

# AEG

## NW Natural Low Income Needs Assessment

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# 1

## INTRODUCTION

NW Natural and its delivery partners currently offer a number of Energy Assistance programs for income-eligible customers in its Oregon<sup>1</sup> and Washington<sup>2</sup> service areas, designed to decrease energy costs and energy burden and to improve residents' health, safety, and comfort. NW Natural is exploring ways to amplify its portfolio of Energy Assistance programs in each state and is interested in understanding additional opportunities to serve its low-income customers' needs, either through increased participation in current offerings or through new or revamped Energy Assistance.

On December 18, 2020, NW Natural filed a general rate case with the Washington Utilities and Transportation Commission (WUTC), docketed as UG-200994. An all-party settlement was reached and submitted to the WUTC for approval. Order 05 was issued on October 21, 2021, which approved the stipulation and resolved all the issues in the case. As part of the stipulation and in compliance with Order 05, NW Natural agreed to work in consultation with the GREAT Advisory Group to produce a Low-income Needs Assessment (LINA) to determine the need for low-income Energy Assistance for the Company's Washington customers. The assistance may come in the form of low-income weatherization, other energy assistance measures, or low-income Energy Assistance programs. The AG and NW Natural LINA should both align with the goal of increasing equitable service.

NW Natural engaged Applied Energy Group (AEG) to perform the LINA and meet the needs of previous rate case orders by providing insight into customer and community characteristics, eligible populations, penetration of current Energy Assistance offerings, and barriers and opportunities for current or future Energy Assistance offerings. To complete this assessment, AEG combined NW Natural data with publicly available secondary sources to provide a granular geographic picture of NW Natural's Oregon and Washington service areas; and then used this information to survey NW Natural's income-qualified residential customers. The assessment also created a robust analysis framework that can be updated and enhanced, as necessary, to answer new questions about NW Natural's income-qualified customers and offerings.

AEG's methodology, data sources, and assessment results are described in the remaining sections of this report:

- **Section 2: Community Characterization and Survey Sample Frame Development** presents the data sources and methodology AEG used to characterize communities within NW Natural's service area, followed by the results of this characterization and a description of the sample that was used to implement the customer survey.
- **Section 3: Customer Survey** describes the implementation of the customer survey and presents key findings related to Energy Assistance. The survey instrument is included in Survey Instrument A, with detailed survey responses in Survey Responses B.
- **Section 4: Additional Analyses** describes two additional analyses that AEG performed as part of this assessment:
  - An assessment of average energy burden within Census block groups within NW Natural's Oregon and Washington service territories, and
  - A penetration analysis of the percent of customers eligible for Energy Assistance currently participating in NW Natural programs.

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<sup>1</sup> Oregon Energy Assistance programs: Low Income Home Energy Assistance Program (LIHEAP), Oregon Low-Income Gas Assistance (OLGA), and Gas Assistance Plan (GAP), Arrearage Management Program (AMP – available during COVID, currently discontinued), Residential Bill Discount Program.

<sup>2</sup> Washington Energy Assistance Program: Low Income Home Energy Assistance Program (LIHEAP), Gas Residential Energy Assistance Tariff (GREAT), and Gas Assistance Plan (GAP), COVID Assistance Program (CAP – available during COVID, currently discontinued)

- **Section 5: Barriers and Recommendations** synthesizes the results of the previous sections to identify barriers to participation in existing NW Natural Energy Assistance offerings and provides recommendations on how the reach of these, or future offerings, could be increased.

# 2

## COMMUNITY CHARACTERIZATION AND SURVEY SAMPLE FRAME DEVELOPMENT

### Community Characterization

To provide deeper insight into NW Natural’s residential customer base and to inform the implementation of the customer survey described in the next section of this report, AEG performed a granular analysis within the communities NW Natural serves in Oregon and Washington. The goal of this analysis was to characterize communities based on two metrics: 1) the probability that a NW Natural customer residing in the area qualifies for Energy Assistance, and 2) whether the community was urban or non-urban.

The data sources and process used to characterize communities on these metrics are described below, along with the results of the analysis.

### Data Sources

To perform the community characterization, AEG relied on the following key data sources:

- NW Natural billing and location data for active customers,
- NW Natural customer Energy Assistance program participation identifiers,
- The 2020 American Community Survey (ACS), which provides average characteristics at the Census block group level,<sup>3</sup> and
- State-specific income guidelines for Energy Assistance, shown in Table 2-1 below. As shown, income guidelines for Energy Assistance are more restrictive for common household sizes in Washington than in Oregon.

Table 2-1 Income Guidelines for Oregon and Washington, Program Year 2022<sup>4</sup>

Household Size (Residents)	Annual Gross Income*	
	Oregon Requirement: 60% State Median Income (SMI)	WA Requirement: 150% Federal Poverty Level (FPL)
1	\$29,334	\$19,320
2	\$38,373	\$26,130
3	\$47,402	\$32,940
4	\$56,430	\$39,750
5	\$65,459	\$46,560
6	\$74,488	\$53,370
7	\$76,181	\$60,180
8	\$77,874	\$66,990
9	\$79,567	\$73,800

<sup>3</sup> Block groups are statistical divisions of census tracts, generally defined to contain between 600 and 3,000 people: <https://www.census.gov/programs-surveys/geography/about/glossary.html#>

<sup>4</sup> Current scope for the sampling and low-income probability was based on the 2022 income guidelines. Updated guidelines for 2023 are available for future LINAs. [Federal Poverty Guidelines for FFY 2023 | The LIHEAP Clearinghouse \(hhs.gov\)](#)



10	\$81,260	\$80,610
11	\$82,953	\$87,420
12	\$84,645	\$94,230
Each Additional Member	\$1,692	\$6,810

\* Gross Income refers to all household income before any deductions

- Urban and non-urban designations are based on the USDA’s Rural-Urban Commuting Areas Codes, which classify Census tracts using measures of population density, urbanization, and daily commuting. Each Census tract is given a 1 to 10 score to delineate metropolitan, micropolitan, small town, and rural commuting areas based on the size and direction of the primary (largest) commuting flow. For this analysis, AEG defined Census tracts with a score of 1-3 as “urban” and Census tracts with a 4-10 as “non-urban.”

Because NW Natural does not gather income or household size information from its customers, AEG was not able to assess Energy Assistance eligibility at a customer level. Rather, AEG mapped each customer’s service address to a Census block group, aggregated customer counts to the Census block group level, and then merged these counts with income and household size information from the ACS.

AEG employed ACS’s margin of error data to determine probability distribution for each block group and estimate the likelihood of Energy Assistance eligibility. This methodology is more rigorous than using only median income and household size from the ACS, which would have created an overly limiting, binary assessment of each block group.

### Data Cleaning

Table 2-2 shows the data cleaning and screening steps AEG took to develop the preliminary residential sampling frame (i.e., the group of customers eligible for the low-income designation), and the proportion of customers remaining after each data processing step. As shown, this cleaning process removed roughly 17% of provided accounts.

1. Filtered out non-residential customers and reclassified customers with missing building types to single family.
2. Removed customers with 0 or negative annual natural gas usage.
3. Removed customers with missing ZIP codes.
4. Removed customers in the bottom 15% of natural gas usage to increase the likelihood of reaching customers who have natural gas heat and water heating.

Table 2-2 Sample Attrition - NW Natural Residential Customer Data

	Number of Households	% Original Accounts
<b>Original Database</b>	718,117	100%
<b>Remove Non-Residential &amp; Reclassify Nulls</b>	716,128	99.7%
<b>Remove Missing Service Zip Codes</b>	708,669	98.7%
<b>Remove 0 or Negative Annual Usage</b>	704,950	98.2%
<b>Only Top 85% of Annual Usage</b>	594,070	82.7%
<b>Sample Frame Total</b>	<b>594,070</b>	<b>82.7%</b>

### Energy Assistance Eligibility

After cleaning the data, AEG matched each remaining customer’s service address to the appropriate Census block group to apply the low-income probabilities developed above. Table 2-3 shows the distribution of NW

Natural residential customers in each state based on the block group-level probability of eligibility for Energy Assistance programs. Key findings from this analysis include:

- In both states, most customers reside in communities where less than 13% of households are expected to qualify for Energy Assistance:
  - In Oregon, 80% of customers reside in these communities
  - In Washington, 99% of customers reside in these communities
- In both states, a small percentage of customers reside in communities where over 90% of households are expected to qualify for Energy Assistance:
  - In Oregon, about 3% of customers reside in these communities
  - In Washington, no customers reside in these communities
- In Washington, few customers (~100) reside in communities with a probability of over 30% Energy Assistance eligibility.
- The distribution of customers by low-income probability likely creates additional challenges for NW Natural in ensuring eligible customers are aware of Energy Assistance offerings.

*Table 2-3 NW Natural Customers by Low-Income Probability, by State*

Low Income Probability	Oregon Customers	Washington Customers
96 – 100%	8,614	0
91 – 95%	3,484	0
86 – 90%	2,178	44
81 – 85%	1,846	0
71 – 80%	4,281	0
61 – 70%	5,821	0
51 – 60%	5,865	25
41 – 50%	8,622	38
31 – 40%	16,244	1
21 – 30%	18,715	155
11 – 20%	28,079	352
1 – 10%	417,866	71,840
<b>Total</b>	<b>521,615</b>	<b>72,455</b>

## Survey Sample Design

Because eligibility for Energy Assistance could not be determined at the customer level, AEG aimed to sample high-probability areas in both states to increase the likelihood of reaching eligible customers with the survey. While this methodology created a sufficiently large sample for Oregon, as discussed and shown above, few such customers were identified in Washington, so an alternate approach was required.

To develop the Washington sample, AEG identified customers who had participated in an Energy Assistance program from 2017–2019,<sup>5</sup> then created a geographic radius area around these participants’ service locations

<sup>5</sup> Because new OLGA program eligibility requirements were introduced during the COVID-19 pandemic (2020-2022), this time period was used to identify customers who qualified under the original program eligibility requirements.

(250 feet for urban customers, 1,320 [one-quarter mile] feet for non-urban customers);<sup>6</sup> the hypothesis was that customers residing near known participants would be more likely to qualify for Energy Assistance programs. This methodology identified roughly 8,000 Washington residential customers to include in the survey sample who might qualify for Energy Assistance programs.

With the eligible sample developed, AEG merged urban and non-urban designations to inform the final survey sample design. Table 2-4 shows the urban/non-urban designation overlaid with the low-income probability for the Oregon service area.

Table 2-4 Oregon Residential Customers by Low Income Probability and Urban/Non-Urban Designation

Low Income Probability	Urban	Non-Urban
96 – 100%	6,581	2,033
91 – 95%	2,747	737
86 – 90%	1,616	562
81 – 85%	1,673	173
71 – 80%	3,251	1,030
61 – 70%	4,433	1,388
51 – 60%	4,909	956
41 – 50%	6,187	2,435
31 – 40%	14,070	2,174
21 – 30%	15,013	3,702
11 – 20%	24,580	3,499
01 – 10%	390,444	27,422

### Final Sample Design

The final sample frame consists of Oregon customers with an 86% or higher probability of being a low-income customer and all Washington customers that were qualified to receive the survey through the method described above. The distribution of customers by each dimension is presented in Table 2-5, with details on the number of customers who were recruited to complete the survey presented in the following section.

