energy bills	44%	2%	1024	NOWRRYY	

Energy Trust Regions (combined)	Hires contractor rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Portland Metro	45%	2%	830	PORTMET	
Willamette Valley/North Coast	44%	2%	419	WLMTNC	
Southern Oregon	38%	3%	232	SOR	
East of the Cascades	48%	4%	140	ECSD	
Urban / rural status	**Hires contractor rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Urban areas	45%	1%	1293	URB	
Small cities and suburbs	40%	3%	237	SBURB	
Small towns and rural areas	37%	5%	91	RURAL	
Utility service type	**Hires contractor rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	46%	2%	714	DUAL	
Electric	40%	2%	697	ELE	GAS
Gas	51%	4%	210	GAS	ELE
Program participation type	**Hires contractor rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	46%	3%	241	DP	
Indirect Participant	37%	6%	57	IP	
Nonparticipant	43%	1%	1323	NP	
Rental Property Type	**Hires contractor rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Public, subsidized, or affordable housing	36%	4%	130	PUBHSNG	
Tribal housing	*100%*	*0%*	*1*	*TRIBHSGN*	
Housing for seniors or people with disabilities	*34%*	*10%*	*26*	*DISBHSNG*	
Market-rate or conventional housing	40%	3%	286	MKTHSNG	
Other	28%	8%	30	OTH	
Not sure	39%	6%	68	NS	

Home is Uncomfortable or Drafty

Own/Rent	Home uncomfortable rate	Std. Error	N Total (unweighted)	Abbr.	PW Sig. Abbr.
Own (incl. resident landlord)	27%	1%	1037	OWN	RENT
Rent (& other non-owners)	51%	2%	544	RENT	OWN
Other	*42%*	*11%*	*20*	*OTH*	
Not sure	*53%*	*23%*	*5*	*NS*	
Building Type	**Home uncomfortable rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Single-family (detached)	29%	1%	1017	SF	LGMF, SMF
Mobile or manufactured home	40%	5%	87	MH	
Small multifamily (2-4 units)	48%	3%	220	SMF	SF
Multifamily (5+ units)	47%	3%	265	LGMF	SF
Other	*44%*	*10%*	*25*	*OTH*	
Income Grouping	**Home uncomfortable rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Low-income	47%	3%	416	LOW	HIGH, MODHIGH
Moderate-income	39%	3%	223	MOD	HIGH, MODHIGH
Moderately High-income	28%	2%	444	MODHIGH	LOW, MOD
High-income	28%	2%	395	HIGH	LOW, MOD
Race/Ethnicity - updated unweighted	**Home uncomfortable rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Asian or Pacific Islander	34%	5%	108	ASIAN	NATAM, OTH, WHITE
Black/African American	45%	6%	64	BLACK	NATAM, OTH, WHITE
Latino or Hispanic	42%	4%	144	LATNX	
Multiracial or mixed race	41%	5%	85	MULTI	
Native American/Indigenous	32%	6%	65	NATAM	ASIAN, BLACK
White Alone (not Hispanic or Latino)	35%	1%	1387	WHITE	ASIAN, BLACK
Other	32%	8%	37	OTH	ASIAN, BLACK
Education level	**Home uncomfortable rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
HS grad or less	39%	3%	270	HSLESS	

Some college or trade school	35%	2%	456	SMECOLL	
College graduate	33%	2%	542	COLLGRAD	
Postgraduate degree	32%	3%	324	POSTGRAD	
Don't know	*20%*	*13%*	*12*	*DK*	
Primarily Language English	**Home uncomfortable rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
English	35%	1%	1500	ENG	
Non-English	34%	5%	104	NONENG	
Energy or fuel assistance in 2021	**Home uncomfortable rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Yes	51%	4%	137	Y	N
No	33%	1%	1450	N	NS, Y
Not sure	*54%*	*10%*	*25*	*NS*	
Worried about energy bills	**Home uncomfortable rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Worried about paying energy bills	53%	2%	581	WRRY	NOWRRYY
Not worried about paying energy bills	25%	1%	1024	NOWRRYY	WRRY
Energy Trust Regions (combined)	**Home uncomfortable rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Portland Metro	37%	2%	831	PORTMET	
Willamette Valley/North Coast	32%	2%	417	WLMTNC	
Southern Oregon	31%	3%	230	SOR	
East of the Cascades	34%	4%	138	ECSD	
Urban / rural status	**Home uncomfortable rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Urban areas	35%	1%	1288	URB	
Small cities and suburbs	32%	3%	237	SBURB	
Small towns and rural areas	28%	5%	91	RURAL	
Utility service type	**Home uncomfortable rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Dual	31%	2%	710	DUAL	ELE
Electric	41%	2%	699	ELE	DUAL, GAS

