



EVALUATION OF THE ENERGY EFFICIENT PRODUCT GUIDE WEBSITE

Final Report

Puget Sound Energy

Date: November 1, 2022





Table of Contents

1	EXECUTIVE SUMMARY	4
1.1	Program Overview	4
1.2	Impact Evaluation Findings	4
1.3	Online Survey Findings	4
1.4	Recommendations	5
2	INTRODUCTION.....	6
2.1	Program Overview	6
2.2	Evaluation Objectives.....	6
3	STUDY METHODOLOGY	8
3.1	Five-Cell Design.....	8
3.2	Impact Evaluation Methods	9
3.3	Online Survey Methods	10
4	RESULTS.....	12
4.1	Impact Evaluation Results.....	12
4.2	Online Survey Results.....	13
5	KEY FINDINGS AND RECOMMENDATIONS	25
5.1	Impact Evaluation Findings	25
5.2	Online Survey Findings	25
5.3	Recommendations	25
6	APPENDICES	27
6.1	Appendix A: Additional Online Survey Tables	27
6.2	Appendix B: PSE Energy Efficient Product Guide Online Survey	32

List of Figures

Figure 3-1. Survey Participant Landing Page.....	10
Figure 4-1. Products Customers Purchased since October 2020	14
Figure 4-2. Distribution Channel of Products Purchased	15
Figure 4-3. Retailers Customers Used to Make Product Purchases	16
Figure 4-4. Influential Factors in Product Purchasing Decisions	17
Figure 4-5. Customer Research Prior to Purchase Decision.....	17
Figure 4-6. Resources Customers Used to Research Products.....	18
Figure 4-7. Customer Awareness of PSE’s Efficient Product Guide Website	19
Figure 4-8. How Customer Heard of PSE’s Efficient Product Guide Website	20
Figure 4-9. Have You Visited PSE’s Efficient Product Guide Website?	20
Figure 4-10. What Users Remember Seeing on the Website	21
Figure 4-11. Satisfaction with the Website	22
Figure 4-12. Suggestions for Website Improvements	23
Figure 4-13. What Users Like About the Website	24
Figure A-1. What Users Remember Seeing on the Website by Study Group, Percent of Respondents	28
Figure A-2. Percent of Products Purchased After Using PSE’s Efficient Product Guide Website by Study Group	29
Figure A-3. Influence of Website on Purchase of Equipment by Study Group	30



List of Tables

Table 3-1. Efficient Product Guide Website Five-Cell Design	8
Table 3-2. Participant Survey Completes and Response Rates	11
Table 4-1. Measured Electric Savings due to Enervee (kWh)	12
Table 4-2. Gas Savings due to Enervee (therm)	13
Table 4-3. Research Done Prior to Purchase by Product	17
Table 4-4. Influence of Energy Efficiency on Purchase Decision – Treatment vs. Control	18
Table 4-5. Customer Awareness of PSE’s Efficient Product Guide Website – Treatment v. Control	19
Table 4-6. Website Visitation – Treatment v. Control	21
Table 4-7. Website Visitation Frequency – Treatment v. Control	21
Table A-1. Age of Household Occupants	31
Table A-2. Household Primary Language	31
Table A-3. Respondents Who Own or Rent Their Residence	31
Table A-4. 2021 Household Annual Income	31



<p>Project Manager: Geoff Barker, Senior Consultant, Markets & Risk DNV Energy Geoff.Barker@dnv.com</p>
<p>Project Sponsor Andrew Wood, Principal Consultant, Markets & Risk DNV Energy Andrew.W.Wood@dnv.com</p>
<p>PSE Residential Evaluation Lead Jesse Durst, Senior Market Analyst, Energy Efficiency Services Puget Sound Energy Jesse.Durst@pse.com</p>



1 EXECUTIVE SUMMARY

This report presents the objectives, methods, and results of DNV's evaluation of the Efficient Product Guide website.

1.1 Program Overview

PSE contracted with Enervee to launch the Efficient Product Guide website in October 2020. The website is designed to help customers consider energy efficiency prior to purchasing a product. Each product listed on the website includes an "Enervee Score," which is an algorithm that estimates the energy efficiency of a product on a 100 point scale. The platform also includes information on product pricing, customer ratings, and other information that is designed to help customers:

- Find information quickly and easily about what products best meet their unique needs
- Have confidence that they are making an informed decision
- Compare energy efficient products side-by-side

PSE marketed the Efficient Product Guide (EPG) website in two different ways: 1) marketing of the Efficient Product Guide within Home Energy Report modules; and 2) direct email marketing to PSE customers. The direct email strategy consisted of 22 separate emails sent to an average of 36,641 customers for each email wave between October 2020 and August 2022.

1.2 Impact Evaluation Findings

- There were no statistically significant energy savings based on the effects of PSE's Efficient Product Guide website.
- There was statistically significant electric savings based on the influence of Home Energy Reports, confirming results from the 2021 HER impact evaluation study.

1.3 Online Survey Findings

- There were no statistically significant differences between treatment and control groups in terms of what customers purchased, the type of research they conducted when making these purchases, or their awareness and use of PSE's Efficient Product Guide website.
- More than two-thirds of surveyed PSE customers (68%) purchased at least one product since October 2020. Three-quarters of products (75%) were researched before purchase and customers reported using customer reviews and expert reviews to inform their purchase decision.
- The top retailers listed on PSE's EPG website were Amazon (19%), Home Depot (18%), and Lowes (11%). Combined, those retailers accounted for 48% of the total reported purchases. On the other hand, Costco (21% of sales), Walmart (2%), and Fred Meyer (1%) are not linked retailers on the PSE's EPG website and accounted for 24% of total reported sales.
- Just over half (51%) of PSE customers surveyed cited energy efficiency of the product as an influence on their decision, while 49% did not consider it a factor.
- The differences in awareness of the website between the treatment and control groups was minimal and not statistically significant. Overall, only 16% of respondents were aware of the website. Interestingly, both control groups (groups A and C) were found to have awareness of the website; this could have been due to mistaking their awareness for another PSE Website (e.g., the PSE Marketplace website).

- The differences in use of the website between the treatment and control groups was also minimal and not statistically significant. Overall, only 36% of respondents who heard of the website reported visiting the website.
- Survey respondents reported having a relatively high level of satisfaction with all 10 aspects of the website evaluated in the online survey (e.g., ease of website navigation, overall satisfaction). For most aspects of the website evaluated, the average level of satisfaction was 4 or slightly higher on a 5 point scale.
- When asked about feedback for the website, users most frequently reported liking the 'ease of use' of the website and stated there was 'nothing to improve.' The second most common suggestion for improving the website was to have 'more selection of products.'

1.4 Recommendations

- The Efficient Product Guide website offers useful tools for evaluating the efficiency of products as well as other considerations such as price and customer reviews. While there may be benefits to PSE for encouraging its customers to choose efficient products, the evaluation did not show statistically significant energy savings resulting from marketing the website. PSE may wish to discontinue supporting the Efficient Product Guide website due to the lack of savings attributable to the website unless there are other non-energy savings benefits that justify continuing to support the website (e.g., increasing awareness of energy efficiency as a consideration when purchasing products).
- If PSE opts to continue hosting and marketing the EPG website, PSE may also want to consider:
 - Sending out the EPG marketing module in Home Energy Reports in addition to email marketing to all HER treatment customers. This was the only scenario where savings were slightly larger (albeit statistically insignificant) than savings generated by HER alone.
 - Adding additional major retail stores to PSE's EPG website, like Costco and Walmart.
 - Adding more links to customer reviews and expert reviews to the EPG website.



2 INTRODUCTION

This report presents the objectives, methods, and results of DNV's evaluation of the Efficient Product Guide website.

2.1 Program Overview

PSE contracted with Enervee to launch the Efficient Product Guide website in October 2020. The website is designed to help customers consider energy efficiency prior to purchasing a product. Each product listed on the website includes an "Enervee Score," which is an algorithm that estimates the energy efficiency of a product on a 100 point scale. The platform also includes information on product pricing, customer ratings, and other information that is designed to help customers:

- Find information quickly and easily about what products best meet their unique needs
- Have confidence that they are making an informed decision
- Compare energy efficient products side-by-side

PSE marketed the Efficient Product Guide (EPG) website in two different ways: 1) marketing of the Efficient Product Guide within Home Energy Report modules; and 2) direct email marketing to PSE customers. The direct email strategy consisted of 22 separate emails sent to an average of 36,641 customers for each email wave between October 2020 and August 2022.

The program theory is that messages about the EPG website delivered from PSE via email and in PSE's Home Energy Report modules will drive people to the website. The information available on the website will then encourage customers to purchase more efficient products than they otherwise would in the absence of the website. Those purchases will, in turn, reduce energy consumption among participating households.

The website offers a range of product categories including:

- Electronics (e.g., televisions and monitors)
- Home appliances (e.g., washers, dryers, and refrigerators)
- Heating, cooling and water heating (e.g., air conditioners, electric water heaters, and smart thermostats)
- Home and office products (e.g., air purifiers, light bulbs, and power strips)
- Pool pumps

Visitors to the website can browse product categories or search by specific brands or models.

2.2 Evaluation Objectives

The primary objectives of this evaluation are to measure the energy savings attributable to the Efficient Product Guide website and to assess product purchase behavior and customer experience with the website. Specifically, the objectives are to:

1. Estimate energy savings associated with the website through billing analysis
2. Characterize product purchasing behavior among customers included in this pilot
3. Assess awareness and use of the website
4. Determine the level of satisfaction with the website



We provide further details on the design of the pilot and evaluation methods in the Section 3.

3 STUDY METHODOLOGY

3.1 Five-Cell Design

Prior to launching the Efficient Product Guide website, PSE divided customers into five-cells of different treatment and control groups (see Table 3-1). Some customers received neither Home Energy Reports (HERs) nor marketing about the website (A), some customers received independent email marketing about the website but no HERs (B), some customers received HERs but no marketing about the website (C), and some customers received both HERs and marketing about the website (D). The distinction between D1 and D2 is that customers in D1 received EPG marketing only through the independent emails, while customers in D2 received both independent emails about the website and EPG website marketing modules in HERs.

Table 3-1. Efficient Product Guide Website Five-Cell Design

	Enervee Marketing Sent	Enervee No-Marketing
HER Treatment (EPG website marketing emails and marketing within HER module)	D2	C
HER Treatment (EPG website marketing emails only)	D1	
HER Control	B	A

The five-cell design allows for testing the following researchable questions through an analysis that compares the consumption of each of the groups.

- $Consumption_A - Consumption_B =$ Main effect of EPG marketing
- $Consumption_A - Consumption_C =$ Main effect of HERs
- $Consumption_A - Consumption_{D1} =$ Combined effect of EPG website marketing with HERs but without EPG-specific marketing modules in HERs
- $Consumption_A - Consumption_{D2} =$ Combined effect of EPG marketing and HERs with EPG-specific marketing modules in the HERs
- $Consumption_B - Consumption_D =$ Effect of adding HERs (with and without EPG module) on top of EPG marketing
- $Consumption_C - Consumption_D =$ Effect of adding EPG marketing on top of HERs (with and without EPG marketing module)
- $Consumption_{D1} - Consumption_{D2} =$ Effect of adding EPG marketing modules to HERs

PSE has been implementing the HER program since 2011. It periodically expands the HER program to wider selections of its customer base. The HER group that was used for the EPG website pilot is one such expansion group. The expansion group included in this pilot started receiving HERs in January 2020. The group is comprised of dual fuel customers. There were approximately 90,000 treatment customers and 30,000 customers in the control group as of January 2020 (120,000 total customers included in the EPG website pilot).