Table 2-5 Residential Sample by Eligibility and Urban/Non-Urban Designations

State	Low Income Indicator	Urban Designation	Universe N	Universe %
Oregon	86 – 100% Probability	Urban	10,944	76.6%
		Non-Urban	3,332	23.4%
Washington	Qualified	Urban	7,705	97.1%
		Non-Urban	309	2.9%
<b>Total Qualified Sample</b>			<b>22,290</b>	

<sup>6</sup> AEG used an initial radius on rural identified homes of 1,000 feet for initial survey recruitment, then increased the rural buffer for Washington to 1,320 feet to increase the number of responses.

# 3

## CUSTOMER SURVEY

AEG used the sample frame above to recruit NW Natural residential customers to participate in a survey to learn more about customers who may qualify for Energy Assistance programs and to identify barriers to participation to make these programs, or potential new offerings, more effective. The survey targeted low-income households with the goal of completing surveys with 400 Oregon and 100 Washington income-qualified customers.

### Survey Implementation

Data collection took place from May 27 to July 20, 2022. As discussed above, AEG was not able to identify qualifying customers directly, which created challenges for hitting quotas, particularly in Washington. To try to get as large a set of responses as possible, AEG implemented a multi-stage recruitment effort:

1. A postcard survey invitation was mailed to 4,520 Oregon customers (3,900 urban and 620 non-urban) and 1,233 Washington customers (1,000 urban and 233 non-urban) based on the established quotas. The postcard included both English and Spanish instructions for accessing the survey online, including the survey URL and a passcode. It also offered the first 500 customers who qualified and completed the survey a \$25 gift card incentive. To qualify for the survey, customers had to have a natural gas heating system and meet the state-specific low-income program requirements shown in **Error! Reference source not found.**

Figure 3-1 Postcard Invitation

A week after the initial mailing, a second invitation postcard was sent to the same sample.

2. Because the response rate and the number of customers who qualified for the survey were lower than expected, AEG mailed the invitation to an additional 1,000 Washington customers in the sample frame.
3. Finally, AEG emailed the survey to Oregon and Washington NW Natural Residential Insight Panel members, regardless of whether they were likely to qualify for the survey.



A total of 1,616 customers completed the screening portion of the survey. Of those, 307 Oregon customers and 63 Washington<sup>7</sup> customers qualified and completed the survey. The +/- at the 90% confidence interval is 5% for Oregon and 10% for Washington.

<sup>7</sup> Due to the small number of responses in the Washington service territory caution should be taken when interpreting the survey results. The most accurate way to interpret the percentages cited in the report for Washington is as a 10% range in both directions. That is, if it is reported that 50% of Washington customers answered yes to a question, that should be interpreted as 40 – 60% of Washington customers answered yes.

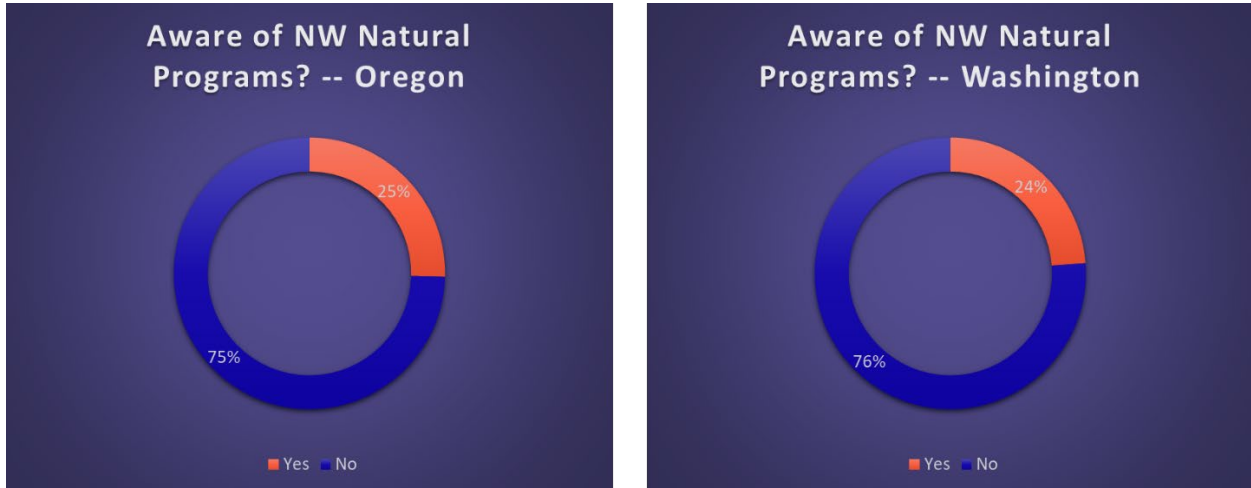
## Key Survey Findings

The survey included questions regarding household characteristics, natural gas service, energy efficiency behavior, NW Natural programs, and barriers to program participation. The key findings as they relate to program interest and energy efficiency opportunities are discussed below.

### Energy Assistance Programs

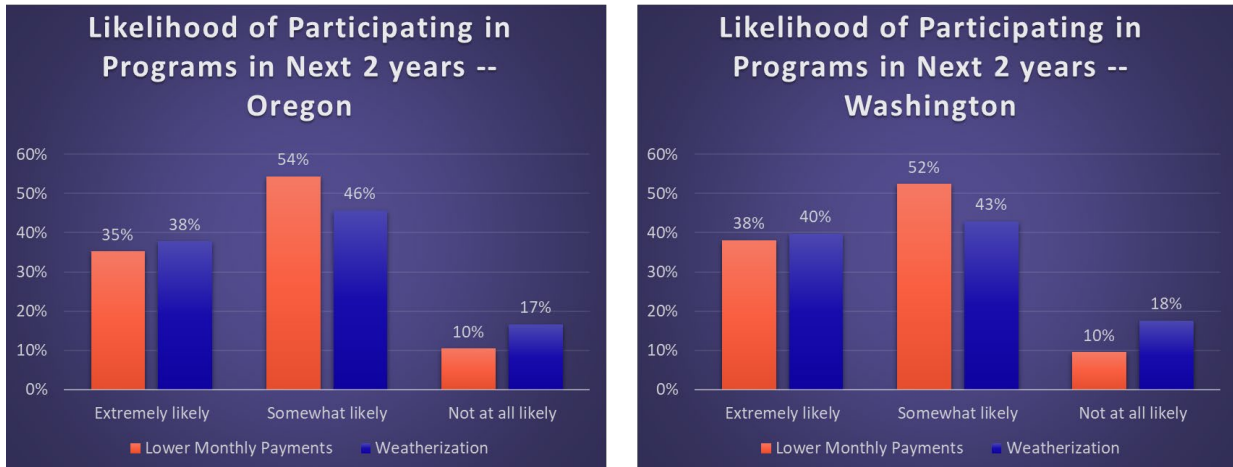
Roughly a quarter of respondents in both states are aware of at least one NW Natural program that can lower monthly bill payments or connect customers to free weatherization services (Figure 3-1).

Figure 3-1 Awareness of NW Natural Energy Assistance or Weatherization Programs (QP1)



Twenty-three percent of Oregon and 13% of Washington respondents had participated in a program; however, a large majority say they are at least somewhat likely to participate in a program that can help lower monthly bill payments or connect customers to free weatherization services (Figure 3-2).

Figure 3-2 Likelihood of Participating in a NW Natural Energy Assistance or Weatherization Program (QP3a)



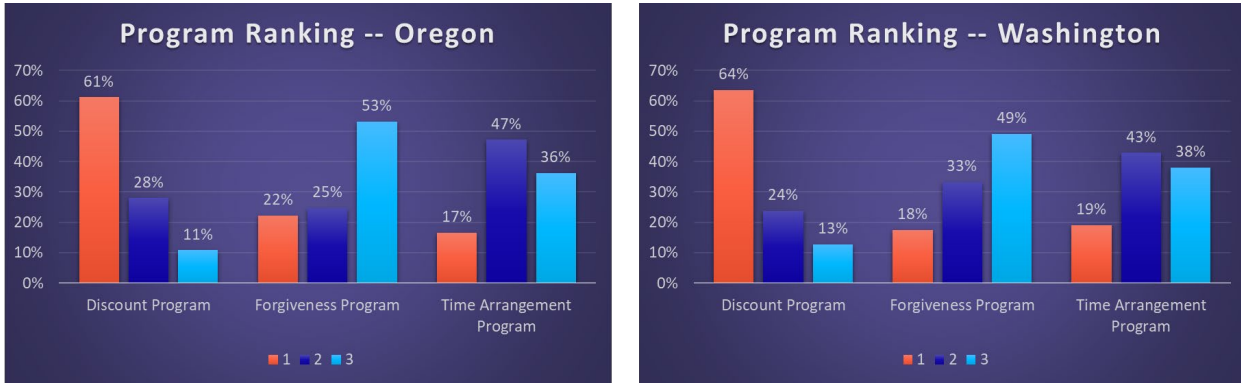
Customers were asked to rank three types of potential Energy Assistance programs in order of preference:

- A discount program that provides a percentage discount on their monthly NW Natural bill,

- A forgiveness program that eliminates or reduces their prior unpaid bills to NW Natural, and
- A time payment arrangement program where they negotiate a contract with NW Natural to pay a fixed amount for natural gas service over a specific period of time (one to two years).

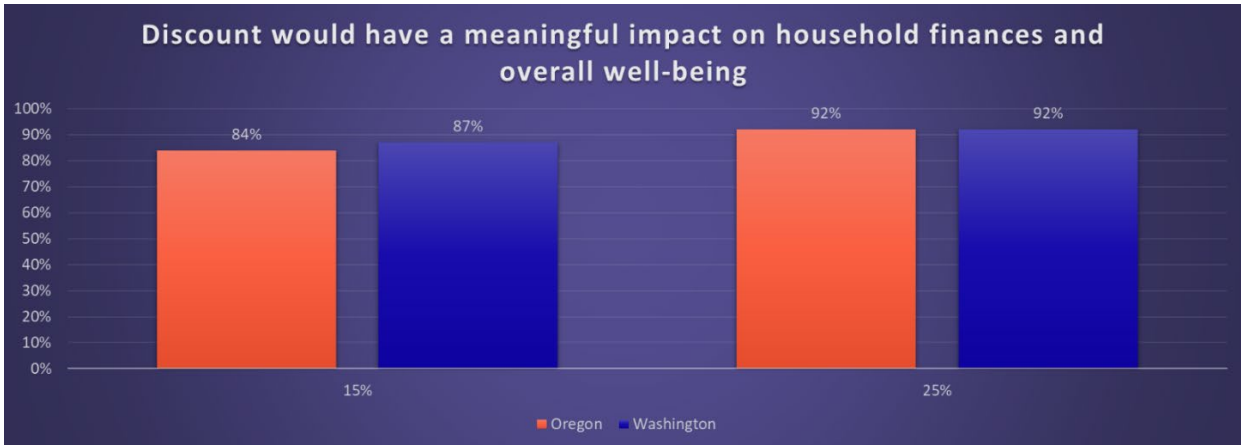
Discount programs are the most popular, with 61% of Oregon respondents and 64% of Washington respondents ranking discount programs first - ahead of forgiveness or time arrangement programs (Figure 3-3).