Gas	27%	3%	207	GAS	ELE
Program participation type	**Home uncomfortable rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Direct Participant	30%	3%	241	DP	
Indirect Participant	43%	7%	58	IP	
Nonparticipant	35%	1%	1317	NP	
Rental Property Type	**Home uncomfortable rate**	**Std. Error**	**N Total (unweighted)**	**Abbr.**	**PW Sig. Abbr.**
Public, subsidized, or affordable housing	52%	5%	129	PUBHSNG	DISBHSNG
Tribal housing	*0%*	*0%*	*1*	*TRIBHSGN*	
Housing for seniors or people with disabilities	*20%*	*8%*	*26*	*DISBHSNG*	*MKTHSNG, OTH, PUBHSNG*
Market-rate or conventional housing	56%	3%	288	MKTHSNG	DISBHSNG, NS
Other	51%	9%	30	OTH	
Not sure	40%	6%	67	NS	

Appendix G. Race/Ethnicity Analysis - Overcount

For the analysis in the body of the report, respondents were grouped into mutually exclusive race/ethnicity categories, which allows for statistical comparison across groups. For the analysis in the body of the report, anyone who selected more than one race (excluding those who selecting Latino/Hispanic) was grouped into the "multiracial" category. However, to be most inclusive/expansive in allowing respondents to select their racial and ethnic identities, we also include below an "overcount" analysis of all key indicator variables by race, which includes anyone who selected that race/ethnicity regardless whether they also selected others. Results across race/ethnicity in this section cannot be compared to each other as they are not mutually exclusive. Results in this section are unweighted.

Asian or Pacific Islander				
OVERCOUNT OF RACE / ETHNICITY FOR INCL. OVERSAMPLE				
		2022		
Outcome variable	**Unit**	**Result**	**Std. Error**	**Unweighted N**
Participation Rate	% of Population	23.6%	3.4%	157
Participation Level	Average Estimated Bill Savings	$9.56	$2.05	157
Awareness of Energy Trust	% of Survey Responses	43.9%	4.0%	157
Knowledge of Energy Trust	% of Survey Responses	21.7%	3.3%	157
Awareness of EE Services	% of Survey Responses	29.9%	3.7%	157
Awareness of Solar Services	% of Survey Responses	18.0%	3.8%	100
Worried about ability to pay bills	% of Survey Responses	34.4%	3.8%	157

Black/African American				
OVERCOUNT OF RACE / ETHNICITY FOR INCL. OVERSAMPLE				
		2022		
Outcome variable	**Unit**	**Result**	**Std. Error**	**Unweighted N**
Participation Rate	% of Population	24.1%	4.8%	79
Participation Level	Average Estimated Bill Savings	$10.42	$4.13	79
Awareness of Energy Trust	% of Survey Responses	34.2%	5.3%	79
Knowledge of Energy Trust	% of Survey Responses	16.5%	4.2%	79
Awareness of EE Services	% of Survey Responses	24.1%	4.8%	79
Awareness of Solar Services	*% of Survey Responses*	*15.4%*	*7.1%*	*26*
Worried about ability to pay bills	% of Survey Responses	57.9%	5.7%	76

Latino or Hispanic				
OVERCOUNT OF RACE / ETHNICITY FOR INCL. OVERSAMPLE				
		2022		
Outcome variable	**Unit**	**Result**	**Std. Error**	**Unweighted N**
Participation Rate	% of Population	12.0%	2.7%	150
Participation Level	Average Estimated Bill Savings	$3.37	$1.07	150
Awareness of Energy Trust	% of Survey Responses	29.3%	3.7%	150
Knowledge of Energy Trust	% of Survey Responses	13.3%	2.8%	150

Awareness of EE Services	% of Survey Responses	14.7%	2.9%	150
Awareness of Solar Services	% of Survey Responses	10.7%	3.6%	75
Worried about ability to pay bills	% of Survey Responses	59.3%	4.1%	145

Native American/Indigenous

OVERCOUNT OF RACE / ETHNICITY FOR INCL. OVERSAMPLE

Outcome variable	Unit	2022 Result	Std. Error	Unweighted N
Participation Rate	% of Population	13.2%	3.2%	114
Participation Level	Average Estimated Bill Savings	$8.32	$4.02	114
Awareness of Energy Trust	% of Survey Responses	35.4%	4.5%	113
Knowledge of Energy Trust	% of Survey Responses	13.3%	3.2%	113
Awareness of EE Services	% of Survey Responses	22.1%	3.9%	113
Awareness of Solar Services	% of Survey Responses	10.3%	3.7%	68
Worried about ability to pay bills	% of Survey Responses	51.3%	4.7%	113