3.2 Impact Evaluation Methods

Similar to how we estimated savings for the Home Energy Report, we used a fixed-effects (FE) regression model to estimate savings generated from Efficient Product Guide website marketing. The FE model estimates program savings by comparing consumption of the treatment group to the control group before and after program implementation.

The fixed effects equation is:

$$E_{it} = \mu_i + \lambda_t + \beta_t P_{it} + \beta_{enervee} P_{enervee} + \beta_{treat,enervee} P_{treat,enervee} + \beta_{treat,enervee,mark} P_{treat,enervee,mark} + \varepsilon_i$$

Where:

E_{it} = Average daily energy consumption for account i during month t

P_{it} = Binary variable: one for households in the HER treatment group in the post period month t , zero otherwise

$P_{enervee}$ = Binary variable: one for households who received general EPG website marketing in the post period, zero otherwise

$P_{treat,enervee}$ = Binary variable: one for HER treatment households who received EPG website marketing in the post period, zero otherwise

$P_{treat,enervee,mark}$ = Binary variable: one for HER treatment households who received EPG website marketing as part of their HER reports in the post period, zero otherwise

λ_t = Monthly effects

μ_i = Account level fixed effect

ε_{it} = Regression residual

The model produces estimates of savings using the following equations:

$$\bar{S}_t = \hat{\beta}_t$$

$$\bar{S}_{enervee} = \hat{\beta}_{enervee}$$

$$\bar{S}_{treat,enervee} = \hat{\beta}_{treat,enervee}$$

$$\bar{S}_{treat,enervee,mark} = \hat{\beta}_{treat,enervee,mark}$$

Where:

\bar{S}_t = Average HER treatment related consumption reduction during month t

$\bar{S}_{enervee}$ = Average EPG website related consumption reduction during the post period

$\bar{S}_{treat,enervee}$ = Average EPG website and HER treatment related consumption reduction during the post period

$\bar{S}_{treat,enervee,mark}$ = Average in-HER marketing related consumption reduction during the post period

$\hat{\beta}_t$ = Estimated parameter measuring the HER treatment group difference in the post period month t

$\hat{\beta}_{enervee}$ = Estimated parameter measuring the EPG website treatment group difference in the post period

$\hat{\beta}_{treat,enervee}$ = Estimated parameter measuring the EPG website and HER treatment group difference in the post period

$\hat{\beta}_{treat,energy,mark}$ = Estimated parameter measuring the in-HER marketing difference in the post period

The model also includes site-specific and month/year fixed effects. The site-specific effects control for mean differences between the treatment and control groups that do not change over time. Baseline energy use is captured by estimates of λt in post-treatment period months. The month/year fixed effects control for change over time that is common to both treatment and control groups. The monthly post-program dummy variables pick up the average monthly HER effects of the treatment while the remaining post-program dummy variables pick up the average annual effects of receiving EPG website marketing.

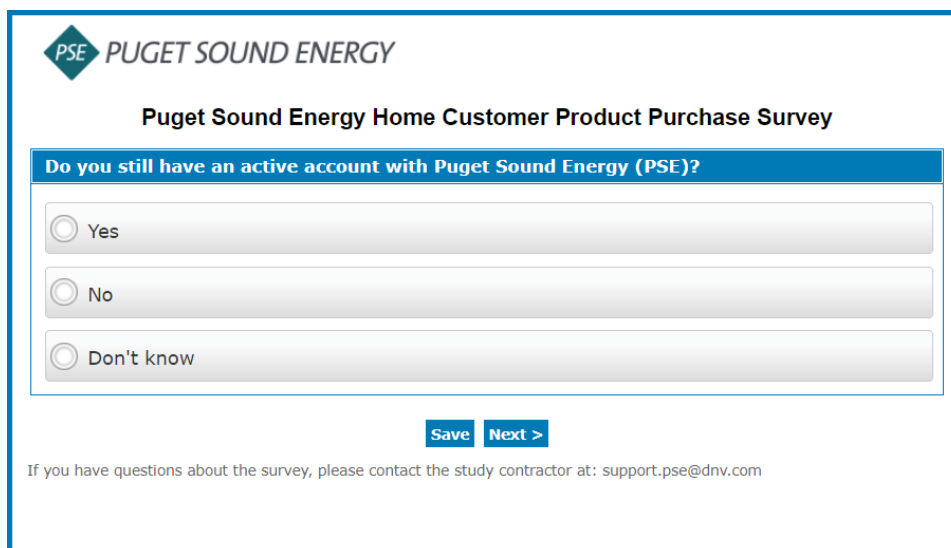
3.3 Online Survey Methods

PSE provided DNV with the population of customers that fell into the 5 different study groups detailed in Section 3.1. For the online survey we aimed to evaluate where products were purchased, what types of considerations were made when purchasing this products, awareness and use of PSE’s Efficient Product Guide website, and customer satisfaction with the website.

The survey invitation was delivered to participant’s email and included the following features:

- Branded with a PSE logo in both the email and landing page
- Contained an authorized contact within PSE to verify the authenticity of the request
- Included a PSE email/domain name Re: “PSE Product Energy Study” pseproductstudy@pse.com
- Included a unique traceable hyperlink with custom information for each respondent including the anonymized customer IDs and key measures of interest for verification purposes.
- To motivate respondents to participate in the online survey, we offered two lottery e-gift card incentives of \$300 and \$200. Respondents who completed the survey within the ‘Promotion Term’ (6/22/22 – 7/29/22) were eligible to win one of the prizes, and therefore included in the raffle.
- All respondents were provided the option to opt-out of the survey and opt-out of the incentive.

Figure 3-1. Survey Participant Landing Page



PSE PUGET SOUND ENERGY

Puget Sound Energy Home Customer Product Purchase Survey

Do you still have an active account with Puget Sound Energy (PSE)?

Yes

No

Don't know

Save **Next >**

If you have questions about the survey, please contact the study contractor at: support.pse@dnv.com



The survey was launched on June 22nd, 2022 and remained open until July 29th, 2022. Non-respondents received up to three reminder emails to complete the survey. Table 3-2 shows the population size, number of completed surveys, and response rate by study group. The overall response rate was 9.5% (Table 3-2).

Table 3-2. Participant Survey Completes and Response Rates

Study Group Name	Population Size	Survey Sample*	Survey Completes	Response Rate
A. No outbound promotion (EPG website control + HER control)	15,000	10,019	1,001	10.0%
B. EPG website marketing promo (EPG website treatment + HER control)	15,000	9,873	929	9.4%
C. No outbound promotion (EPG website control + HER treatment)	45,000	29,984	2,923	9.7%
D1. EPG website promo via emails only (EPG website treatment + HER treatment)	22,500	15,015	1,402	9.3%
D2. EPG website promo via emails and HER modules (EPG website treatment + HER treatment)	22,500	14,925	1,363	9.1%
Overall	120,000	79,816	7,618	9.5%

* When preparing the online survey sample, DNV removed participants from the EPG website pilot population who either: a.) opted out of receiving emails or b.) did not have valid email addresses.

4 RESULTS

4.1 Impact Evaluation Results

Table 4-1 and Table 4-2 below show energy savings (electric and gas savings, respectively) associated with the influence of various levels of marketing about the Efficient Product Guide website. We should note that all of the products marketed on the EPG website are electric measures, so we would expect that any savings attributable to the website would show up as electric savings. All of the comparisons that measure the energy savings effect associated with the Efficient Product Guide website showed no statistically electric or gas savings (rows 1 and rows 3-7 in both tables). The only statistically significant electric savings resulted from the influence of the Home Energy Reports, which showed electric savings of 57.4 kWh per customer (row 1, which compares groups A and C). Neither groups A nor C should have received marketing about the EPG website.¹ This is roughly in line with the savings estimates for the refill 2020 cohort described in the 2021 HER memo, which had average measured electric savings of 61.1 kWh per customer for the 2020 refill group due to receiving the Home Energy Reports.

Comparing the impact of both HER treatment and EPG website marketing through emails and the HER module (row 4 comparing group D2 versus group A) there may be a positive effect on electric savings of 59.8 kWh, which is slightly higher than the HER electric savings effect on its own (row 2 comparing C and A). HER treatment customers who received both EPG website emails and HER modules about the website (group D2) saved 15.6 kWh over HER treatment customers who received the marketing through email only (group D1; see row 7 comparing D2 and D1). However, we should note that none of these comparisons show statistically significant differences in savings with the exception of the HER effect discussed in the previous paragraph (groups C vs. A in row 2).

Table 4-1. Measured Electric Savings due to Enervee (kWh)

Electric (kWh)		Measured Savings	
Study Group Comparison (Effect)		Estimate	90% Confidence Interval
1	B vs A (EPG effect)	-12.7	(-67.4, 42.0)
2	C vs A (HER effect)	57.4*	(0.8, 114.1)
3	D1 vs A (EPG without HER marketing effect)	44.3	(-34.5, 123.0)
4	D2 vs A (EPG with HER marketing effect)	59.8	(-53.5, 173.1)
5	D vs B (HER effect on top of EPG marketing)	64.8	(-26.2, 155.7)
6	D vs C (EPG effect on top of HER)	-5.4	(-95.1, 84.4)
7	D2 vs D1 (EPG marketing in HER module effect)	15.6	(-30.3, 61.4)

*Statistically significant at the 90% confidence level.

¹ Approximately 14% of the control groups that should not have received marketing about the EPG website (groups C and A) reported that they were aware of the website. A small percentage of these respondents reported that they also used the EPG website. The most likely explanation for this is that these customers confused the EPG website with another PSE website, such as the PSE Marketplace website. Please see sections 4.2.3 and 4.2.4 for further details.



Table 4-2. Gas Savings due to Enervee (therm)

Gas (Therm)		Measured Savings	
Study Group Comparison (Effect)		Estimate	90% Confidence Interval
1	B vs A (EPG effect)	0.5	(-3.2, 4.2)
2	C vs A (HER effect)	2.9 [^]	(-1.4, 7.2)
3	D1 vs A (EPG without HER marketing effect)	3.7	(-3.6, 10.9)
4	D2 vs A (EPG with HER marketing effect)	5.8	(-1.6, 13.2)
5	D vs B (HER effect on top of EPG marketing)	4.3	(-2.2, 10.7)
6	D vs C (EPG effect on top of HER)	1.8	(-4.2, 7.9)
7	D2 vs D1 (EPG marketing in HER module effect)	2.1	(-0.9, 5.1)

[^] This effect was statistically significant in the 2021 HER savings memo. However, the 2020 refill cohort is split for this analysis, so the number of customers used to calculate this effect is smaller than the analysis undertaken for the 2021 HER savings memo.