Figure 3-3 Ranking of Potential Energy Assistance Options (QP5)



Next, respondents were asked about the impacts of specific bill discount levels. A large percentage of respondents say a 15% discount program would have a meaningful impact on their household finances and overall well-being. That metric increases by only 5 - 8% when the discount is increased to 25% (Figure 3-4).<sup>8</sup>

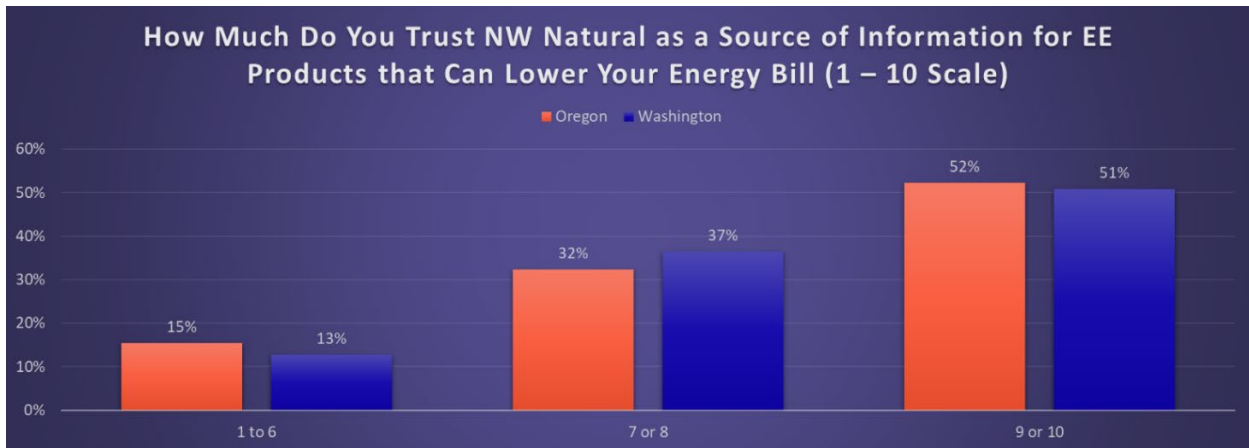
Figure 3-4 Customer Response to Discount Programs (QP6 – QP7)



Respondents view NW Natural as a trusted source of information about Energy Assistance, with 84% of Oregon respondents and 88% of Washington respondents giving the statement “How much do you trust NW Natural as a source of information for energy efficiency products that can lower your energy bill?” a rating of seven or higher on a 10-point scale (Figure 3-5).

<sup>8</sup> If customers indicated a 15% discount would be meaningful, they were not asked about a 25% discount, as it was assumed that these customers would also find a higher discount meaningful.

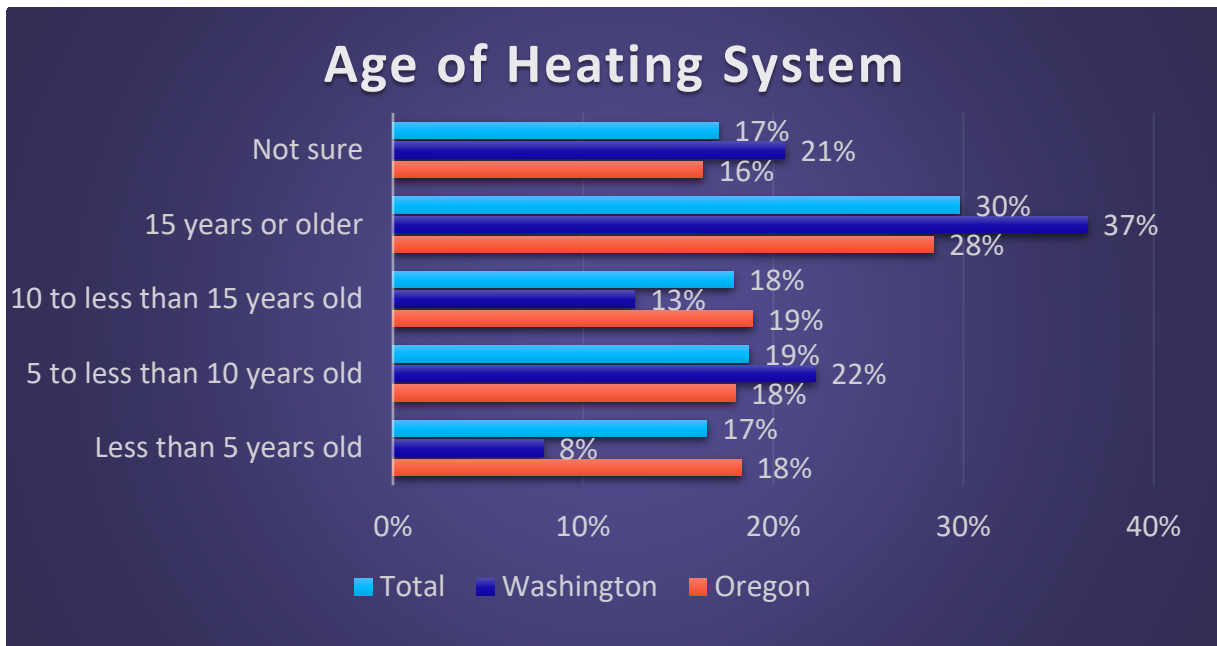
Figure 3-5 Trust in NW Natural (QEE3)



### Energy Efficiency

In terms of natural gas equipment in customers’ homes, the survey identified an opportunity for energy efficiency upgrades. More than a quarter of Oregon respondents and more than a third of Washington respondents have natural gas heating systems that are nearing the end of their useful lives (15 years or older, Figure 3-6)

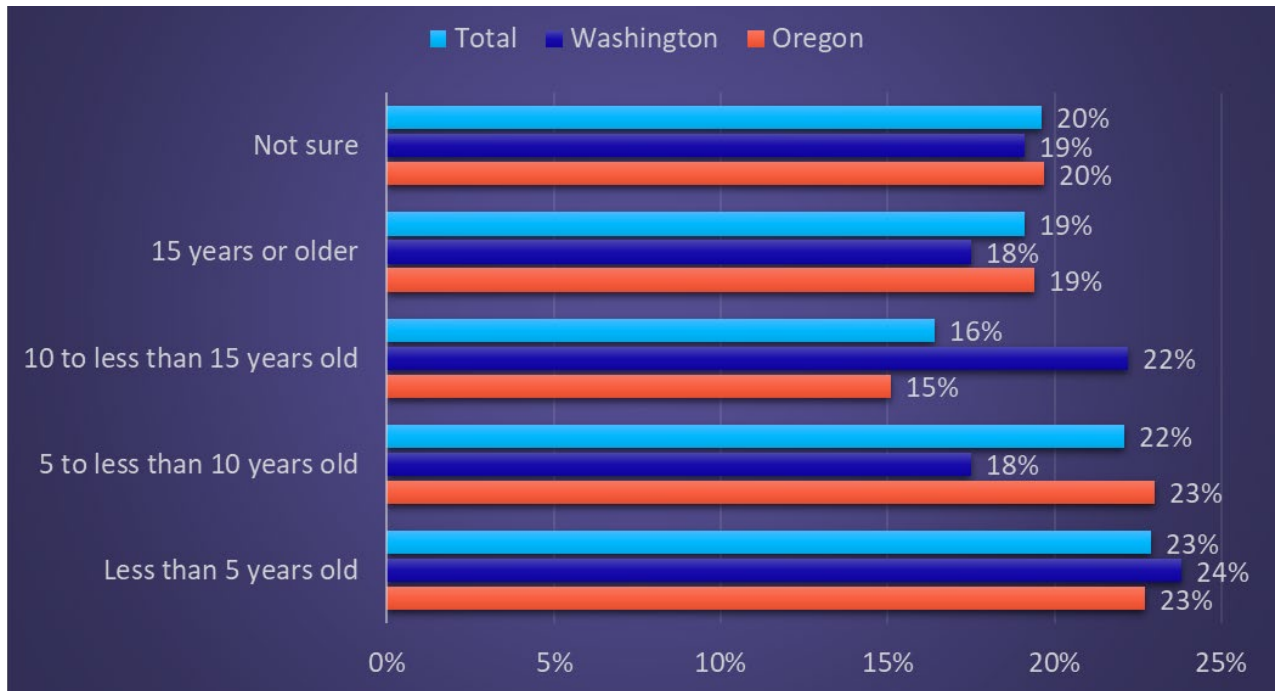
Figure 3-6 Age of Heating System (QH2)



A smaller but still significant proportion of customers in both states have water heating systems that are 15 years or older (Figure 3-7).

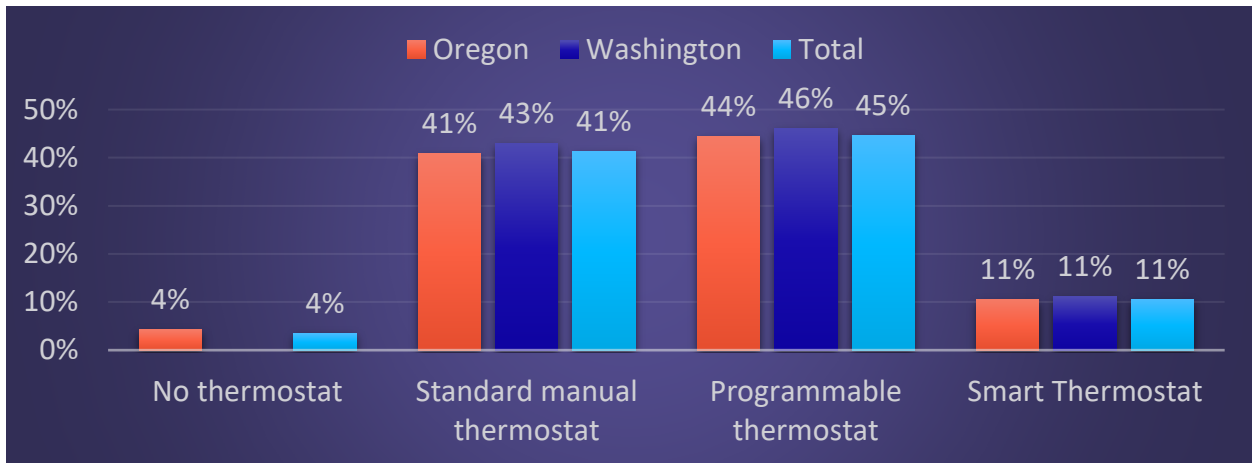


Figure 3-7 Age of Water Heating System (QH6)



41 percent of Oregon respondents and 43 percent of Washington respondents have a manual thermostat (Figure 3-8).