White

OVERCOUNT OF RACE / ETHNICITY FOR INCL. OVERSAMPLE

Outcome variable	Unit	2022 Result	Std. Error	Unweighted N
Participation Rate	% of Population	19.1%	1.0%	1507
Participation Level	Average Estimated Bill Savings	$21.52	$2.95	1507
Awareness of Energy Trust	% of Survey Responses	62.9%	1.2%	1500
Knowledge of Energy Trust	% of Survey Responses	35.4%	1.2%	1500
Awareness of EE Services	% of Survey Responses	44.5%	1.3%	1500
Awareness of Solar Services	% of Survey Responses	21.8%	1.3%	1072
Worried about ability to pay bills	% of Survey Responses	33.3%	1.2%	1486

Other

OVERCOUNT OF RACE / ETHNICITY FOR INCL. OVERSAMPLE

Outcome variable	Unit	2022 Result	Std. Error	Unweighted N
Participation Rate	% of Population	10.4%	4.4%	48
Participation Level	Average Estimated Bill Savings	$3.48	$1.90	48
Awareness of Energy Trust	% of Survey Responses	60.4%	7.1%	48
Knowledge of Energy Trust	% of Survey Responses	39.6%	7.1%	48
Awareness of EE Services	% of Survey Responses	43.8%	7.2%	48
Awareness of Solar Services	*% of Survey Responses*	*24.1%*	*7.9%*	*29*
Worried about ability to pay bills	% of Survey Responses	41.7%	7.1%	48

Multiracial Overcount Analysis

Below, we include analyses of all respondents who selected more than one race/ethnicity in the survey, including those who selected Hispanic/Latino and any other race. This includes a detailed summary of all racial and ethnic identities selected, as well as a summary of the "overcount" key indicator variables for this group.

Races/Ethnicities Selected in Survey – Multiracial Respondents			Unweighted n	Percent
Asian or Pacific Islander	White		35	29%
Native American/Indigenous	White		30	25%
Hispanic/Latino	White		20	16%
Black or African American	White		5	4%
Hispanic/Latino	Native American/Indigenous		5	4%
Middle Eastern/North African	White		5	4%
Asian or Pacific Islander	Hispanic/Latino	White	3	2%
Asian or Pacific Islander	Hispanic/Latino		3	2%
Asian or Pacific Islander	Native American/Indigenous		3	2%
Hispanic/Latino	Native American/Indigenous	White	3	2%
Asian or Pacific Islander	Native American/Indigenous	White	2	2%
Black or African American	Middle Eastern/North African		2	2%
Black or African American	Native American/Indigenous	White	2	2%
Asian or Pacific Islander	Black or African American	Hispanic/Latino	1	1%
Black or African American	Hispanic/Latino		1	1%
Black or African American	Native American/Indigenous		1	1%
Middle Eastern/North African	Native American/Indigenous	White	1	1%

Multiracial or mixed race				
OVERCOUNT OF RACE / ETHNICITY FOR INCL. OVERSAMPLE				
Outcome variable	**Unit**	**2022 Result**	**Std. Error**	**Unweighted N**
Participation Rate	% of Population	17.2%	3.4%	122
Participation Level	Average Estimated Bill Savings	$5.82	$1.82	122
Awareness of Energy Trust	% of Survey Responses	47.9%	4.5%	121
Knowledge of Energy Trust	% of Survey Responses	21.5%	3.7%	121
Awareness of EE Services	% of Survey Responses	33.1%	4.3%	121
Awareness of Solar Services	% of Survey Responses	17.8%	4.5%	73
Worried about ability to pay bills	% of Survey Responses	41.3%	4.5%	121

Appendix H. Survey Instrument - English

2022 CUSTOMER AWARENESS AND PARTICIPATION SURVEY

Survey Instrument

This is a draft instrument for the 2022 Customer Awareness and Participation Survey. It is designed to be programmed for web, mobile and telephone completion. We assume that most respondents will complete the survey online, from a drive-to-web letter with a survey URL and customer-specific PIN. Secondarily, non-respondents will receive a survey form via mail (paper/mail version).

Recruiting materials (letters and emails) are included in a separate document.

This instrument will be translated into Spanish and offered in both English and Spanish languages online and by phone as needed. We plan to also offer the web survey in Mandarin (Chinese) and Vietnamese.