4.2 Online Survey Results

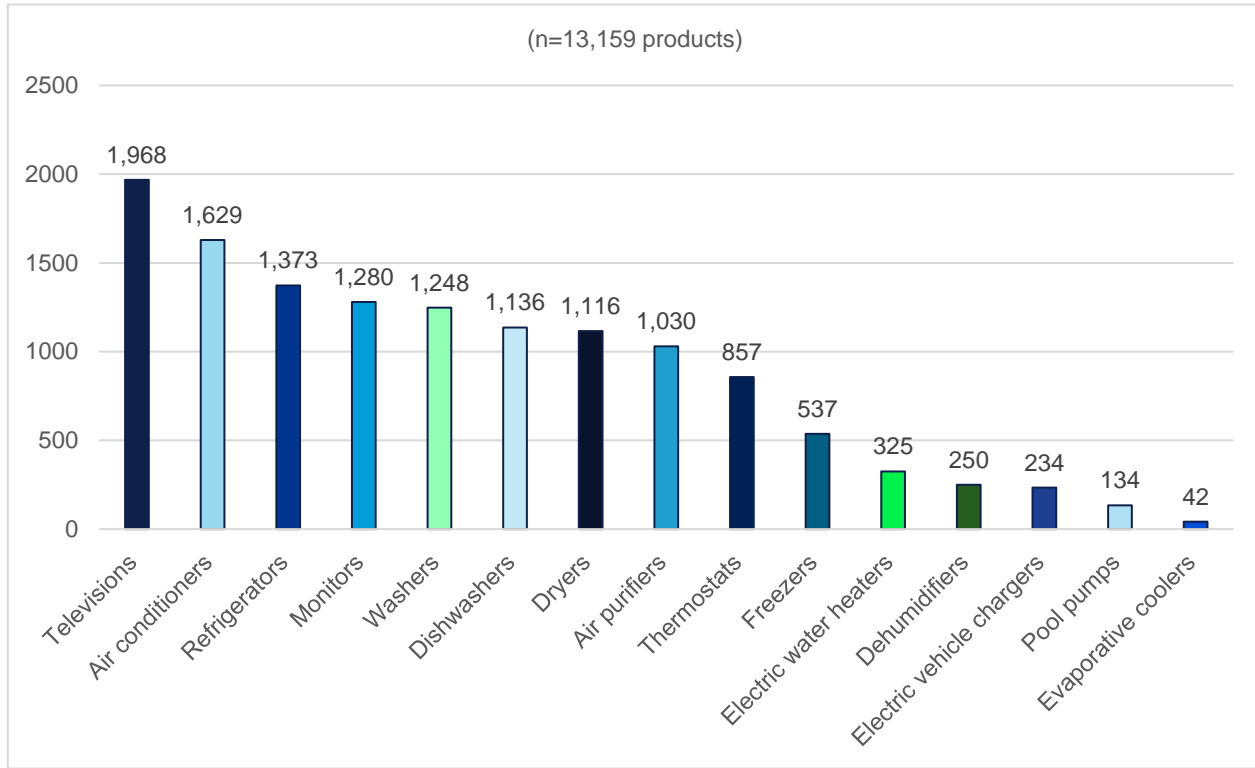
Below we present key results from the online survey, including product purchasing behavior as well as awareness and engagement with the Efficient Product Guide website.

4.2.1 Product Purchases

DNV asked PSE customers if they had purchased at least one listed product since October 2020. Among the surveyed population (n=7,618)², more than two-thirds (68%) reported purchasing at least one item, while about one-third of the customers (31%) did not purchase any products. The most popular products purchased were televisions, air conditioners, and refrigerators, while the least purchased products were electric vehicle chargers, pool pumps, and evaporative coolers (see Figure 4-1). Customers who made a purchase reported buying 2.7 products on average since October 2020.

² Note that survey respondents were not required to answer every question to advance the online survey and that some respondents chose to skip survey questions. As such, there was some attrition in the number of respondents who answered questions as the survey advanced.

Figure 4-1. Products Customers Purchased since October 2020

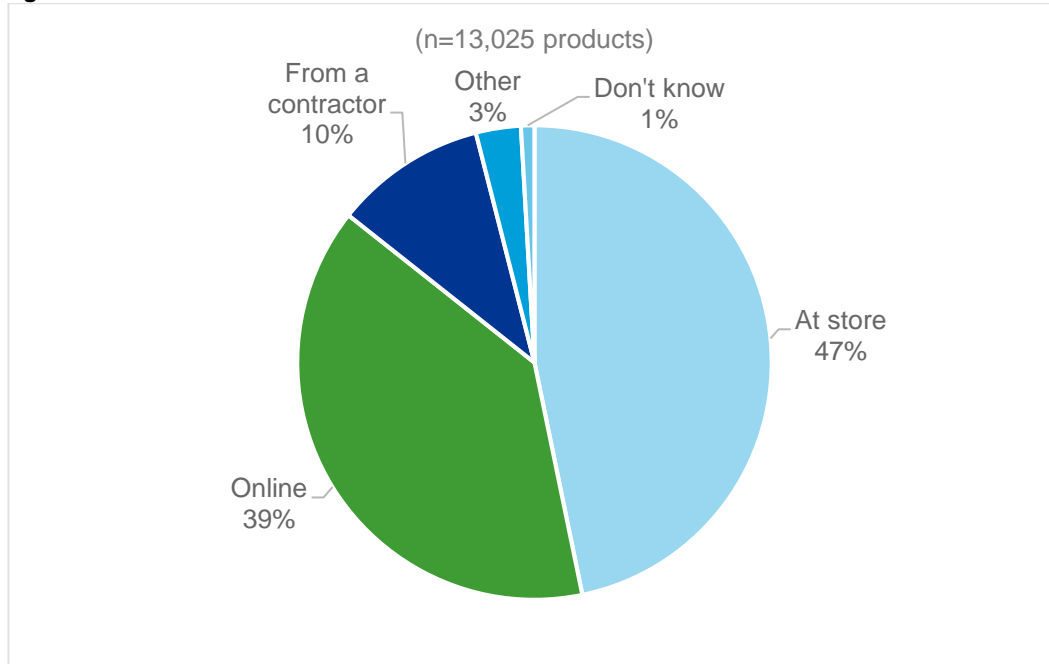


Next, we asked respondents, who reported purchasing a product, what the distribution channel where they made their purchase was (Figure 4-2). Overall, 47% of respondents reported buying their product at a store, 39% purchased their product online, and 10% went through a contractor. The remaining 4% were either unsure or bought their product via another means.³ Respondents used contractors more frequently for purchasing air conditioners (41%) and electric water heaters (53%). There was minimal variation between the treatment and control groups.⁴

³ Those who used an "Other" source (n=399) for completing their purchase frequently cited second-hand sources, such as websites like Craigslist.org (n=19) and OfferUp.com (n=19), as well as personal and professional resources such as friends (n=30), family (n=16), and employers (n=17). Others received their item as a gift (n=26), or it came with their residence (n=19).

⁴ For the purposes of the online survey analysis, we consider those groups who received information about the EPG website a collective treatment group (groups B, D1, and D2) and those that did not a collective control group (groups A and C)

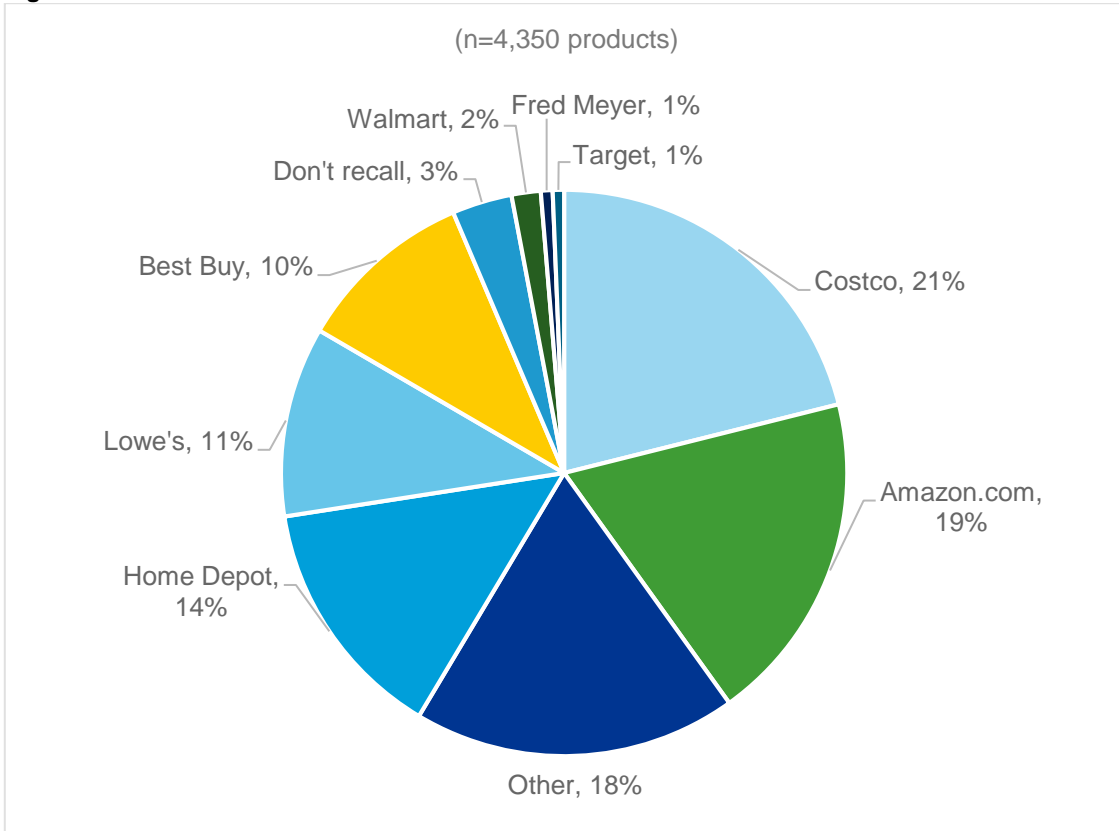
Figure 4-2. Distribution Channel of Products Purchased



We asked customers where they purchased their products and Costco was the top reported retailer with 21% of reported purchases (Figure 4-3). Amazon (19%) and Other (18%)⁵ were the next most frequently mentioned retail stores for product purchases. The top retailers mentioned by respondents that were also on the EPG website were Amazon (19% of product purchases), Home Depot (18%), and Lowe's (11%). Combined, those retailers accounted for 48% of the total reported product purchases. On the other hand, Costco (21% of purchases), Walmart (2%), and Fred Meyer (1%) are not referenced on the EPG website and accounted for 24% of total reported purchases. Several of the vendors listed on the website either accounted for zero purchases or only a few purchases; these include Appliances Connection, Abt Appliances & Electronics, AJ Madison, Trail Appliances, Leslie's Pool Supplies, and Pool Supply Unlimited.

⁵ Some customers who indicated they used an "Other" retailer (n=799) for their purchase used local or regional stores like Albert Lee Appliance (n=112), Video Only (n=44), and Frederick's Appliances (n=34). Others used a specific product's brand website like Dell (n=24), Tesla (n=22), and Samsung (n=21).