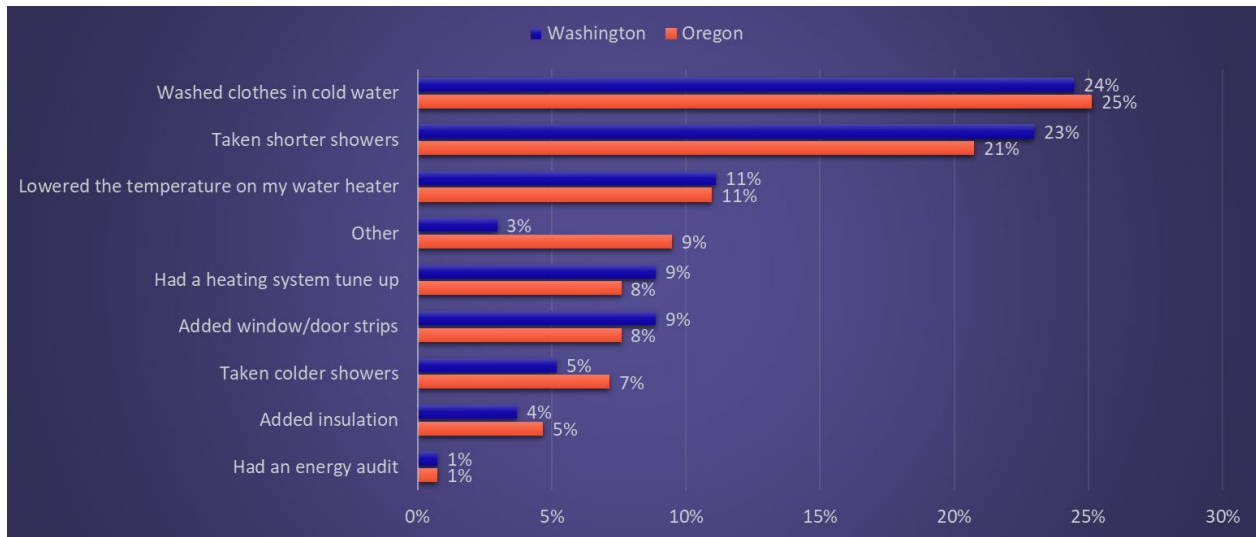
Figure 3-8 Type of Thermostat (QH3)



Few Oregon and Washington respondents have taken actions to lower their natural gas bills. Among those that have the actions are mainly behavioral (Figure 3-9).



**Figure 3-9**      **Actions Taken to Lower Natural Gas Bills (QB2)**



Additional survey responses related to energy burden and program barriers and opportunities are presented in [Sections 4](#) and [Section 5](#), respectively. Results for all survey responses are provided in [Appendix B](#).

# 4

## ADDITIONAL ANALYSES

In addition to the community characterization and customer surveys, to provide insight into Energy Assistance opportunities and barriers to participation, AEG performed two separate analyses as part of this project:

1. An assessment of average energy burden within Census block groups within NW Natural's Oregon and Washington service territories, and
2. A penetration analysis of the percent of customers eligible for Energy Assistance currently participating in NW Natural programs.

The methods and results of these analyses are described in detail below.

### Energy Burden Analysis

#### Energy Burden Methodology

Energy burden is defined as the percent of household income spent on energy bills.<sup>9</sup> A household is typically considered energy burdened when energy-related expenditures exceed 6% of the household's annual income. As part of this assessment, NW Natural wanted to understand the level of energy burden within its service area to identify geographic areas and communities where Energy Assistance could be particularly impactful. To perform this energy burden analysis, AEG performed the following steps:

1. **Calculated average natural gas bills for each NW Natural residential customer.** AEG used historical billing data and current NW Natural base charges and volumetric rates to calculate average annual natural gas bills for each customer.
2. **Estimate average electricity bills.** When calculating energy burden, it is important to include both natural gas and electricity costs. As a natural gas utility, NW Natural does not have access to electricity billing data for its customers, so AEG needed to use secondary sources to estimate average electricity bill amounts. To perform this estimation, AEG calculated average annual electricity consumption for natural gas-heated homes in the Northwest Energy Efficiency Alliance's 2016 Residential Building Stock Assessment (RBSA) by state and housing type.<sup>10</sup> AEG then applied electric consumption rates from Portland General Electric (Oregon) and Clark Public Utilities (Washington)<sup>11</sup> to average annual electric usage by building type to get an average annual electric cost for single-family and multifamily households by state.
3. **Estimate average total energy-related costs.** AEG combined estimated annual gas costs by customer with estimated RBSA average annual electric costs by state and building type to estimate total annual energy-related costs for each NW Natural customer. AEG then calculated the median energy-related cost of all customers within each Census block group.
4. **Calculate average energy burden by Census block group.** For each block group, AEG divided median annual energy-related costs by median household income to calculate the average energy burden for each Census block group.

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<sup>9</sup> *Ten Year Plan: Reducing the Energy Burden in Oregon Affordable Housing*, p. 1. Available at the following URL <https://www.oregon.gov/energy/Get-Involved/Documents/2018-BEEWG-Ten-Year-Plan-Energy-Burden.pdf>

<sup>10</sup> The RBSA sample of homes in NW Natural's service territory was not sufficient to calculate reliable averages, so AEG averaged all-natural gas-heated homes in each state, regardless of provider.

<sup>11</sup> Based on discussion with NW Natural, AEG used rates from the most prevalent electric provider within NW Natural's service area in each state.

### Energy Burden Results

Although this averaging method does not provide an estimate of the number of NW Natural customers that are energy burdened in each Census block group, it does provide insight into the typical energy burden across NW Natural’s service area and how this varies by geography. This variation is illustrated in maps of select areas of NW Naturals Oregon and Washington service territory below; the shaded areas represent block groups with an average energy burden of **over 3%**. For comparison, AEG calculated average statewide energy burdens of 2.25% and 1.86% for NW Natural’s Oregon and Washington service areas, respectively.

Figure 4-1 Portland, Oregon (East)