Sample Variables

Customer first and last name [FIRSTNAME] and [LASTNAME], if available

Address [ADDRESS]: Combine street number/name and city, e.g., “123 West Street in Corvallis”

Address Street [ADDRESS_STREET]: street number/name

Address Apartment/Unit [ADDRESS_APT_UNIT]: apartment or unit number

Address City [ADDRESS_CITY]: city (needed to prepopulate gift card address)

Address Zip [ADDRESS_ZIP]: zip (needed to prepopulate gift card address)

County [COUNTY]

Mailing Address [MAIL_ADDRESS]: mailing address number/name, if different from street address

Mailing Address Apartment/Unit [MAIL_ADDR_APT_UNIT]: apartment or unit number of mailing address, if different from street address

Participant (Yes/No) [PART]

Direct Participant [PART_DIR]

Indirect Participant [PART_IND]

Email Sample (1 if we have an email address for them, otherwise 0) [EMAIL_SAMPLE]

Phone number [PHONE_NUMBER]

Email address [EMAIL_ADDR]

Call is placed by phone [PHONE]

Has address (1 if we have a physical address, otherwise 0) [HAS_ADDRESS]

Survey Guide

ONLINE INTRODUCTION AND PIN VERIFICATION

[ASK SECTION IF THEY ARE COMING FROM THE LETTER OR POSTCARD URL – ANONYMOUS LINK]

PROGRAMMING NOTE: FOR PERSONALIZED LETTERS OR POSTCARDS, EVERYONE SHOULD RECEIVE A PIN THAT, WHEN ENTERED, WILL PULL IN THEIR SAMPLE INFORMATION.

[SHOW ENERGY TRUST OF OREGON LOGO]

Thank you for your interest in our research!

We want to find out what Oregonians know about the energy services available in Oregon. Your responses will be used to help your fellow Oregonians access the energy services available in Oregon and save energy and money.

It takes approximately 5-10 minutes to complete the survey. To thank you for your time, you will receive a $20 e-gift card after you complete the survey.

A1. Please enter your access number. This is the 5-character number on the postcard you received. If you don't have your number, please call 800-429-8515 or email STUDY@EANDWRESEARCH.COM and we will provide it.

1. Your Access Number: [5 CHARACTER FIELD]

Para completar la encuesta en español, seleccione "Español" en el menú desplegable en la esquina superior derecha de la pantalla.

要用普通话完成调查，请从屏幕右上角的下拉菜单中选择"普通话"

Để hoàn thành khảo sát bằng tiếng tiếng Việt, hãy chọn " tiếng Việt " từ menu thả xuống ở góc trên bên phải của màn hình.

[VALIDATE THAT CARD NUMBER IS ON FILE AND HAS NOT BEEN USED BY ANOTHER RESPONDENT YET.]

[IF CARD NUMBER IS ON FILE AND NOT YET USED, SKIP TO A4]

A2. [ASK IF CARD PIN IS NOT ON FILE] Sorry, but the number that you entered cannot be found. Please re-enter the access number from the card that you received in the mail, or from a customer service representative.

1. Your Access Number: [5 CHARACTER FIELD]

A3. [IF CARD NUMBER NOT ON FILE AGAIN, THANK AND TERMINATE WITH THIS MESSAGE:] Unfortunately, we are unable to locate that access number. Please call 800-429-8515 or email STUDY@EANDWRESEARCH.COM and we can help you find the right number. We appreciate your time and apologize that it's not working right now. [CODE AS "TERMINATE"]

A4. [WHEN USING GENERIC LINK & ENTER VALID ACCESS CODE] Great, your record has been found.

Please use the next button at the bottom of the screen to move forward.

If you need to leave the survey, you may re-open the survey at the same place you left by clicking on the link from the original device used (your phone, computer, or tablet).

All of your responses are confidential.

Para completar la encuesta en español, seleccione "Español" en el menú desplegable en la esquina superior derecha de la pantalla.

要用普通话完成调查，请从屏幕右上角的下拉菜单中选择"普通话"

Để hoàn thành khảo sát bằng tiếng tiếng Việt, hãy chọn " tiếng Việt " từ menu thả xuống ở góc trên bên phải của màn hình.

[IF USING UNIQUE LINK FROM EMAIL WITH ACCESS CODE PIPED AUTOMATICALLY]

[SHOW ENERGY TRUST OF OREGON LOGO]

Thank you for your interest in our research!

We want to find out what Oregonians know about the energy services available in Oregon. Your responses will be used to help your fellow Oregonians access the energy services available in Oregon and save energy and money.

It takes approximately 5-10 minutes to complete the survey. To thank you for your time, you will receive a $20 e-gift card after you complete the survey.