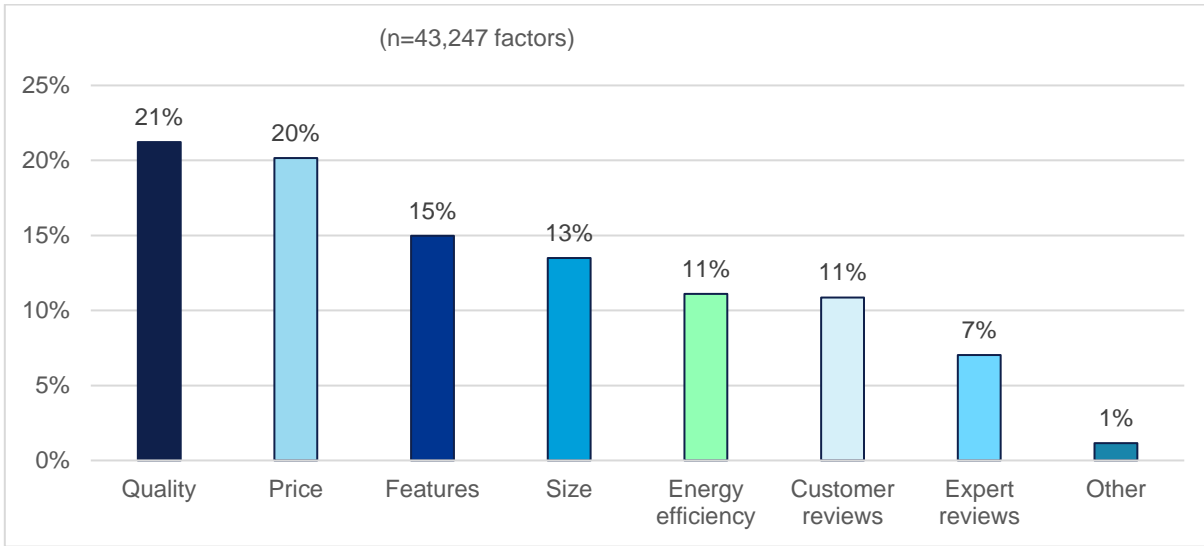
Figure 4-3. Retailers Customers Used to Make Product Purchases



4.2.2 Purchase Considerations

Respondents were asked a series of questions to determine how they selected their products. When asked about factors that influenced their purchase decisions, quality, price, and product features were the most important considerations for customers overall (Figure 4-4). Among the top items purchased, size was also one of the top three factors for televisions (18%) and refrigerators (16%), while energy efficiency was noted as an important consideration for air conditioners (15%). In addition to air conditioners, customers purchasing thermostats (15%) and electric water heaters (17%) also noted energy efficiency as a purchase consideration. Overall, energy efficiency was only the fifth most important factor for customers, but it was considered more influential than customer reviews or expert reviews.

Figure 4-4. Influential Factors in Product Purchasing Decisions



Customers were then asked about research done prior to making their purchases. Those surveyed reported researching the majority of products (75%) before making a purchase (Figure 4-5). Customers did not research 22% of products before purchasing and 3% were unsure. There was no variation between the treatment and control groups in terms of researching products before they purchased them. As shown in Table 4-3, the most researched products were dishwashers (83%), washers (81%), refrigerators (81%), and televisions (81%). Conversely, the least researched products were electric water heaters (58%), pool pumps (63%), and thermostats (66%). It is likely that some of these customers relied on the advice of their contractor before purchasing these products.

Figure 4-5. Customer Research Prior to Purchase Decision

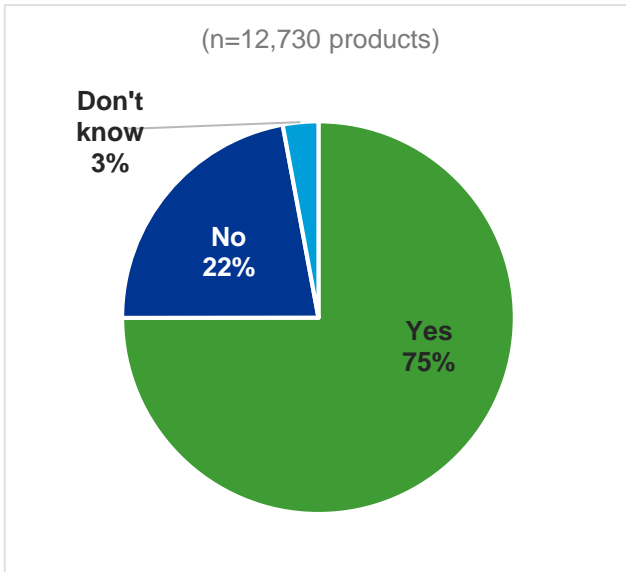


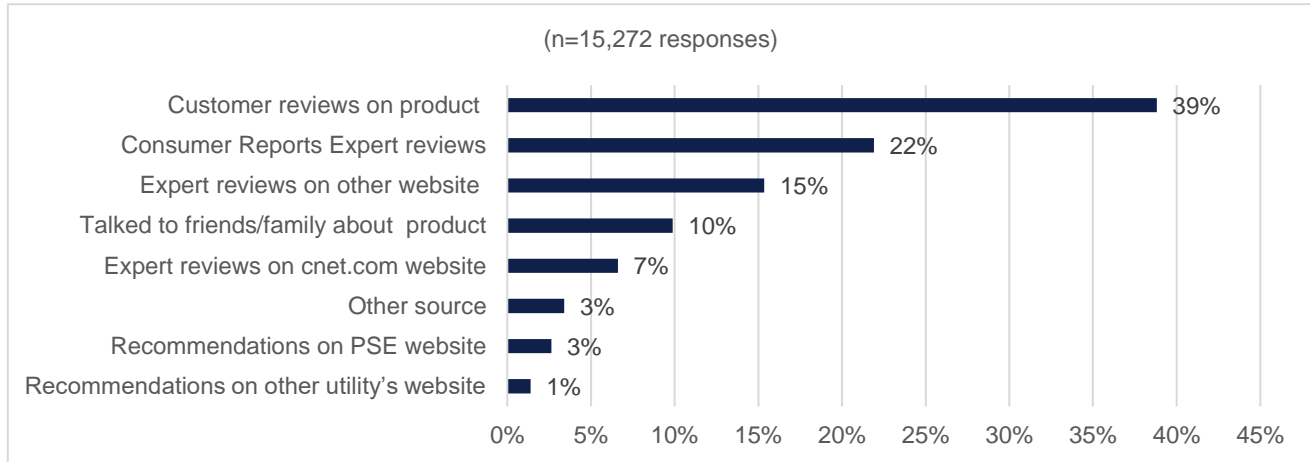
Table 4-3. Research Done Prior to Purchase by Product

Product	Yes	No
Dishwashers (n=1,065)	83%	17%
Washers (n=1,190)	81%	19%
Refrigerators (n=1,302)	81%	19%
Televisions (n=1,908)	81%	19%
Dryers (n=1,054)	80%	20%
Monitors (n=1,215)	77%	23%
Air purifiers (n=960)	77%	23%
Evaporative coolers (n=33)	76%	24%
Air conditioners (n=1,506)	74%	26%
Freezers (n=496)	74%	26%
Electric vehicle chargers (n=217)	73%	27%
Dehumidifiers (n=232)	71%	29%
Thermostats (772)	66%	34%
Pool pumps (n=121)	63%	37%
Electric water heaters (n=287)	58%	42%

Among those who did research prior to purchasing products, respondents were asked what sources they used to do their research (Figure 4-6). Across all products, respondents cited customer reviews (39%), Consumer Reports expert reviews

(22%), and expert reviews on other websites (15%) as their main resources for product research. There was little difference in results between the treatment and control groups surveyed. The least mentioned resources were recommendations read on the PSE website (3%) and recommendations read on other utility's websites (1%).

Figure 4-6. Resources Customers Used to Research Products



Next, we asked customers about the influence of energy efficiency on their purchase decisions (Table 4-4). On average, 51% of customers cited energy efficiency of the product as an influence on their decision, while 49% did not consider it a factor. When broken out by treatment group, the control group indicated energy efficiency was a factor slightly more than the treatment group (52% versus 50%, respectively). Energy efficiency was most likely to be an influence on purchase decisions for electric water heaters (64%), air conditioners (61%), and washers (61%). Televisions (29%), pool pumps (27%), and monitors (24%) and were products where customers were less likely to be concerned with energy efficiency.

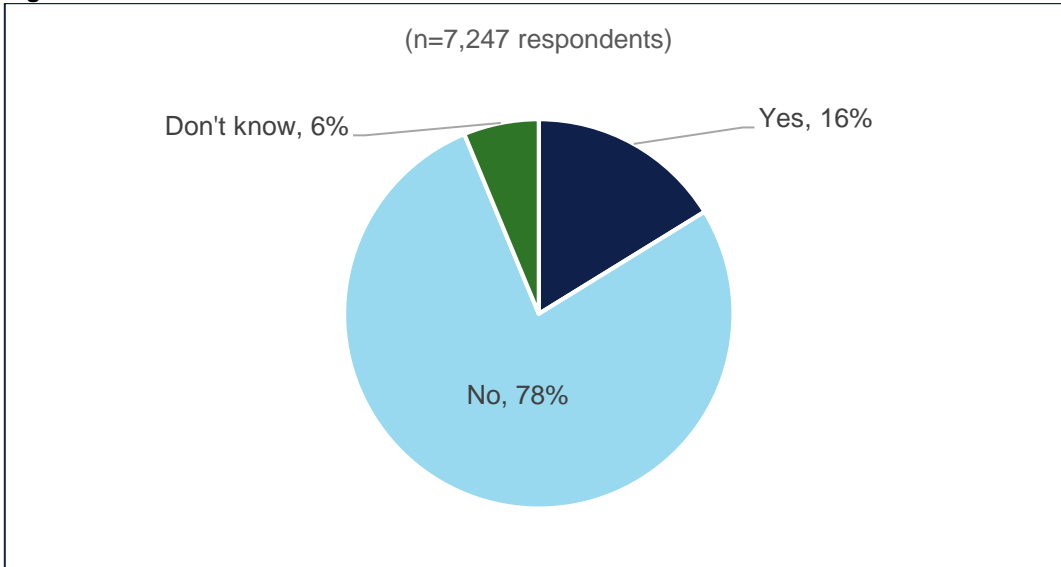
Table 4-4. Influence of Energy Efficiency on Purchase Decision – Treatment vs. Control

Study Group Name	Percent of Responses	
	Yes	No
Enervee Treatment (n=5,868)	50%	50%
Enervee Control (n=6,035)	52%	48%
Overall (n=11,903)	51%	49%

4.2.3 Website Awareness

DNV assessed the awareness of PSE's Efficient Product Guide website by asking respondents if they had heard about it, and if so, where they heard about it from. Overall, 78% of respondents were not aware of the website and only 16% reported being aware of the site (Figure 4-7).

Figure 4-7. Customer Awareness of PSE’s Efficient Product Guide Website



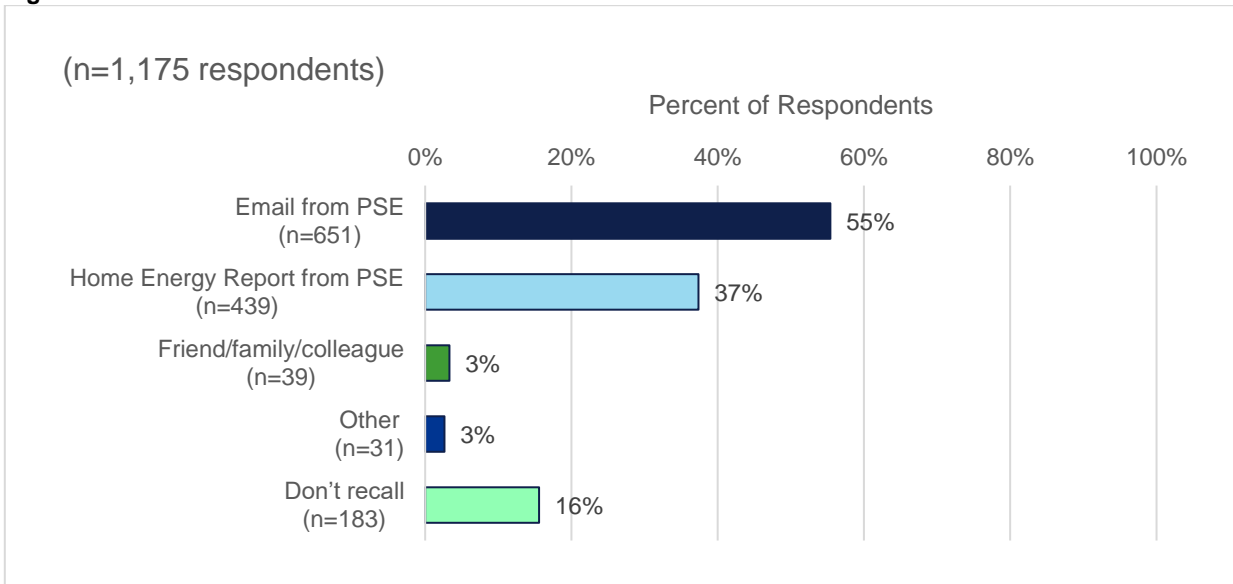
The treatment group (study groups B, D1, and D2) showed more awareness (19%) of the EPG website than the control group (study groups A and C; 14%), although the difference was not statistically significant (Table 4-5). One surprising finding was that both control groups showed awareness of the website. One possible explanation is that these survey respondents mistook their awareness for another PSE website (e.g., the PSE Marketplace website).