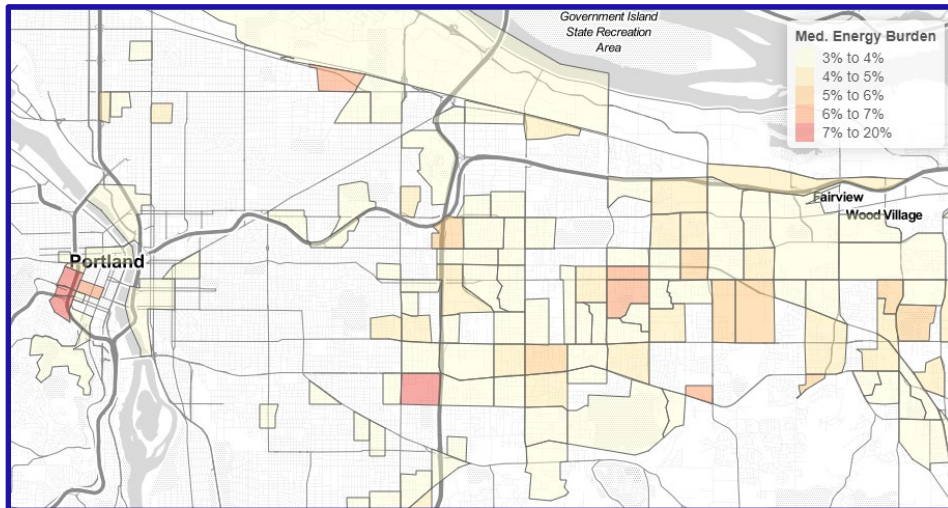


Figure 4-2 Eugene, Oregon

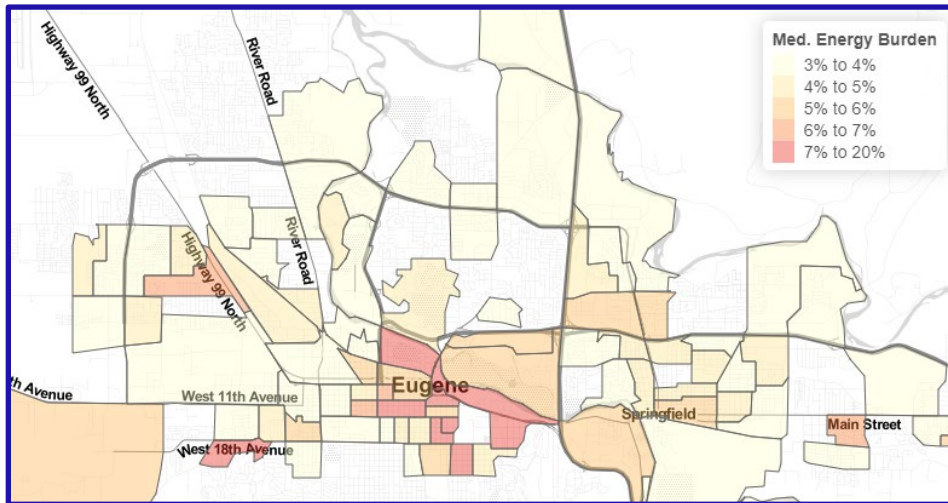


Figure 4-3 Salem, Oregon

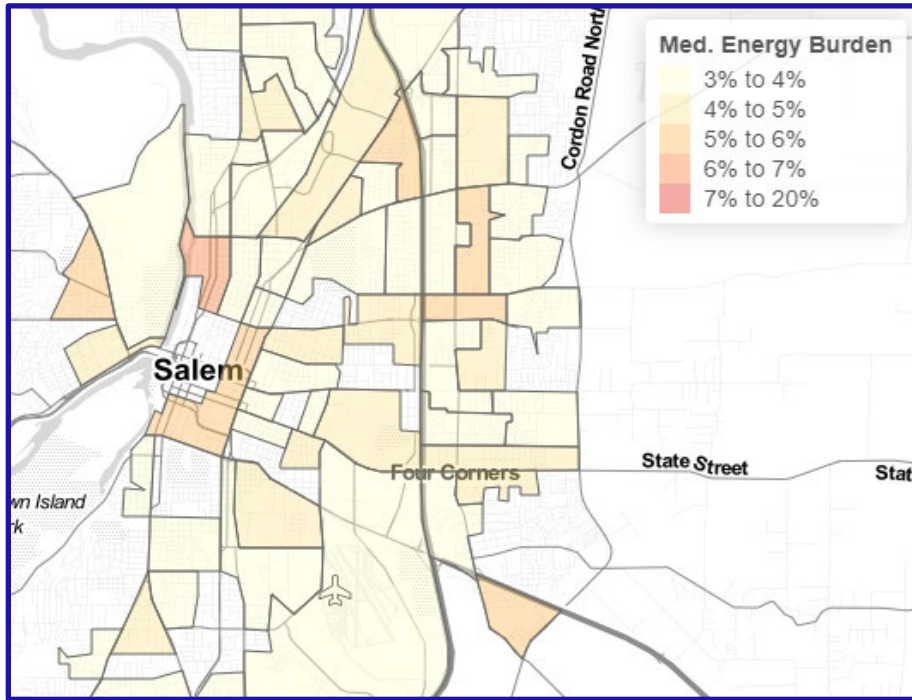
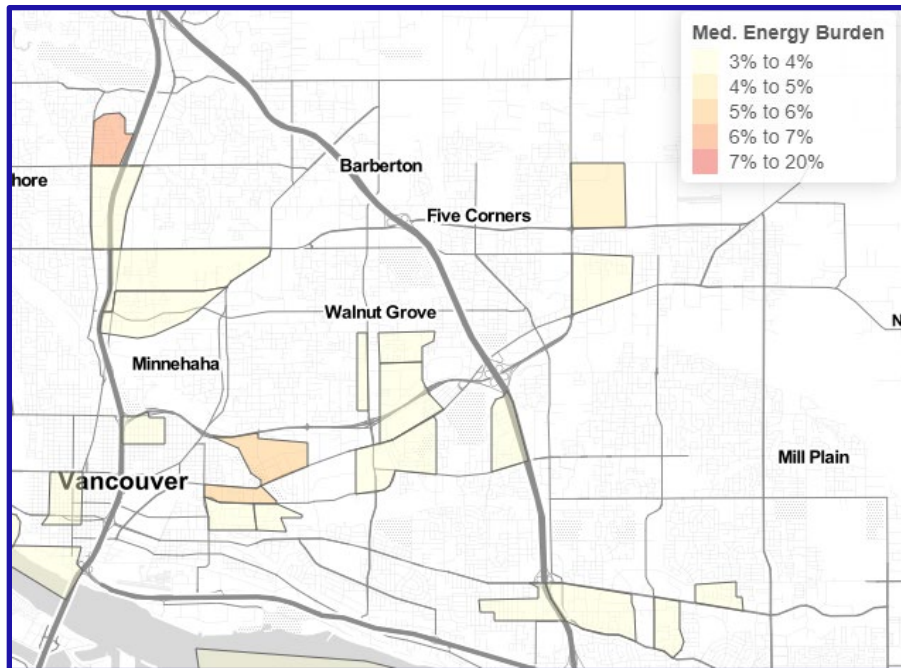


Figure 4--3 Vancouver, Washington

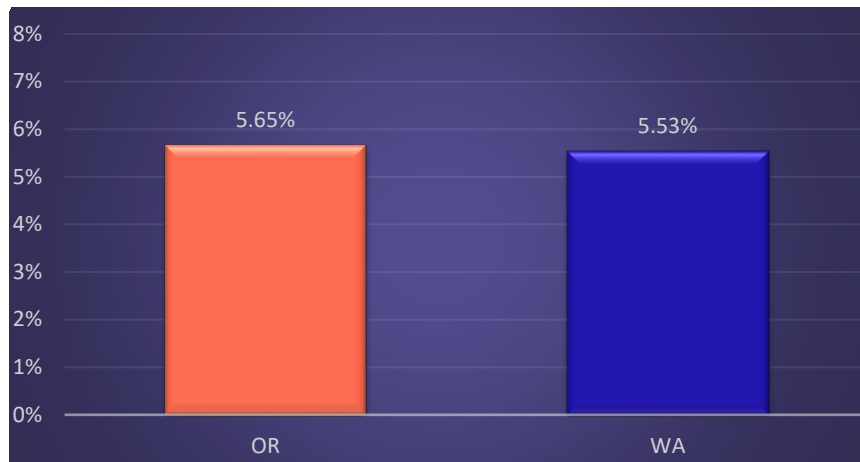


## Energy Burden Among Survey Respondents

Of the 370 survey responses, AEG was able to calculate each household’s energy burden based on calculated natural gas costs from NW Natural billing data, estimated electric costs from RBSA, and reported income submitted through the survey. In the survey, AEG requested household income by bucketed groups encompassing a range of incomes – such as \$35,000 to \$39,999. The figures below show energy burden across different metrics, separated by state. Note that average energy burdens from survey respondents are higher than statewide averages, which is to be expected because only customers eligible for Energy Assistance were qualified to take the survey.

Based on the survey responses, there is little variability between states, urban communities, and market segments. Due to the limited number of responses, AEG is unable to draw conclusions from the survey data pertaining to rural Washington communities, as only one respondent was classified as rural<sup>12</sup>. However, the survey responses indicate that single-family homes are more likely to be energy burdened compared to multifamily units. In addition, for Oregon, the energy burden between homeowners and renters is negligible for both single-family and multifamily homes, while Washington single-family and multifamily homeowners are slightly more burdened than renters.

Figure 4-4 Survey Respondents’ Average Energy Burden by State



<sup>12</sup> AEG only received one Rural Washington completed survey and this household is estimating 11% energy burden based on our analysis.

Figure 4-5 Survey Respondents' Average Energy Burden by State & Community

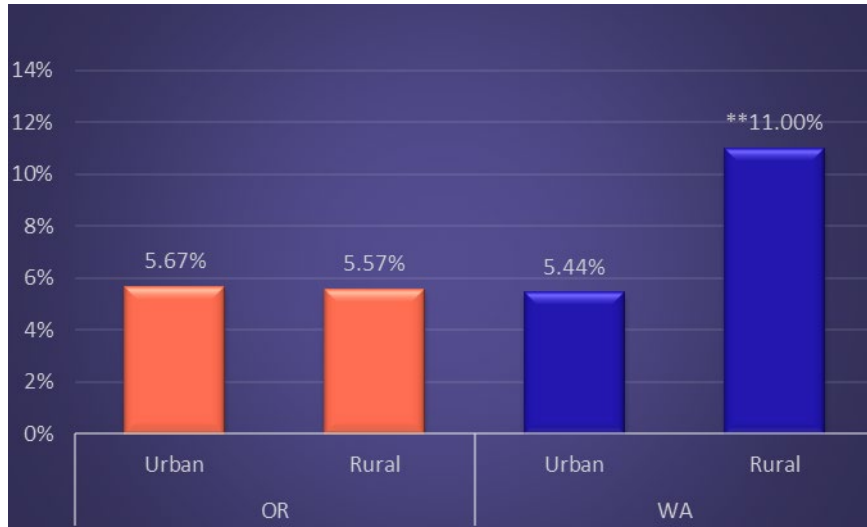


Figure 4-6 Survey Respondents' Average Energy Burden by State and Market Segment

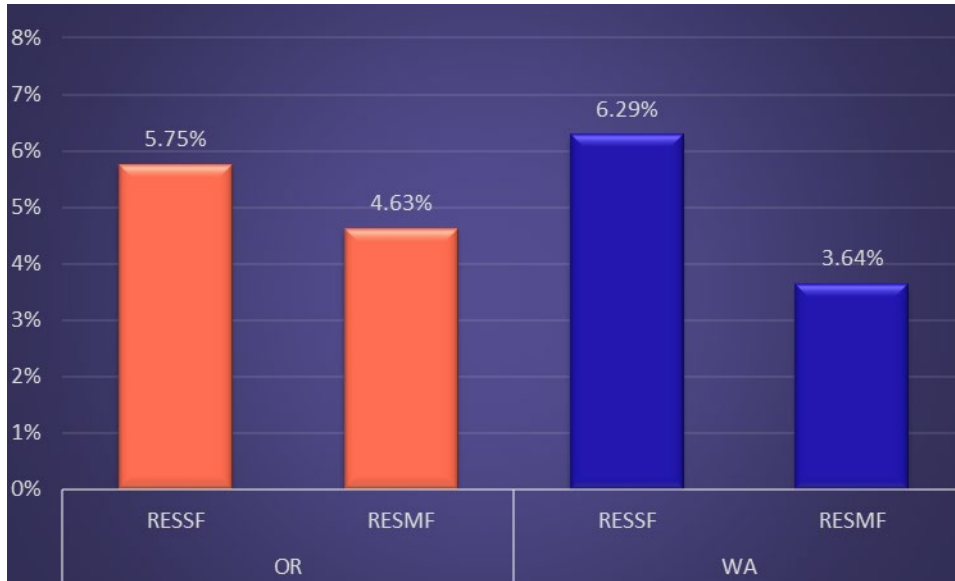


Figure 4-7 Survey Respondents' Average Energy Burden by Ownership and Market Segment



Survey responses indicate that, across NW Natural’s service territory, homes reporting an income of less than \$30,000 are likely to be energy burdened – above 6% of annual income dedicated to utility costs. Note that while household size is a factor in determining eligibility for Energy Assistance, it is not a component of energy burden. However, survey responses did not indicate that energy burden necessarily increases with household size, though this may be a function of using a single average electricity cost which does not vary by household size.