Please use the next button at the bottom of the screen to move forward.

If you need to leave the survey, you may re-open the survey at the same place you left by clicking on the link from the original device used (your phone, computer, or tablet).

All of your responses are confidential.

Para completar la encuesta en español, seleccione "Español" en el menú desplegable en la esquina superior derecha de la pantalla.

要用普通话完成调查，请从屏幕右上角的下拉菜单中选择"普通话"

Để hoàn thành khảo sát bằng tiếng tiếng Việt, hãy chọn " tiếng Việt " từ menu thả xuống ở góc trên bên phải của màn hình.

PHONE INTRODUCTION

[TELEPHONE INBOUND RESPONSE AND RETURNED CALLS]

B1. [IF RETURNING CALL – TRANSLATED INTO REQUESTED LANGUAGE AS NEEDED] Hello, my name is [INTERVIEWER NAME] from E&W RESEARCH and I'm returning your call about the survey we are conducting on behalf of Energy Trust of Oregon.

B2. Thank you for your interest in our research! We are doing a brief 5–10 minute survey to find out what Oregonians know about the energy services available in Oregon. We'll give you a $20 gift card as a thank you for your time. Your responses will be used to help your fellow Oregonians access these services and save energy and money.

B3. Are you involved with things like paying the bills, buying new lights, appliances, or electronics, or adjusting the thermostat? [SINGLE RESPONSE]

1. Yes
2. No, respondent available [RESTATE INTRODUCTION, AND SKIP TO B2]
3. No, respondent currently not available [SCHEDULE CALLBACK]
4. No, refused [TERMINATE]

[INTERVIEWER NOTE: IF AT ANY POINT IN THE INTRODUCTION THE RESPONDENT MENTIONS THAT THEY HAVE LIMITED ENGLISH SKILLS, PLEASE OFFER TO SWITCH TO A SPANISH INTERVIEWER (IF AVAILABLE) OR RECORD LANGUAGE PREFERENCE FOR A CALL-BACK. IF THEY SPEAK A LANGUAGE OTHER THAN SPANISH, OFFER A RETURN CALL IN THEIR PREFERRED LANGUAGE IF AVAILABLE.]

[INTERVIEWER NOTE: IF THE RESPONDENT EXPRESSES THAT THEY'RE NOT THE RIGHT PERSON BECAUSE THEY'RE A RENTER, OR THEIR HOUSEHOLD DOESN'T PAY THE BILLS, REASSURE THEM THAT THAT'S OKAY – WE'RE JUST LOOKING FOR THE PERSON IN THEIR HOUSEHOLD WHO IS MOST INVOLVED IN ELECTRICITY AND/OR NATURAL GAS DECISIONS IN THE HOME, EVEN IF THEY ARE RENTERS OR THE LANDLORD PAYS THE BILLS.]

[INTERVIEWER NOTE: IF SOMEONE SAYS THEY ARE A LANDLORD OR OWN BUT DON'T OCCUPY THE BUILDING, YOU CAN RESPOND, "WE'RE ACTUALLY LOOKING TO SPEAK WITH JUST THE OCCUPANTS. CAN YOU PUT US IN TOUCH WITH THE PEOPLE WHO LIVE AT [STREET_ADDRESS]?"]

[INTERVIEWER NOTE: IF RESPONDENTS WANTS MORE INFORMATION ON THE PURPOSE OF THE STUDY, SAY, "ENERGY TRUST OF OREGON WANTS TO ENSURE THAT ALL OREGONIANS ARE BENEFITING FROM ENERGY EFFICIENCY AND RENEWABLE ENERGY, SO WE'RE TALKING TO A WIDE RANGE OF PEOPLE ABOUT THEIR HOMES."]

[ONCE CONTACT FOUND] [REPEAT IF NEEDED]: My name is [INTERVIEWER NAME], and] we are talking to people on behalf of Energy Trust of Oregon about what they know about the energy services available to them in Oregon. We are offering a $20 e-gift card for you to complete a short survey.

[IF LANDLORD]: We're actually looking to speak with just the occupants. Can you put us in touch with the people who live at [ADDRESS]?

[IF NEEDED]: I work for E&W Research, a national research company that is conducting research for Energy Trust of Oregon. I don't work directly for Energy Trust or a utility company.

[IF NEEDED]: Energy Trust of Oregon is an independent, non-profit organization dedicated to helping 1.6 million utility customers in Oregon and Southwest Washington save energy and generate renewable power. Energy Trust serves customers of Portland General Electric, Pacific Power, NW Natural, Cascade Natural Gas, and Avista.