Table 4-5. Customer Awareness of PSE’s Efficient Product Guide Website – Treatment v. Control

Study Group Name	Percent of Responses		
	Yes	No	Don't know
Enervee Treatment (n=3,694)	19%	75%	6%
Enervee Control (n=3,924)	14%	80%	6%
Overall	16%	78%	6%

Most respondents (55%) who were aware of the site heard about it from a PSE email, while 37% said they learned about it from their PSE Home Energy Report (Figure 4-8). Only 3% of respondents reported hearing about the website from 'Other' sources including 'the PSE website', 'Google / Browser search,' 'PSE employees,' 'retailers,' and 'contractors.' The differences between treatment and control groups were not statistically significant.

Figure 4-8. How Customer Heard of PSE’s Efficient Product Guide Website



4.2.4 Website Use and Recall

Survey respondents were then asked various questions surrounding their potential use of the website and their recollection about the website contents. When asked if they have visited PSE’s EPG website, 36% of the respondents confirmed that they had visited website, while 58% indicated that they had not visited the site (Figure 4-9). The remaining 5% were unsure if they had visited the website or not.

Figure 4-9. Have You Visited PSE’s Efficient Product Guide Website?

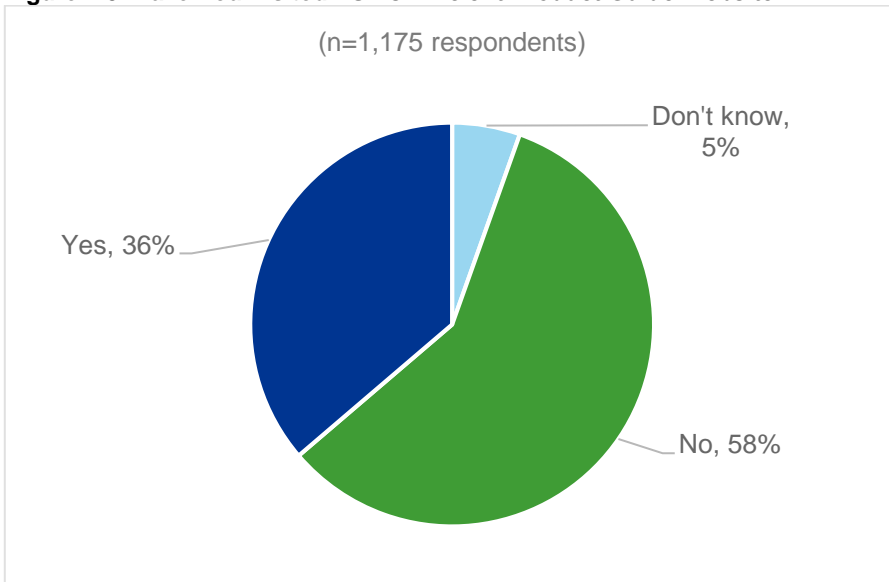


Table 4-6 breaks out these results by study group. Slightly more respondents from the treatment group visited the website (39% vs 36%, respectively), although the differences between treatment and control groups were not statistically significant.

Table 4-6. Website Visitation – Treatment v. Control

Study Group Name	Percent of Responses		
	Yes	No	Don't know
Enervee Treatment (n=668)	39%	55%	6%
Enervee Control (n=507)	33%	62%	5%
Overall	36%	58%	5%

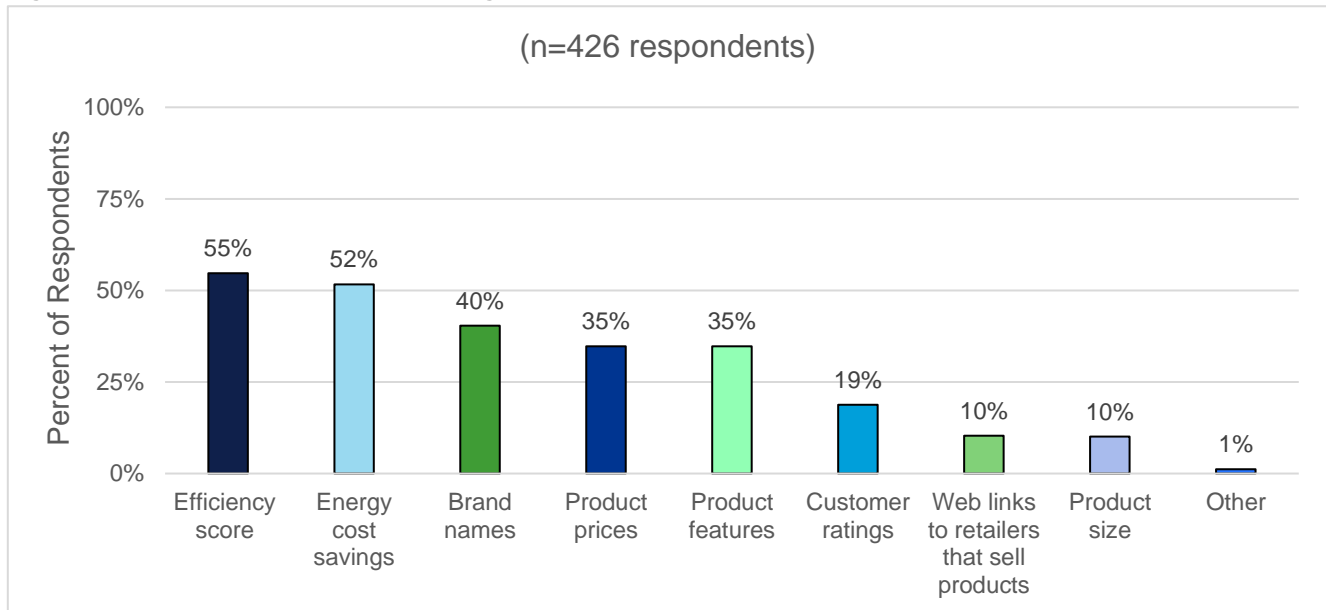
Respondents who reported visiting PSE’s EPG website (n=426) were then asked how many times they had visited the website. As shown in Table 4-7, the majority of customers who confirmed visiting the website either visited it once (32%) or 2 to 3 times (54% for the treatment group, 52% for the control group).

Table 4-7. Website Visitation Frequency – Treatment v. Control

Study Group Name	Percent of Responses				
	Once	2-3 times	4-5 times	More than 5 times	Don't know
Enervee Treatment (n=258)	32%	54%	5%	4%	5%
Enervee Control (n=168)	32%	52%	7%	2%	7%
Overall	32%	54%	5%	4%	5%

DNV also evaluated customer recollection by asking respondents who visited the website (n=426) what type of information they remembered seeing on the website. As depicted in Figure 4-10, respondents most frequently remembered seeing the efficiency score (55% of respondents), energy cost savings (52%), and brand names (40%) that were displayed on the website. ‘Other’ information that respondents reporting seeing on the website included ‘rebates’ and ‘suggestions for preferred appliances.’

Figure 4-10. What Users Remember Seeing on the Website



* Respondents were instructed to select all the messages they recalled, so the totals exceed 100%.

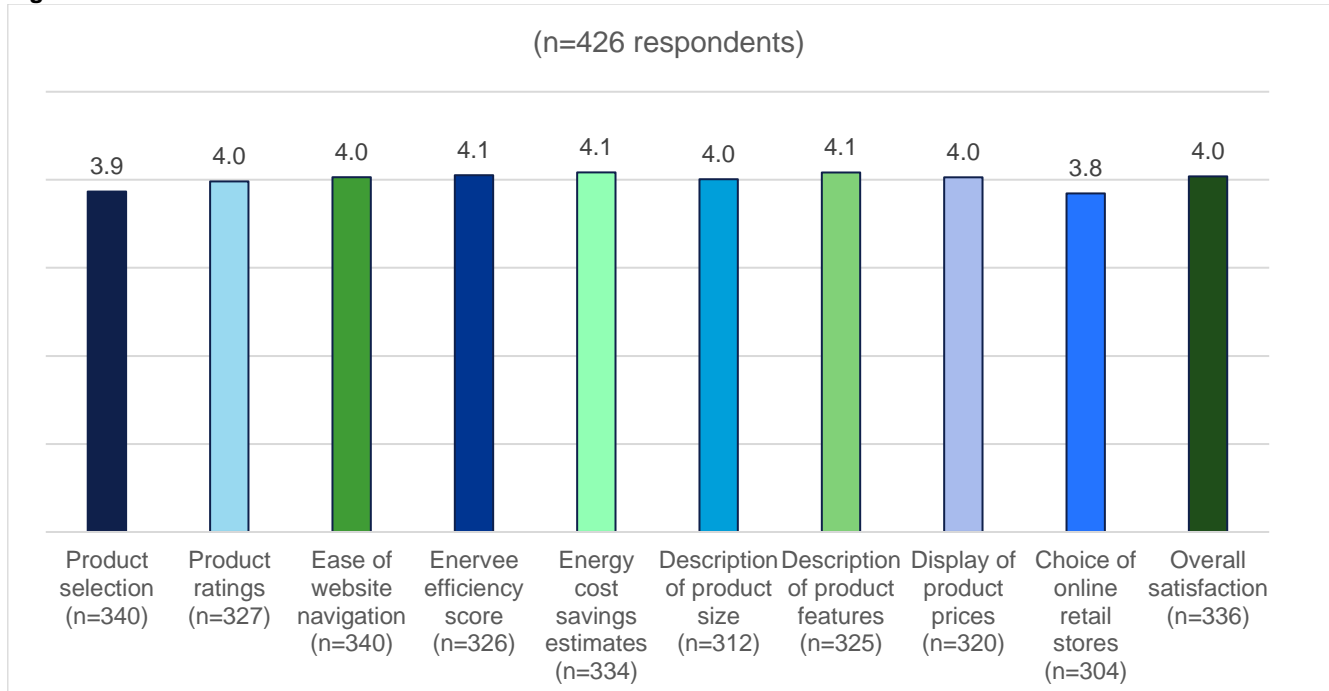
DNV next assessed the influence of the website on individual equipment purchases by asking survey respondents if they used the website before purchasing the equipment. Overall, the difference between the treatment and control groups was not statistically significant. Less than a third (33%) of the treatment group reported using the website before purchasing their

equipment, compared to 30% of the control group. Respondents who reported considering energy efficiency prior to their purchase and who also stated the energy efficiency of the product influenced their purchase decision (n=246) were also asked if the website had influenced their decision. A larger percent of the control group (37%) reported being influenced by the EPG website compared to the treatment group (33%), although once again the difference was not statistically significant.