Figure 4-8 Survey Respondents' Average Energy Burden by Reported Income

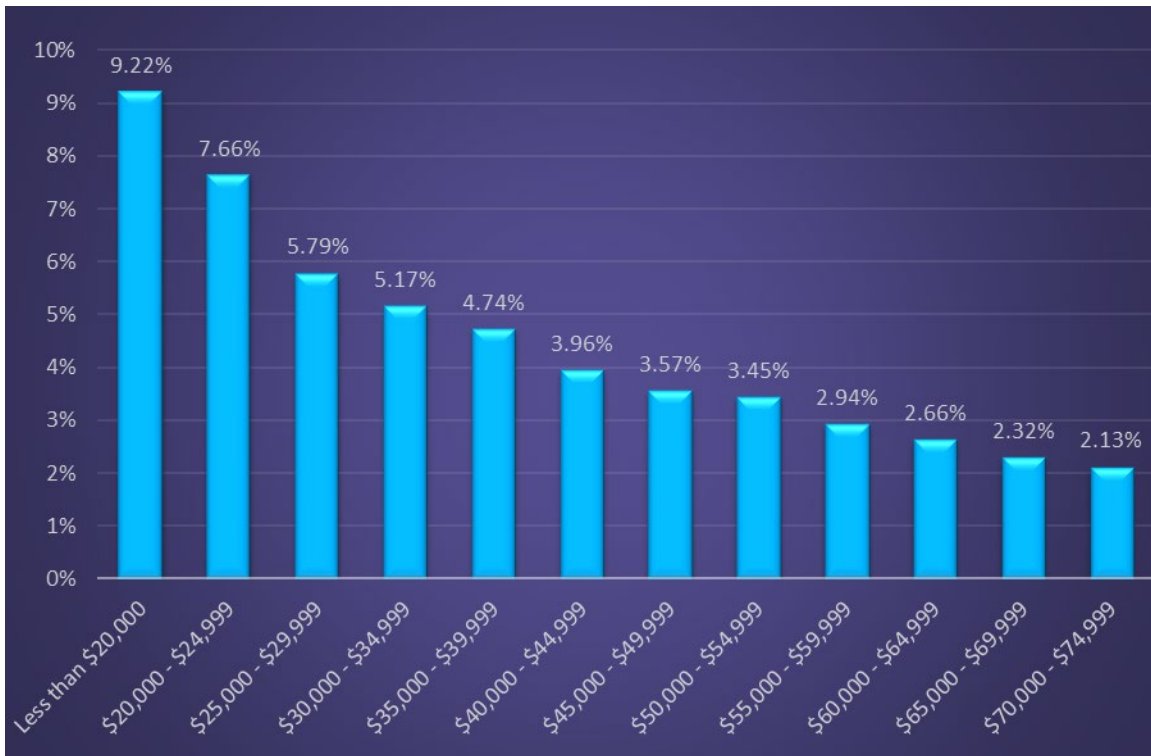
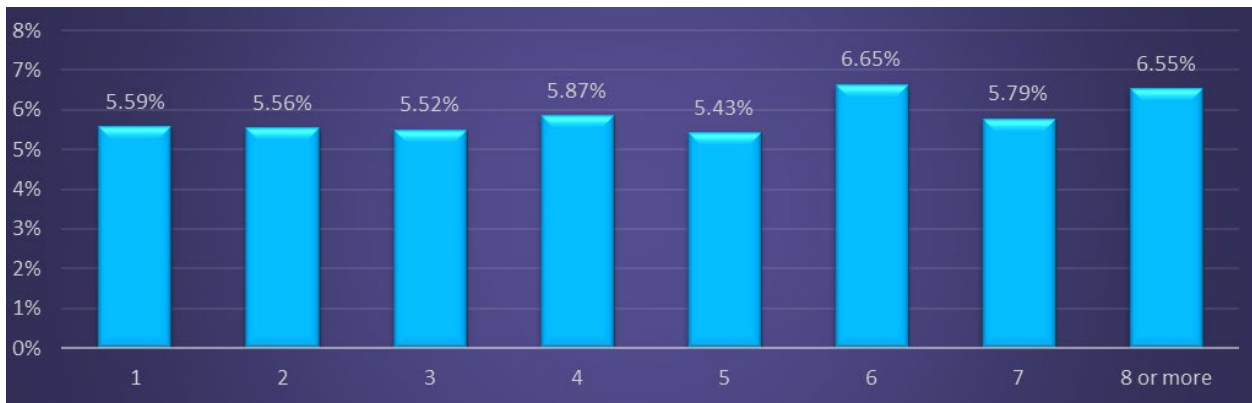


Figure 4-9 Survey Respondents' Average Energy Burden by Household Size



### Energy Burdened Households Receiving Energy Assistance

Out of 370 survey responses, 39 responses were identified as receiving some amount of Energy Assistance between 2017 and 2022:

- **Pre-COVID** (2017-2019), 30 survey respondents received some monetary support through an Energy Assistance program. Of those 30 respondents who received pre-COVID assistance, the average energy burden, based on their current reported income, was **6.03%**.
- During **COVID** (determined as 2020-2022), 27 survey respondents received some monetary support through an Energy Assistance program. Of those 27 respondents who received assistance during COVID, the average energy burden, based on their current reported income, was **5.75%**.

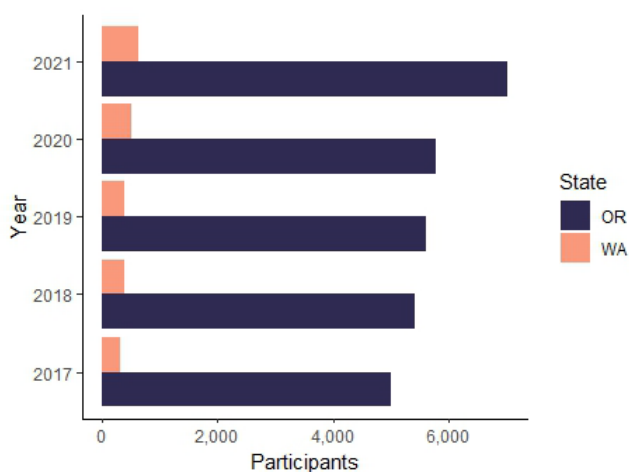


As stated earlier, new Energy Assistance eligibility requirements were introduced during COVID, allowing households with higher reported incomes to receive assistance; this is reflected in the slight drop in average energy burden during COVID compared to pre-COVID. However, this analysis does not consider historically reported income as AEG did not receive information regarding customers' annual reported income from historical years.

## Energy Assistance Penetration Analysis

To assess the penetration of existing NW Natural Energy Assistance programs, AEG compared customer-level participation data provided by NW Natural, to the number of estimated eligible residential customers, with eligibility determined by household size and income. The number of recent participating premises in NW Natural's existing Energy Assistance programs, by state, is shown in Figure 4-10. As shown, the number of participants has steadily increased in both states over the past several years, with a larger increase in 2021 when eligibility requirements were relaxed to help customers navigate the COVID-19 pandemic.

Figure 4-10 Energy Assistance Program Participation

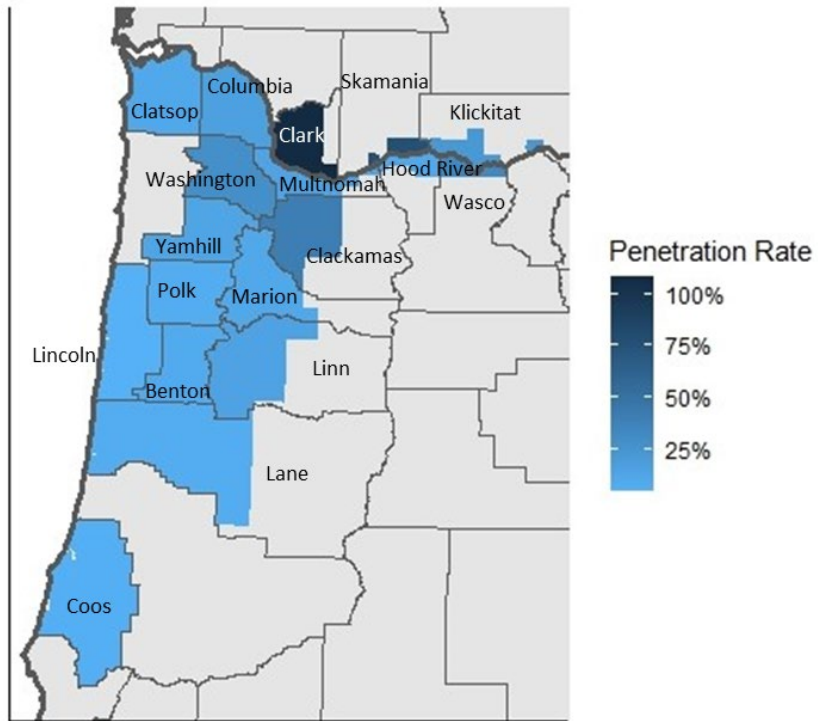


AEG used the participation and eligibility information to investigate program penetration by geography within NW Natural's Oregon and Washington service territories. Through this analysis, AEG noted the following challenges in calculating Energy Assistance penetration rates:

- Participation is based on actual NW Natural data, but the estimated eligible households are based on populations at the Census's Block Group level.
- Program participation is based on eligibility in each year, but population eligibility estimates were based on the most current information from the American Community Survey.
- Because participation was tied to premises, when residents moved, the new residents may or may not have continued to receive Energy Assistance.

Because of these challenges, the calculated values may not be reflective of current program penetration; however, the relative penetration across different geographies is expected to be more reliable and can help NW Natural identify areas that existing programs have underserved. Figure 4-11 illustrates this variation across counties served by NW Natural in Oregon and Washington (shaded areas represent the portion of each county served by NW Natural). As shown, AEG estimates that NW Natural has achieved the highest Energy Assistance penetration in Clark County, WA, though this may be a function of having few qualified customers in the service area, as discussed in Section 2.

Figure 4-11 Energy Assistance Program Penetration by County



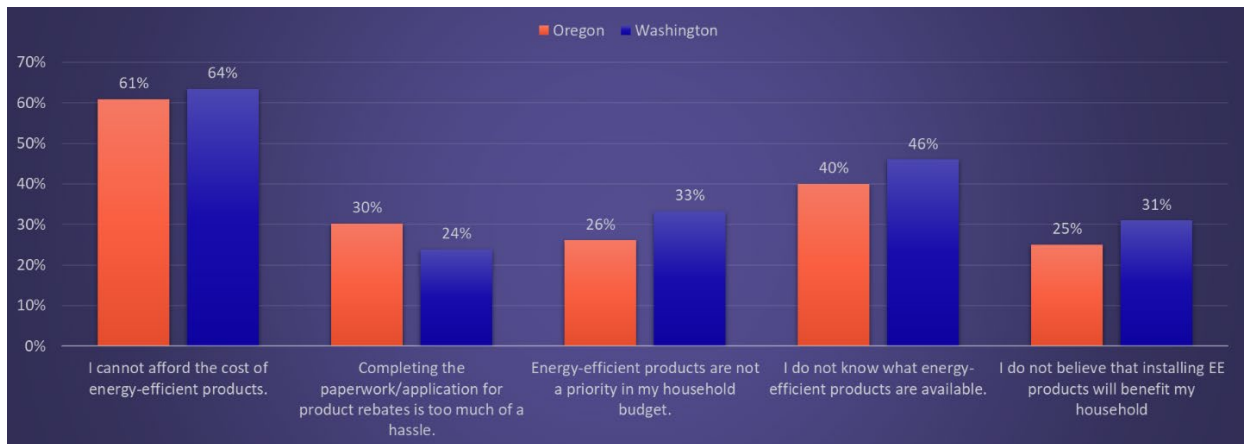
# 5

## BARRIERS AND RECOMMENDATIONS

### Identified Barriers

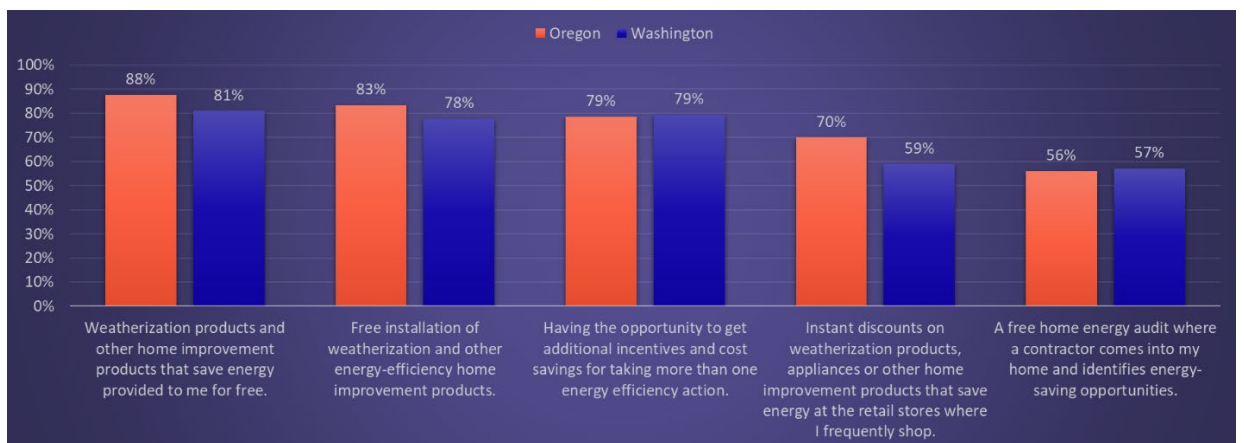
The survey included questions on common barriers to seeking Energy Assistance and purchasing energy-efficient products through energy-efficient rebate programs, and features that would make it easier for customers to find Energy Assistance and participate in rebate programs. The questions focused on cost, awareness/education, the type of Energy Assistance that can impact their household, and trust barriers to learn more about the most significant factors in the customer decision-making process when seeking Energy Assistance or purchasing energy-efficient products. As shown in Figure 5-1, the cost of energy-efficient products was the most commonly cited barrier in both states, followed by a lack of energy efficiency and Energy Assistance program awareness.