[CONTINUE WHEN KNOWLEDGEABLE PERSON IDENTIFIED, ELSE CALL BACK]

B4. Great! We are offering a $20 gift card for you to complete a survey.

RELATIONSHIP TO PREMISE

Programming Notes:

All web respondents should be able to skip questions by clicking "continue" – **No required answers.** Because respondents can skip questions easily, we did not write "Prefer not to answer" or "Refused" as options.

The following numbering should be used for "standardized" response options:

96: For "None of these" or "Not applicable" (wording may vary depending on question)

97: Other (Specify)

98: For "Don't know" or "Not sure" or "Don't remember" (wording may vary depending on question)

99: Refused on phone or prefer not to answer (or skipped online)

C1. We have your address as <ADDRESS>. Do you currently live at <ADDRESS>?: [RESPONSE REQUIRED]

1. **Yes,** I currently live at that address
2. **No**, I don't currently live at that address

C2. [ASK IF 0 =1] Is <ADDRESS> your primary residence? [RESPONSE REQUIRED]

1. Yes, it's my primary residence
2. No, another address is my primary residence

C3. [ASK IF 0 =2 OR C2 = 2] What is your current primary address? [RECORD OPEN END]

Address 1:

Address 2:

City:

State:

Zip:

C4. [ASK IF 0 =1] Do you (or someone in your household) rent or own the home at <ADDRESS>? [RESPONSE REQUIRED]

1. Rent
2. Own
3. Live there but don't pay rent
97. Other (Specify)
98. Not sure

C5. What best describes the home at <ADDRESS>? [RESPONSE REQUIRED]

1. Home where I live all/most of the time
2. Second home where I live some of the time (e.g., vacation home)
3. Property that I rent out to others
4. Business address where nobody lives (not a home) [THANK AND TERMINATE] [Thank you for that information. Because this is a business address, we do not need you to continue with this survey. Thank you very much for your time.]
5. Home where I used to live but no longer have any connection to [THANK AND TERMINATE] [Thank you for that information. Because you are not the current occupant of this home, we do not need you to continue with this survey. Thank you very much for your time.]
96. I don't know – Not my address [THANK AND TERMINATE] [Thank you for that information. Because you are not the occupant of this home, we do not need you to continue with this survey. Thank you very much for your time.]
97. Other (Specify)

C6. [ASK IF C5 = 2, 3, OR 97] Who lives at <ADDRESS>? [MULTIPLE RESPONSE] [RESPONSE REQUIRED]

1. Year-round tenants/renters [THANK AND TERMINATE] [Thank you for that information. Because you are not the occupant of this home, we do not need you to continue with this survey. Thank you very much for your time.]
2. Short-term tenants/renters (including vacation renters) [THANK AND TERMINATE] [Thank you for that information. Because you are not the occupant of this home, we do not need you to continue with this survey. Thank you very much for your time.]

3. A business [THANK AND TERMINATE] [Thank you for that information. Because this is a business address, we do not need you to continue with this survey. Thank you very much for your time.]
4. I use it as a second/vacation home
5. It is vacant all/most of the time [THANK AND TERMINATE] [Thank you for that information. Because you are not the occupant of this home, we do not need you to continue with this survey. Thank you very much for your time.]
97. Other (Specify)

PROGRAMMING:

HOUSEHOLD CLASSIFICATION (FOR ASSIGNMENT OF REMAINING SURVEY SECTIONS):

HOMEOWNER IF (C4 = 2 AND C5 = 1) *(OWNER-OCCUPIED)*

RENTER: IF C4 = 1 OR 3

LANDLORD: IF [C6 = 1, 2] [THANK AND TERMINATE]

BUSINESS: IF C5 = 4 OR C6 = 3 (BUSINESS) [THANK AND TERMINATE]

OWN_VACATION: IF C4=2 AND (IF C5 = 2 OR C66 = 4) *(OWNER/VACATION USE)*

OWN_RENT: IF (C5 = 3 OR 97) AND (C6 = 2 OR 5) AND (C6 NOT 4) *(OWNER/VACATION RENTAL)* [THANK AND TERMINATE]

VACANT: IF C6 = 5

OWNER, RENTER AND LANDLORD should be mutually exclusive categories in the end.

IF NEEDED, IF ANYONE ENDS UP WITHOUT AN ASSIGNMENT, DEFAULT TO OWNER

BUILDING CHARACTERISTICS

[IF HOMEOWNER OR RENTER] For the rest of this survey, we'll be asking questions about your home at <ADDRESS>.