4.2.5 Satisfaction of Website

All survey respondents who reported having visited PSE’s Efficient Product Guide website (n=426) were asked to rate their satisfaction with different aspects of the experience using a 5 point scale, where 5 means “very satisfied” and 1 means “very dissatisfied.” All 10 aspects of the website displayed in Figure 4-11 have average satisfaction ratings close to ‘4’ which indicates a relatively high level of satisfaction. On average, participants reported the highest level of satisfaction with the Enveree efficiency scores, energy cost savings estimates included on the website, and the descriptions that included the product sizes. When asked about their overall satisfaction with the website, only 5% (n=19) reported being dissatisfied.

Figure 4-11. Satisfaction with the Website



4.2.6 Website Feedback

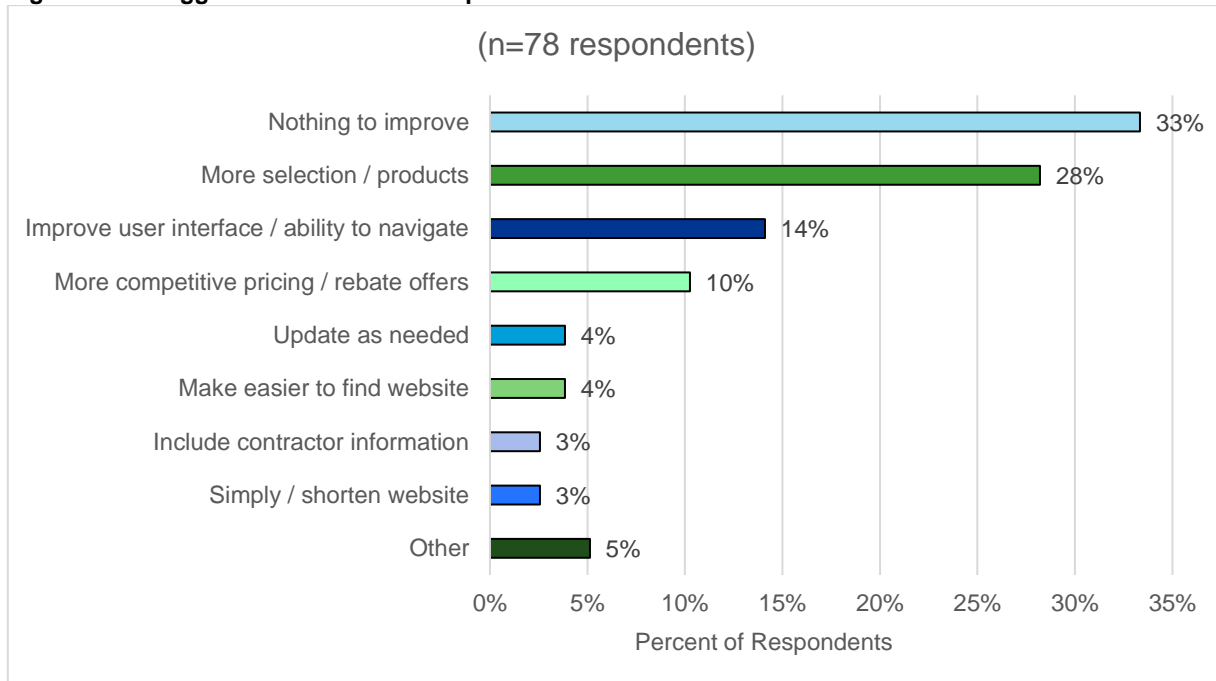
All survey respondents who reported having visited PSE’s Efficient Product Guide website (n=426) were also asked to provide feedback on their experience with the website. When the website users were asked how the website could be improved, roughly one third (33%) of the 78 respondents who provided feedback reported that there was ‘nothing to improve.’ This result aligns with the relatively high overall satisfaction previously discussed in Section 4.2.5. Of the remaining responses, Figure 4-12 shows the most commonly suggested improvements, which were more selection of products on the website (28%), improving the user-interface to make it easier to navigate (14%), and including more competitive pricing and rebate offers for the products (10%).

‘Other’ suggestions respondents reported included:

- *“Put the link near bill pay online.”*

- *“Include links to other reputable sites.”*
- *“Remind people to use it.”*

Figure 4-12. Suggestions for Website Improvements



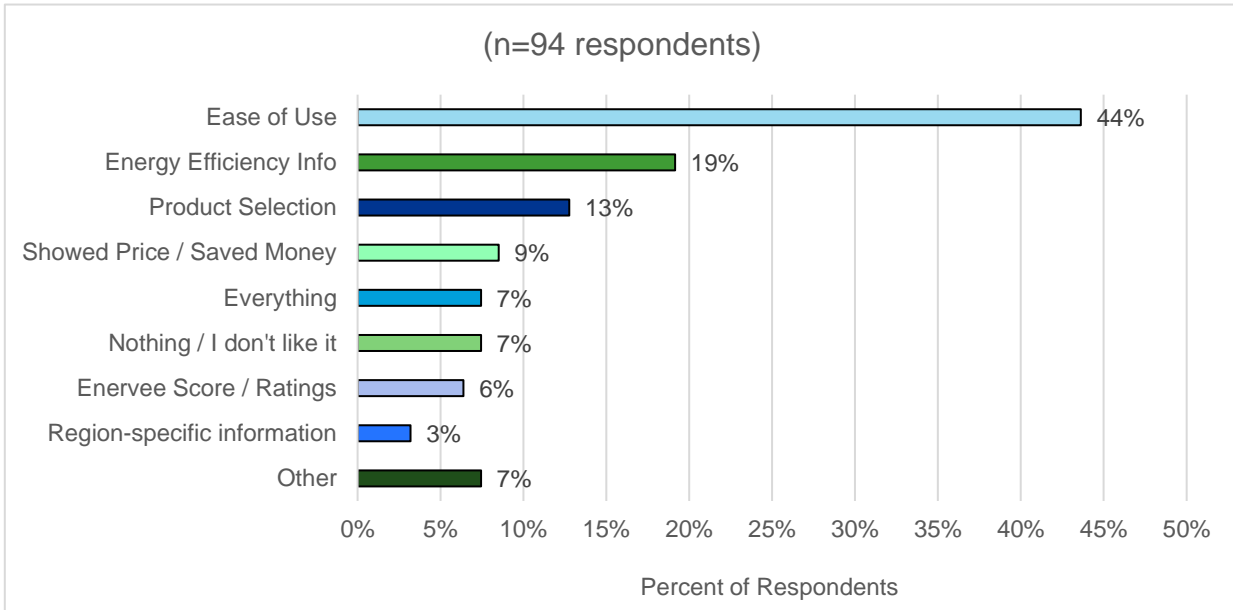
The respondents who used the website were also asked what they liked about using the website. As displayed in Figure 4-13, less than half of respondents (44%) reported liking how easy it was to use the website. This finding suggests that while some (n=11) users previously suggested improving the ease of use and ability to navigate the website, a larger number of respondents (n=41) find the website easy to navigate. This aligns with the average satisfaction rating of ‘4’ for the website’s ease of navigation displayed in Figure 4-11.

Survey respondents also frequently reported liking the energy efficiency information on the website and the product selection. More respondents suggested increasing the product selection (n=22) compared to those who reporting liking the product selection (n=12). This result is also in alignment with the satisfaction ratings displayed in Figure 4-11, as product selection received the second lowest average satisfaction rating (3.9).

‘Other’ things respondents reported liking about the website included:

- *“It shows me that you are looking towards the future and care about my environment.”*
- *“I like the overall goal. I just need to remember it’s there.”*
- *“The direct link to the product I wanted to buy from a PSE email.”*
- *“Gave me an idea of what I wanted.”*

Figure 4-13. What Users Like About the Website



5 KEY FINDINGS AND RECOMMENDATIONS

5.1 Impact Evaluation Findings

- There were no statistically significant energy savings based on the effects of PSE's Efficient Product Guide website.
- There was statistically significant electric savings based on the influence of Home Energy Reports, confirming results from the 2021 HER impact evaluation study.

5.2 Online Survey Findings

- There were no statistically significant differences between treatment and control groups in terms of what customers purchased, the type of research they conducted when making these purchases, or their awareness and use of PSE's Efficient Product Guide website.
- More than two-thirds of surveyed PSE customers (68%) purchased at least one product since October 2020. Three-quarters of products (75%) were researched before purchase and customers reported using customer reviews and expert reviews to inform their purchase decision.
- The top retailers listed on PSE's EPG website were Amazon (19%), Home Depot (18%), and Lowes (11%). Combined, those retailers accounted for 48% of the total reported purchases. On the other hand, Costco (21% of sales), Walmart (2%), and Fred Meyer (1%) are not linked retailers on the PSE's EPG website and accounted for 24% of total reported sales.
- Just over half (51%) of PSE customers surveyed cited energy efficiency of the product as an influence on their decision, while 49% did not consider it a factor.
- The differences in awareness of the website between the treatment and control groups was minimal and not statistically significant. Overall, only 16% of respondents were aware of the website. Interestingly, both control groups (groups A and C) were found to have awareness of the website; this could have been due to mistaking their awareness for another PSE Website (e.g., the PSE Marketplace website).
- The differences in use of the website between the treatment and control groups was also minimal and not statistically significant. Overall, only 36% of respondents who heard of the website reported visiting the website.
- Survey respondents reported having a relatively high level of satisfaction with all 10 aspects of the website evaluated in the online survey (e.g., ease of website navigation, overall satisfaction). For most aspects of the website evaluated, the average level of satisfaction was 4 or slightly higher on a 5 point scale.
- When asked about feedback for the website, users most frequently reported liking the 'ease of use' of the website and stated there was 'nothing to improve.' The second most common suggestion for improving the website was to have 'more selection of products.'

5.3 Recommendations

- The Efficient Product Guide website offers useful tools for evaluating the efficiency of products as well as other considerations such as price and customer reviews. While there may be benefits to PSE for encouraging its customers to choose efficient products, the evaluation did not show statistically significant energy savings resulting



from marketing the website. PSE may wish to discontinue supporting the Efficient Product Guide website due to the lack of savings attributable to the website unless there are other non-energy savings benefits that justify continuing to support the website (e.g., increasing awareness of energy efficiency as a consideration when purchasing products).

- If PSE opts to continue hosting and marketing the EPG website, PSE may also want to consider:
 - Sending out the EPG marketing module in Home Energy Reports in addition to email marketing to all HER treatment customers. This was the only scenario where savings were slightly larger (albeit statistically insignificant) than savings generated by HER alone.
 - Adding additional major retail stores to PSE's EPG website, like Costco and Walmart.
 - Adding more links to customer reviews and expert reviews to the EPG website.



6 APPENDICES

6.1 Appendix A: Additional Online Survey Tables

We present additional figures and tables of online survey results below.