Figure 5-1 Barriers to Energy Efficiency



Respondents indicated that programmatic features that can help overcome barriers include free products, subsidized installation, and audits, as well as point of purchase discounts. These features are likely to increase participation in utility programs that offer rebates for the purchase and installation of energy efficient products.

Figure 5-2 Features that Will Make Customers More Likely to Participate in an EE Program (QP4)



## Recommendations

Based on survey responses and additional analysis performed through this project, AEG offers the following recommendations to address key barriers to Energy Assistance and energy efficiency program participation.

The 2022 LINA provides an analysis structure and baseline customer survey responses to build on in future years. Using 2022 survey responses, future LINA's can pinpoint communities where income-eligible customers live, which will increase the number of income-eligible customers the survey reaches and potentially the response rate. NW Natural can also measure the change in survey responses on program participation, barriers to participation, customers' awareness, and other baseline metrics that have been established through the 2022 survey. This will allow NW Natural to measure their success in implementing new programs, awareness campaigns, and Energy Assistance benefits to serve the income-eligible population more effectively in Oregon and Washington.

### Addressing Cost Barriers

61% of survey respondents in Oregon and 64% in Washington indicate that they cannot afford energy-efficient purchases. NW Natural (through the Energy Trust of Oregon) currently offers rebates for a number of energy efficiency home upgrades, but the price of these upgrades remain cost prohibitive for many of the survey respondents. The following AEG recommendations are focused on removing the cost barrier for energy efficiency upgrades for income-qualified customers:

- 88% of Oregon respondents and 81% of Washington respondents are interested in **free weatherization and other energy efficiency home improvement products**. Weather stripping, LED bulbs, and low-flow showerheads are common low-cost upgrades utilities have provided to customers in the past. Explore opportunities to continue or increase these offerings for income-qualified customers. NW Natural can also look at providing these products through direct install programs in combination with a free home energy audit.
- **Offering increased incentives on HVAC and water heating equipment or zero-cost replacement programs for income-qualified customers**. Survey results indicate that there is a significant opportunity to replace old HVAC and water heating equipment in income-qualified customer homes. 30% of survey respondents in Oregon and 37% in Washington have natural gas space heating equipment that is 15 years or older, while close to 20% of respondents between the two states have natural gas water heaters that are approaching 15 years or older. This provides NW Natural with an opportunity to target equipment replacement in income-qualified homes that is nearing end-of-life, and bundle HVAC (including smart thermostats) and water heating equipment if it results in larger incentive offerings (see "bundling" recommendation below). Partnering with other Energy Assistance organizations or funding opportunities would also be an effective way to remove the cost barrier for these customers.
- 79% percent of survey respondents in Oregon and Washington are interested in **bundling energy-efficient upgrades for a larger incentive**. This provides NW Natural with an opportunity to have customers participate in more than one energy efficiency program to improve the efficiency of their home if an increased incentive from bundling is available to lower the cost to the customer. NW Natural could also explore partnerships with other community programs that provide additional home services to income-qualified customers.

### Increasing Customer Awareness and Education

Survey results indicate that low awareness is impacting participation in Energy Assistance programs in both Oregon and Washington. A quarter of respondents in both states are aware of NW Natural programs that can lower monthly bill payments or connect customers to free weatherization services, while only 23% of Oregon and 13% of Washington respondents had participated in a program in the past.

Oregon and Washington customer interest suggests that there are opportunities to increase participation in NW Natural Energy Assistance and weatherization programs. 54% of Oregon and 52% of Washington

respondents are ‘somewhat likely’ to participate in a program that lowers monthly payments in the next two years, while 46% of Oregon and 43% of Washington respondents are ‘somewhat likely’ to participate in a weatherization program.

There is greater awareness of energy efficiency products in both states; however, increasing customer education on the benefits of energy-efficient products may increase customers’ adoption and participation in NW Natural programs. 40% of survey respondents in Oregon and 46% in Washington indicate that awareness of energy-efficient products is a barrier to purchasing energy-efficient products and participating in rebate programs.

The following AEG recommendations focus on increasing awareness and education of Energy Assistance and energy efficiency products and programs.

- **Targeted Community Marketing** is directed to communities that are identified as having a high number of income-qualified customers. AEG’s community characterization estimates the average median income within a block group and the number of households that are eligible for Energy Assistance programs based on a low-income probability score for each block group. These block groups have been included on interactive maps that visually show where these low-income communities are throughout NW Natural’s Oregon and Washington service territory. The maps provide NW Natural with an opportunity to implement targeted marketing campaigns that reach income-qualified residents, with the hope that providing education and awareness of Energy Assistance programs and the benefits of energy-efficient products will increase participation in NW Natural programs. Partnering with organizations that provide services to income-qualified customers, such as food banks or health and educational services, can also be an effective way of increasing customer touch points within these communities.
- **Prioritizing educational resources** with each NW Natural customer interaction that increases awareness of available Energy Assistance and the benefits of energy-efficient products and programs. Leave behind brochures, links to online resources, or one-on-one information exchanges are all ways to educate customers on where to find Energy Assistance and how to lower bills by way of improving energy efficiency in a home. Coordinating with NW Natural customer service departments and field staff increases the opportunity to reach customers who are not initially contacting the utility for energy efficiency related or Energy Assistance inquiries.

### Discount Program Design and Streamlining Program Participation

Survey recipients were asked to rank the type of Energy Assistance options in order of their preference. Discount programs ranked higher than forgiveness programs and time arrangement payments, with a preference from 61% of Oregon and 64% of Washington survey respondents.

30% of survey respondents in Oregon and 24% in Washington indicate that completing rebate program paperwork is overly burdensome and is a barrier to energy efficiency program participation.

The following recommendations focus on the type of Energy Assistance customers are most interested in and how to streamline participation in energy efficiency rebate programs.

- **Offer bill discounts for income-eligible customers in the 15%-25% range.** A significant number of respondents in Oregon and Washington say a 15%-25% bill discount would have a meaningful impact on their household finances and overall well-being.
- **Offer midstream incentives and point of purchase discounts.** 70% of respondents in Oregon and 59% in Washington would be interested in instant discounts on energy-efficient products and services at their local retailers. Midstream rebates with local retailers eliminate customer rebate paperwork and potentially increase the number of discounted energy-efficiency products that are offered. Recruiting retailers who serve higher populations of income-qualified customers, are located in high probability low-income areas, or are located near mass transit could also increase energy efficiency rebate accessibility for these customers.

### Building Trust Through Testimonials

- **Customer testimonials** can reinforce the benefits of energy-efficient upgrades and NW Natural’s support through program participation. 25% of respondents in Oregon and 31% in Washington reported that they do not believe installing energy-efficient measures in their home will add benefit. Promoting testimonials from customers who have participated in NW Natural programs can be a useful tool in removing this “trust” barrier. Testimonials that reference increased comfort or a reducing energy bill cost will likely resonate the strongest with income-qualified customers who are looking for ways to reduce energy use.

### Reducing Energy Burden

AEG’s analysis identified areas of NW Natural’s service territory with higher-than-average energy burden. Although this analysis could be improved with actual electricity bill information, the information should be valuable for NW Natural in targeting Energy Assistance offerings to communities with high energy burden. This analysis framework can also be updated over time based on new billing and ACS data.

# A

## Survey Instrument



NW%20Natural\_LI%  
20Assessment\_Final%

# B

## SURVEY RESPONSES



Survey%20Tables.xls  
x



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P: 510.982.3525

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# Appendix A

NW Natural Low Income Needs Assessment Survey

## LANDING PAGE

**Welcome. Please share your feedback using this survey, sponsored by NW Natural.**



---

Please enter the 5-digit "Access Code #" that appears on the survey invitation you received.

Access Code# : \_\_\_\_\_

**\*\*PROGRAMMER: VERIFY VALID CODE AND READ IN ALL VARIABLES FROM SAMPLE FILE.\*\***

The information you provide will be kept anonymous. If you have any concerns about the legitimacy of this survey, please contact NW Natural at 800.422.4012.

# Appendix A

## Introduction

Thank you for taking the time to participate in this new research study. Information from the survey will help NW Natural identify new bill-assistance and energy-saving opportunities that help lower bills and improve comfort for customers year round.

Your household is one of a small number being asked to respond to this survey. We truly appreciate your time and effort in responding to our survey invitation and answering these initial questions, which are designed to see if you are eligible to participate in this research project.

To show our appreciation for your time and effort, we will send a \$25 gift card as a Thank You to the first 250 people who qualify for, and then complete the survey, which should take about 20 minutes.

If you need to pause the survey at any time, you can come back later to where you left off. Simply save the URL and the access code from your survey invitation to access your survey again. The survey will automatically take you to the point where you left off.

Your responses are important to us, so please press "Next" to begin answering the survey questions. All information provided in this survey will be kept strictly confidential, and at no time will you be asked to purchase anything.