[IF OWN_VACATION] For the rest of this survey, we'll be asking questions about the property at <ADDRESS>, though some of the questions may sound like they're about your primary home. Please answer for the property at <ADDRESS>.

D1. What best describes the building at <ADDRESS>?

1. Single-family detached home
2. Single-family attached home (side-by-side units with shared walls, like a townhouse or rowhouse)
3. Duplex (2 units)
4. Building with 3 or more units (apartments or condos)
5. Guest house or accessory dwelling unit
6. Mobile or manufactured home
97. Other (Specify)

D2. [ASK IF D=4,97] About how many units are in the building?

1. 3-4
2. 5-9

3. 10-19
4. 20-49
5. 50+
97. Other (Specify)

D3. Approximately how many years have you lived at <ADDRESS>?

1. Less than 1 year
2. 1-2 years
3. 3-4 years
4. 5-7
5. 8-10 years
6. More than 10 years

UTILITY RELATIONSHIP

[ASK EVERYONE]

E1. What utility bills do you pay for this home/building? Select all that apply. [MULTIPLE RESPONSE]

1. Electricity
2. Natural Gas
3. Oil or propane
96. None of these [EXCLUSIVE]
97. Other (Specify)

E2. How do you primarily heat this home/building? Select all that apply. [MULTIPLE RESPONSE]

1. Natural gas forced air furnace
2. Natural gas radiant heat (hot water system)
3. Electric forced air furnace
4. Electric central heat pump
5. Electric ductless / mini split heat pump(s)
6. Electric baseboards or wall heaters
7. Electric radiant heat (hot water or electric coil system)
8. Oil furnace
9. Propane/bottled gas furnace
10. Wood stove or fireplace
96. No heating [EXCLUSIVE]
97. Other (Specify)
98. Not sure [EXCLUSIVE]

E3. How do you primarily cool this home/building? Select all that apply. [MULTIPLE RESPONSE]

1. Central air conditioner
2. Central heat pump
3. Ductless / mini split heat pump(s)
4. Window air conditioner(s)
5. Portable air conditioner unit(s)
6. Ceiling fan(s)
7. Whole house fan

8. Evaporative / swamp cooler
96. No cooling [EXCLUSIVE]
97. Other (Specify)
98. Not sure [EXCLUSIVE]

E4. Did you receive any energy or fuel assistance in 2021? (i.e., help paying your electric or heating bills from a government program, local program, utility, or another organization)

1. Yes
2. No
98. Not sure

AWARENESS OF ENERGY TRUST OF OREGON

[ASK EVERYONE]

F1. Before today, had you ever heard of Energy Trust of Oregon?

1. Yes
2. No
98. Not Sure

F2. [ASK IF F1=1] How familiar are you with Energy Trust of Oregon? Would you say…

1. I've heard the name "Energy Trust of Oregon," but that's about it
2. I know a little about the discounts, money back and services that Energy Trust offers
3. I know a lot about the discounts, money back and services Energy Trust offers
97. Other (Specify)

[PROGRAMMING: Generate ETO_AWARE=1 if F1 = 1]

F3. [ASK IF F1= 1] Before today, which of the following Energy Trust of Oregon energy efficiency services were you aware of? Select all that apply. [RANDOMIZE RESPONSES, MULTIPLE RESPONSE]

1. Free Energy Saver Kits
2. Discounts or money back on LEDs, showerheads, and smart thermostats,
3. Discounts or money back on efficient clothes washers and dryers
4. Discounts or money back for installing efficient heating and cooling systems and water heaters
5. Discounts or money back for installing insulation and windows
6. Help finding a contractor to help improve efficiency of home
96. No, I was not aware of any of these before today [EXCLUSIVE]

F4. [ASK IF F1=1] Have you ever participated in an Energy Trust of Oregon program? [MULTIPLE SELECT]

That could mean getting an Energy Saver Kit, getting free light bulbs or a discount or money back from Energy Trust (for energy-efficient light bulbs, smart thermostats, appliances, etc.), or using an Energy Trust contractor to install a heating or cooling system, water heater, windows, insulation, etc.