Figure A-1. What Users Remember Seeing on the Website by Study Group, Percent of Respondents

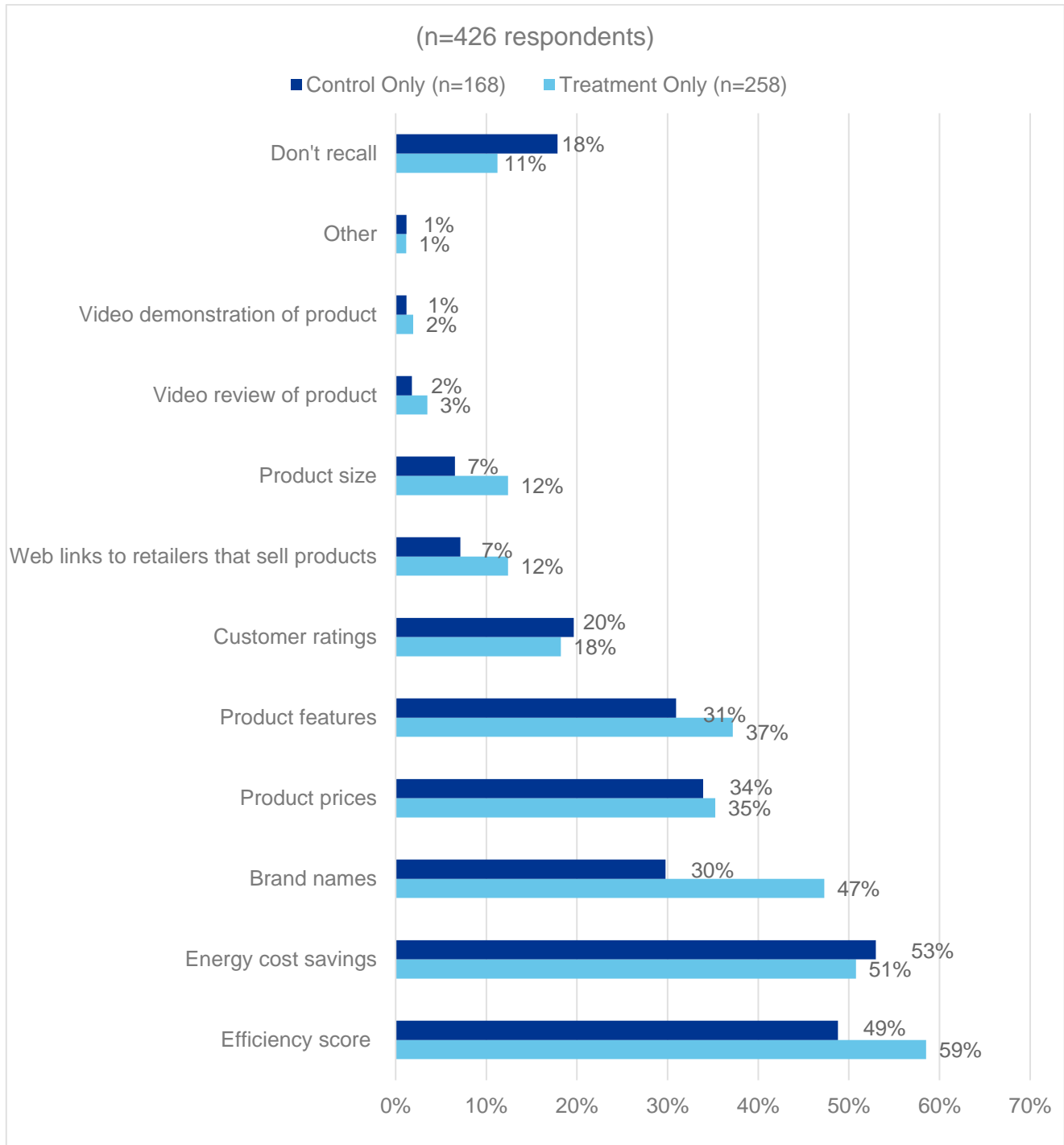


Figure A-2. Percent of Products Purchased After Using PSE’s Efficient Product Guide Website by Study Group

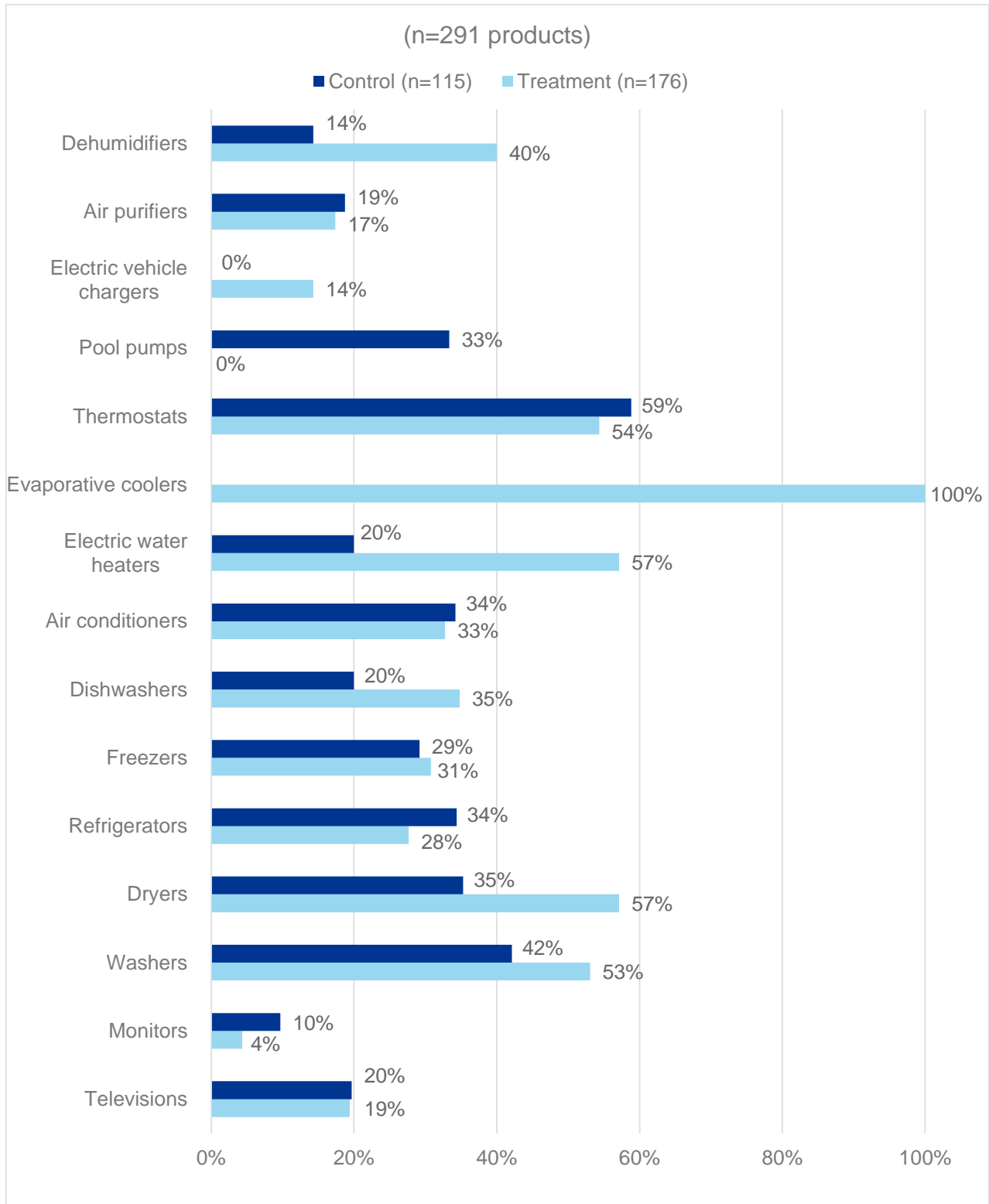


Figure A-3. Influence of Website on Purchase of Equipment by Study Group

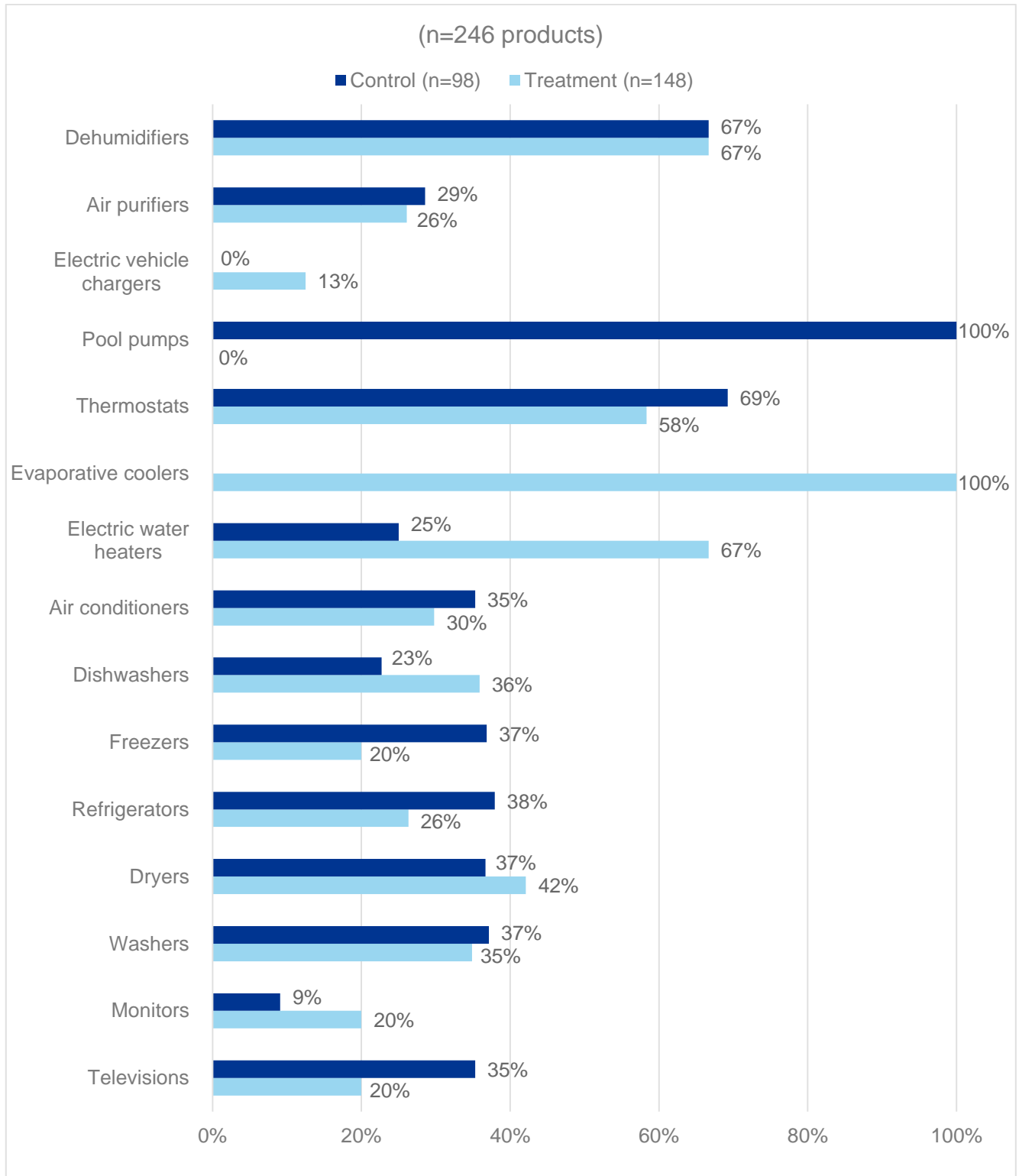




Table A-1. Age of Household Occupants

Age Range	Percent of Overall Occupants
Under 5	8%
6 to 18	21%
19 to 65	55%
65 and older	16%

n=6,989

Table A-2. Household Primary Language

Primary Language	Percent
English	91%
Other	2%
Chinese	2%
Prefer not to say	1%
Spanish	1%
Korean	1%
Vietnamese	1%
Tagalog	1%
Total	100%

n=7,231

Table A-3. Respondents Who Own or Rent Their Residence

Own or Rent	Percent
Own	91%
Rent	9%
Total	100%

n=7,222

Table A-4. 2021 Household Annual Income

Income Range	Percent
Less than \$10,000	1%
\$10,000 – \$19,999	1%
\$20,000 – \$24,999	1%
\$25,000 – \$49,999	6%
\$50,000 – \$74,999	12%
\$75,000 – \$99,999	14%
\$100,000 – \$149,999	24%
\$150,000 – \$174,999	10%
\$175,000 - \$199,999	7%
\$200,000 – \$249,999	8%
\$250,000 or more	15%
Total	100%

n=5,565



6.2 Appendix B: PSE Energy Efficient Product Guide Online Survey

RESEARCH OBJECTIVES

1. To what extent are there differences between treatment and control groups in the purchase of efficient products?
 - a. Which products did customers buy?
 - b. Where did customers purchase their products?
 - c. Which customers bought the products offered on the PSE Energy Efficient Product Guide website?
 - d. Among the products purchased, how many were efficient products?
2. Do customers recall seeing marketing materials from PSE about the Energy Efficient Product Guide website?
3. Do customers recall seeing marketing materials from PSE about the Energy Efficient Product Guide website along with a PSE Home Energy Report?
4. How satisfied are customers with the Efficient Product Guide website? CUSTOMER NOTIFICATION EMAIL

CUSTOMER NOTIFICATION EMAIL

Email: From [ESEEvaluations@PSE.com]

Subject: PSE Requests your feedback

Dear [CUSTOMER],

Puget Sound Energy is conducting research on home consumer product purchases and would like to get your feedback.

To get started click on this link: [LINK]

PSE has hired the research firm, DNV, to help administer this survey. If you have any questions or concerns regarding this research, please contact me.

Thank you for helping us with this research effort.

Jesse Durst

Senior Market Analyst
Energy Efficiency Services
Puget Sound Energy
Cell: 608-616-5551
jesse.durst@pse.com



If you have questions about the survey, please contact the study contractor at: support.pse@dnv.com

If you would like to be removed from this survey, please click on this link [REMOVE]



SCREENER

1. Do you still have an active account with Puget Sound Energy (PSE)?

1	Yes	
2	No	Terminate survey
-99	Don't know	Terminate survey

SURVEY

Product Purchases

2. Since October 2020, have you purchased any of the following products?

Electronics		Home Appliances		Heating, Cooling, Water Heating		Other Products	
1	Televisions	3	Washers	8	Air conditioners	12	Pool pumps
2	Monitors	4	Dryers	9	Electric water heaters	13	Electric vehicle chargers
		5	Refrigerators	10	Evaporative coolers	14	Air purifiers
		6	Freezers	11	Thermostats	15	Dehumidifiers
		7	Dishwashers				
16. No (Skip to Q9)							
17. Don't know (Skip to Q9)							

3. [IF Q2 = YES] Did you make your purchase online or at a store (ask for up to 15 products)?

		Select 1		
		PRODUCT 1	PRODUCT 2	PRODUCT 3
1	Online			
2	At store			
3	From a contractor			
4	Other (specify)			
-99	Don't know			

4. [IF Q2 = 1 or 2] Where did you purchase the [PRODUCT]?

		Select 1		
		PRODUCT 1	PRODUCT 2	PRODUCT 3
1	Amazon.com			
2	Best Buy			
3	Lowe's			
4	Home Depot			
5	Walmart			
6	Target			
7	Fred Meyer			
8	Costco			
9	Appliances Connection			
10	Abt Appliances & Electronics			
11	AJ Madison			
12	Trail Appliances			
13	Leslie's Pool Supplies			
14	Pool Supply Unlimited			
15	Other [SPECIFY]			
-99	Don't recall			

5. [IF Q2 = YES] What things did you consider when purchasing a/an?

		Select all that apply		
		PRODUCT 1	PRODUCT 2	PRODUCT 3
1	Product price			
2	Product quality			
3	Product size			
4	Product features			
5	Expert reviews			
6	Customer reviews			
7	Energy efficiency			
8	Other [SPECIFY]			

6. [IF Q2 = YES] Did you do any research prior to purchasing a/an?

		Select one		
		PRODUCT 1	PRODUCT 2	PRODUCT 3
1	Yes			
2	No			
-99	Don't know			



7. [IF Q6=1] What did you use to research your product?

		Select all that apply		
		PRODUCT 1	PRODUCT 2	PRODUCT 3
1	Read expert reviews on Consumer Reports website			
2	Read expert reviews on cnet.com website			
3	Read expert reviews on other website [SPECIFY]			
4	Read customer reviews on product			
5	Read recommendations on Puget Sound Energy website			
6	Read recommendations from other utility's website			
7	Talked to friends/family about the product			
8	Other source [SPECIFY]			
-99	Don't recall			

8. [SKIP IF Q5=7] Did the energy efficiency of the product you purchased influence the decision to purchase it?

		Select one		
		PRODUCT 1	PRODUCT 2	PRODUCT 3
1	Yes			
2	No			
-99	Don't know			

Awareness and Use Website

9. [FOR EVERYONE] Have you heard of PSE's Efficient Choice website (pse.efficientchoice.com)? [INSERT SCREENSHOT OF WEBSITE]

1	Yes	
2	No	Q20
-99	Don't know	Q20

10. [IF Q9=1] How did you hear about PSE's Efficient Choice website?

		Select all that apply
1	Email from PSE	
2	Home Energy Report from PSE	
3	Friend/family/colleague	
4	Other [SPECIFY]	
-99	Don't recall	



11. [IF Q9=1] Have you visited PSE's Efficient Choice website?

1	Yes	
2	No	Q20
-99	Don't know	Q20

12. [IF Q11=1] How many times have you visited the website?

1	Once	
2	2-3 times	
3	4-5 times	
4	More than 5 times	
-99	Don't know	

13. [IF Q11=1] What information do you remember seeing on the website?

		Mark all that apply
1	Product prices	
2	Brand names	
3	Product size	
4	Product features	
5	Customer ratings	
6	Efficiency score	
7	Energy cost savings	
8	Video demonstration of product	
9	Video review of product	
10	Web links to retailers that sell products	
11	Other [SPECIFY]	

[IF Q2=16 OR 17 (NO OR DON'T KNOW), SKIP TO Q16]

14. [IF Q2= YES AND Q11=1] Did you use PSE's Efficient Choice website before you purchased...?

		Select one		
		PRODUCT 1	PRODUCT 2	PRODUCT 3
1	Yes			
2	No			
-99	Don't know			

IF Q2=16 OR 17 (NO OR DON'T KNOW), SKIP TO Q16]

15. [IF Q8=1] Did PSE's Efficient Choice website influence your decision to purchase a more energy efficient product?

		Select one		
		PRODUCT 1	PRODUCT 2	PRODUCT 3
1	Yes			
2	No			
-99	Don't know			

Satisfaction with Website

Thinking about your experience using PSE’s Efficient Choice website, I’d like to ask you about your satisfaction with different aspects of the website.

16. [IF Q11=1] Using a scale of 1 to 5 where 1 means very dissatisfied, 2 is somewhat dissatisfied, 3 is neither satisfied nor dissatisfied, 4 is somewhat satisfied, and 5 is very satisfied, how satisfied are you with your experience the following aspects while using PSE’s Efficient Choice website?

	Aspect	Rating	If < 4, ask “What about the [WEBSITE ASPECT] could be improved?”
1	Product selection	1 2 3 4 5 Don’t know	
2	Product ratings	1 2 3 4 5 Don’t know	
3	Ease of website navigation	1 2 3 4 5 Don’t know	
4	Enervee efficiency score	1 2 3 4 5 Don’t know	
5	Energy cost savings estimates	1 2 3 4 5 Don’t know	
6	Description of product size	1 2 3 4 5 Don’t know	
7	Description of product features	1 2 3 4 5 Don’t know	
8	Display of product prices	1 2 3 4 5 Don’t know	
9	Choice of online retail stores	1 2 3 4 5 Don’t know	
10	Overall satisfaction with Efficient Choice website	1 2 3 4 5 Don’t know	

17. [IF Q14=2 OR -99] Why didn’t you use PSE Efficient Choice website prior to making your purchase?

		Mark all that apply
1	I forgot about the website	
2	I didn’t find the website helpful	
3	I didn’t want to purchase the product(s) online	
4	I couldn’t find the product on the website	
5	Other [SPECIFY]	
6	Don’t know	

18. [IF Q11=1] How could the website be improved? [RECORD OPEN ENDED RESPONSE]

19. [IF Q11=1] What did you like about using the website? [RECORD OPEN ENDED RESONSE]



Demographics

These last questions help PSE better understand its customers. Your responses will remain anonymous.

20. For each of the following age groups, how many people, including yourself, live in your home at least 6-months a year? Please indicate the number of people who live in your home from each age category.

	Age Category:	Mark All That Apply
1	Under 5	
2	6 to 18	
3	19 to 65	
4	65 and older	

21. What is the primary household language?

1	English
2	Spanish
3	Chinese (including Mandarin and Cantonese)
4	Tagalog
5	Vietnamese
6	Korean
7	Prefer not to say
8	Other (please specify)

22. What is the highest degree or level of school you have completed? If you're currently enrolled in school, please indicate the highest degree you have received.

1	Less than a high school diploma
2	High school degree or equivalent
3	Vocational/trade school or associate degree
4	Bachelor's degree (e.g., BA, BS)
5	Master's degree (e.g., MA, MS, MEd)
6	Doctorate (e.g., PhD, MD, EdD)
7	Prefer not to say
8	Other (please specify)

23. Do you own or rent?

1	Own
2	Rent



24. Which of the following building types best describes your home?

1	Single-family detached home (home not attached to another home)
2	Townhouse, duplex, or row house (shares exterior walls with neighboring unit, but not roof or floor)
3	Apartment or condominium (2–4 units)
4	Apartment or condominium (5 or more units)
5	Mobile home
6	Other

25. Please check the range that best describes your household's 2021 total annual income.

1	Less than \$10,000
2	\$10,000 – \$19,999
3	\$20,000 – \$24,999
4	\$25,000 – \$49,999
5	\$50,000 – \$74,999
6	\$75,000 – \$99,999
7	\$100,000 – \$149,999
8	\$150,000 – \$174,999
9	\$200,000 – \$249,999
10	\$250,000 or more
11	Prefer not to say

26. Would you be interested in earning a \$100 e-gift card by participating in a virtual panel so that PSE can learn more about your experience using the Efficient Choice website?

1	Yes	
2	No	

27. As a thank you for your participation in this research, your response will be entered into a drawing for an Amazon e-gift card of up to \$300. If selected for the e-gift card, you will be notified by email (please check your spam filter).

Would you like to be included in the incentive drawing?

1	Yes, include my response in the drawing
2	No, exclude my response from the drawing



About DNV

DNV is a global quality assurance and risk management company. Driven by our purpose of safeguarding life, property and the environment, we enable our customers to advance the safety and sustainability of their business. We provide classification, technical assurance, software and independent expert advisory services to the maritime, oil & gas, power and renewables industries. We also provide certification, supply chain and data management services to customers across a wide range of industries. Operating in more than 100 countries, our experts are dedicated to helping customers make the world safer, smarter and greener.