1. **Yes,** I participated in my current home
2. **Yes,** I participated in a previous home that I owned or rented
3. **No,** but I looked into Energy Trust of Oregon programs or services [EXCLUSIVE]

4. No, I have never participated or looked into participating [EXCLUSIVE]
97. Other (Specify)
98. Not sure [EXCLUSIVE]

F5. [ASK IF F1=1 AND (HOMEOWNER OR OWN_VACATION)] Before today, which of the following Energy Trust of Oregon solar services were you aware of? Select all that apply. [RANDOMIZE RESPONSES, MULTIPLE RESPONSE]

1. Free assessment of your home's solar potential
2. A customized bid for the cost (and benefits) of installing solar panels
3. Cash incentives for installing solar panels (additional incentives beyond the federal tax credit)
4. A list of contractors who install solar panels
96. No, I was not aware of any of these before today [EXCLUSIVE]

F6. [ASK IF F1=1] How much do you agree or disagree with the following statements? [RANDOMIZE; SINGLE RESPONSE PER ROW]

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
Energy Trust of Oregon….	1	2	3	4	5
a. is trustworthy.					
b. cares about the environment.					
c. cares about my local community.					
d. is taking action to make energy more affordable					

ORIENTATION TO ENERGY EFFICIENCY

G1. How much do you agree or disagree with the following statements? [RANDOMIZE; SINGLE RESPONSE PER ROW] [IF PHONE: Use a scale of 1-5 where 5 is "strongly agree" and 1 is "strongly disagree."]

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
	1	2	3	4	5
a. I worry whether there is enough money to pay my energy/utility bills.					
b. I pay close attention to the cost of my energy bill every month.					
c. When something in my home needs to be fixed, I am more likely to hire a contractor or professional than to fix it myself.					
d. My home is drafty, and/or feels uncomfortable on very hot or very cold days.					
e. I worry about a major appliance (like my furnace, A/C, or refrigerator) breaking down					

OCCUPANT CHARACTERISTICS

[SHOW FOR EVERYONE] Energy Trust of Oregon services and cash incentives are available to everyone - all races, ethnicities, income levels, and communities. The next few questions will be used to make sure Energy Trust is serving everyone fairly. Anything you share will remain confidential.

H1. [ASK IF RENTER] Which of the following describes the property at <ADDRESS>?

1. Public, subsidized, or affordable housing
2. Tribal housing
3. Housing for seniors or people with disabilities
4. Market-rate or conventional housing
97. Other (Specify)
98. Not sure

H2. Which categories describe your race, ethnicity, or origin? SELECT ALL THAT APPLY. [MULTIPLE RESPONSE]

1. Black or African American
2. Chinese
3. Filipino
4. Hispanic, Latino or Spanish
5. Japanese
6. Korean
7. Middle Eastern or North African
8. Native American or Alaska Native
9. Native Hawaiian or Pacific Islander not listed here
10. South Asian or Indian
11. Vietnamese

12. Asian Origin not listed here
13. White, Caucasian, or European
97. None of these describe me (Please Specify) [EXCLUSIVE]

H3. What is the primary language spoken in your home? [SELECT ONE]

1. Arabic
2. Chinese - Cantonese
3. Chinese - Mandarin
4. English
5. French
6. German
7. Hindi
8. Japanese
9. Korean
10. Persian (including Farsi)
11. Russian
12. Spanish
13. Tagalog (including Filipino)
14. Vietnamese
97. Other (Specify)

H4. How many people in each age group live in your home full-time? Don't forget to include yourself!

1. Children under 5 years-old	
2. Children 5–17 years old	
3. Adults 18–24 years old	
4. Adults 25–44 years old	
5. Adults 45–64 years old	
6. Adults aged 65 or older	

H5. Which of the following ranges describes your total 2021 household income before taxes?

1. Less than $25,000
2. $25,000 - $34,999
3. $35,000 - $49,999
4. $50,000 - $74,999
5. $75,000 - $99,999
6. $100,000 - $149,999
7. $150,000 - $199,999

8. $200,000 or more
98. Don't know

H6. What is the highest level of education you have completed?

1. Elementary
2. Some high school
3. High school graduate
4. Some college
5. Technical / trade school / community college graduate
6. College graduate
7. Postgraduate degree
98. Don't know

CONCLUSION

I1. Is there anything else you would like to share with Energy Trust of Oregon? [RECORD OPEN END]

I2. Would you like Energy Trust to contact you about other upcoming customer research opportunities, such as focus groups and in-depth interviews? Energy Trust uses these types of research efforts to get to know our customers better. You would be compensated for your time.

1. Yes
2. No

I3. Thank you for your time today! As a thank you for completing this survey, we will send you a $20 gift card.

To receive the gift card by EMAIL, please enter your name and email address.

1. Name:
2. Email Address:
3. Confirm Email Address:

I4. Thank you. Please look for an email with your VISA® gift card. The email will come from our gift card distributor, Tango (noreply@tangocard.com) within the next 1-2 weeks. If you do not receive the gift card within 1-2 weeks, you can contact E&W Research at study@eandwresearch.com or by calling 800-429-8515.