# Appendix A

## Screening Questions

- S1. Which of the following best describes your home?
1. A house, (single family home detached from any other houses)
  2. A house attached to one or more houses
  3. An apartment/condo (multi-family home )in a building with 2-4 apartments/units
  4. An apartment/condo (multi-family home) in a building that has 5 or more apartments/units
  5. A mobile or manufactured home
  6. Other [Specify]
- S2. Do you own or rent your home?
1. Own
  2. Rent
- S3. Is your household billed by NW Natural for heating all or some of the space in your home?
1. Yes
  2. No, we have natural gas heating, but it is included in our rent
  3. No, we do not have a natural gas heating system **[TERMINATE]**
  4. Not Sure **[TERMINATE]**
- S4. **Including yourself**, how many individuals normally live in your home?  
*Do not include anyone who is just visiting, those away in the military, or children who are away at college.*
- [RECORD NUMBER 1-20]** individuals
- S5. Which of the following categories includes your total household income in 2021? Please include the income of all the people living in your home.
1. Less than \$20,000
  2. \$20,000 - \$24,999
  3. \$25,000 – \$29,999
  4. \$30,000 – \$34,999
  5. \$35,000 – \$39,999
  6. \$40,000 –\$44,999
  7. \$45,000 - \$49,999
  8. \$50,000 – \$54,999
  9. \$55,000 - \$59,999
  10. \$60,000 – \$64,999
  11. \$65,000 - \$69,999
  12. \$70,000 - \$74,999
  13. \$75,000 – \$79,999
  14. \$80,000 - \$84,999
  15. \$85,000 - \$89,999
  16. \$90,000 - \$94,999
  17. \$95,000 or more
  18. Don't know/Do not want to answer (this will terminate the survey and you won't be eligible to continue)

**[SEE LOW INCOME CLASSIFICATION]**

# Appendix A

## Note to Reviewers:

The chart below will be used to determine income eligibility for the survey, rounded to the nearest income category in \$5.

Annual Gross Income*		
Household Unit Size	OR Requirement:	WA Requirement:
	60% SMI	200% FPL
1	\$29,334	\$27,180
2	\$38,373	\$36,620
3	\$47,402	\$46,060
4	\$56,430	\$55,500
5	\$65,459	\$64,940
6	\$74,488	\$74,380
7	\$76,181	\$83,820
8	\$77,874	\$93,260
Each Additional Member	\$1,692	\$9,440

\* Gross Income means all household income before any deductions

## Terminate Language for Non-Qualifying Or Over-Quota Respondents

We truly appreciate your time and effort in responding to our survey invitation and answering these initial questions, which are designed to see if you are eligible to participate in this research project.

At this time, we have reached the number of respondents we can accept from individuals with your type of experience or background. Again, we thank you for your time and attention.

---

Thank you. Have a nice day!

## Appendix A

### Invitation Language for Qualifying Respondents

Thank you for your responses so far! You qualify to take part in the survey. We appreciate your time in filling out the survey as completely as possible. All information provided in this survey will be kept strictly confidential, and at no time will you be asked to purchase anything.

The survey should take about 20 minutes to complete. Once you complete the survey you will be eligible to receive a **\$25 gift card as a thank you**. Information about how to receive this payment will be provided at the end of the survey.

Your responses are important to us, so please press “Next” to begin answering the survey questions.

As you complete the survey, you will **not** be able to use your browser’s “back” button. If you mistakenly press your browser’s “back” button, you will need to press the “refresh” button to continue the survey.

# Appendix A

## Energy Bill

QB1. What factors make it difficult for you to pay your energy bill? If you do not have any difficulty paying your energy bill, please write "None"

[OPEN ENDED]

QB2. Which of the following actions have you taken in the last year to lower your households natural gas bill? (CHECK ALL THAT APPLY) **[ROTATE LIST]**

1. Taken shorter showers
2. Taken colder showers
3. Washed clothes in cold water
4. Lowered the temperature on my water heater
5. Added insulation
6. Added window/door strips
7. Had an energy audit
8. Had a heating system tune up
9. Other (Specify)
10. None [EXCLUSIVE]

## Program Awareness and Participation

QP1. Are you aware of any NW Natural programs that can lower monthly bill payments or connect you to free weatherization services?

1. Yes
2. No

**[ASK QP2 IF QP1 = YES; ELSE SKIP TO QP3]**

QP2. In the last 5, years have you participated in any of these NW Natural programs?

1. Yes
2. No

**[ASK QP2A IF QP2 = 1; ELSE SKIP TO QP2B]**

QP2A Which programs have you participated in?

1. GREAT
2. LIHEAP
3. CAP
4. GAP
5. Unknown

## Appendix A

[ASK QP2B IF QP2 = 2; ELSE SKIP TO QP2C]

QP2B. Why haven't you participated in any of these NW Natural programs?

[OPEN ENDED]

QP2C. How did you hear about the NW Natural program that you participated in?

1. NW Natural customer service number
2. NW Natural website
3. An email from NW Natural
4. Information included in my bill
5. Mass media ad (TV, radio, etc.)
6. A community agency
7. A relative, friend or neighbor
8. Other (Please specify)

QP2D. Has your participation in the program impacted your household finances and overall quality of life?

1. Participating in the program had a positive impact.
2. Participating in the program had no impact.
3. Participating in the program had a negative impact.

[ASK QP2E IF QP2D = 1 ELSE SKIP TO Q3A]

QP2E. What did your household do with the money you saved from participating in the program?

1. Spent the money on essentials such as housing, groceries, transportation etc.
2. Put the money in savings.
3. Spent the money on something education or work-related.
4. Paid off debt (credit card bills, other unpaid/overdue bills).
5. Something else (Specify)

QP3A. In the next 2 years, how likely are you to participate in a NW Natural program that can help you lower monthly payments?

1. Extremely likely
2. Somewhat likely
3. Not at all likely

QP3B. How likely are you to participate in a NW Natural program that connects you to free weatherization services (such as home energy audits, insulation, duct sealing, window/door strips, storm windows and doors) **in the next two years?**

1. Extremely likely
2. Somewhat likely
3. Not at all likely



## Appendix A

QP4. Below is a list of features that are intended to make energy assistance programs more attractive to customers. Please review the list of features and use your cursor to “drag” each of these program features into one of the three categories listed:

- This feature would make me MORE likely to participate.
- This feature would have NO IMPACT on my participation.
- This feature would make me LESS likely to participate.

**[PROGRAMMER: CREATE DRAG AND DROP FOR ATTRIBUTES INTO THE THREE LABELLED BUCKETS. NO LIMIT ON THE NUMBER OF ITEMS THAT CAN GO INTO EACH BUCKET; RANDOMIZE INITIAL LIST OF ATTRIBUTES]**

MORE LIKELY TO PARTICIPATE	NO IMPACT ON MY PARTICIPATION	LESS LIKELY TO PARTICIPATE
----------------------------	-------------------------------	----------------------------

1. Instant discounts on weatherization products, appliances or other home improvement products that save energy at the retail stores where I frequently shop.
2. Weatherization products and other home improvement products that save energy provided to me for free.
3. Free installation of weatherization and other energy-efficiency home improvement products.
4. Rebates on weatherization products, appliances, or other home improvement products where I mail or submit an application online after I purchase the eligible product.
5. No- or low-interest financing for home improvements or upgrades that will save energy.
6. A free home energy audit where a contractor comes into my home and identifies energy-saving opportunities.
7. Access to an energy advisor with technical expertise that can answer questions and provide guidance on energy-saving purchases.
8. Having a representative from NW Natural come to my home and handle all aspects of product selection, installation, financing, and paperwork.
9. Having the opportunity to get additional incentives and cost savings for taking more than one energy efficiency action.
10. Access to workshops/trainings on different energy-efficiency technologies hosted by energy industry professionals.
11. Being able to finance weatherization products, appliances or other home improvement products that save energy through monthly payments on my NW Natural bill.

QP5. In addition to providing programs that help you save energy, NW Natural could also offer payment-assistance programs to customers who face challenges paying their monthly energy bill. Assuming you were eligible for payment assistance, please rank the types of programs listed below based on how much of a meaningful impact the program would have on your household.

RANK MOST MEANINGFUL IMPACT = 1; LEAST MEANINGFUL IMPACT = 3

1. A discount program that provides a percentage discount on my monthly NW Natural bill.
2. A forgiveness program that eliminates or reduces my prior unpaid bills to NW Natural.
3. A time payment arrangement program where I negotiate a contract with NW Natural to pay a fixed amount for my natural gas service over a specific period of time (one to two years).

## Appendix A

QP6. If NW Natural offered you a 15% discount on your monthly NW Natural bill, on a scale of 1 to 10, how meaningful of an impact would that have on your household finances and overall well-being?

- 1 No impact
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 A positive meaningful impact

**[ASK QP7 IF QP6 = 6 OR LOWER, ELSE SKIP TO QEE1]**

QP7. If NW Natural offered you a 25% discount on your monthly NW Natural bill, on a scale of 1 to 10, how meaningful of an impact would that have on your household finances and overall well-being?

- 1 No impact
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 A positive meaningful impact

**[ASK QP7 IF QP6 = 6 OR LOWER, ELSE SKIP TO QEE1]**

QP8. What percentage discount would you need on your monthly NW Natural bill for it to have a meaningful impact on your household finances and overall well-being?

\_\_\_\_\_ % Discount

QP9. What type of program would be meaningful and helpful to you for managing your NW Natural monthly bill?

[OPEN ENDED]

# Appendix A

## Energy Efficiency

QEE1. Although there are several energy-efficient products available to improve the comfort of your home and reduce your energy bill, there are a variety of reasons why some customers may not purchase these products. Below is a list of possible reasons why you might not purchase energy-efficient products for your home. Please review the list of reasons below and use your cursor to “drag” each of these reasons into one of the three categories listed:

- This is a MAJOR reason why I do not install energy-efficient products.
- This is a MINOR reason why I do not install energy-efficient products.
- This has NO IMPACT on me installing energy-efficient products.

**[PROGRAMMER: CREATE DRAG AND DROP FOR ATTRIBUTES INTO THE THREE LABELLED BUCKETS. NO LIMIT ON THE NUMBER OF ITEMS THAT CAN GO INTO EACH BUCKET; RANDOMIZE INITIAL LIST OF ATTRIBUTES]**

MAJOR REASON	MINOR REASON	NO IMPACT
--------------	--------------	-----------

1. I do not know what energy-efficient products are available.
2. I do not believe that installing energy-efficient products will benefit my household.
3. I cannot afford the cost of energy-efficient products.
4. Energy-efficient products are not a priority in my household budget.
5. I do not trust the energy/cost savings claims made by the suppliers of energy-efficient products.
6. Completing the paperwork/application for product rebates is too much of a hassle.
7. Energy-efficient products do not always have all the features I want in a product.
8. Energy-efficient products are low quality.
9. I cannot find energy-efficient products in the places where I shop.

QEE2. If NW Natural wanted to inform you about energy assistance, or programs or products that help you save energy, what would be the best way for them to communicate with you? [SELECT ONE RESPONSE]

1. Personal email
2. An insert in my bill/in the newsletter that accompanies my bill
3. NW Natural website
4. Radio advertisements
5. TV advertisements
6. Other [SPECIFY]

QEE3. On a scale of 1 to 10, how much do you trust NW Natural as a source of information about energy-efficient products that can help you lower your monthly bill?

- 1 Not at all trustworthy
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 Extremely trustworthy

# Appendix A

## Heating and Water Heating

QH1. Which one of the following space heating systems do you use to heat all or most of your home?

1. Natural gas central air furnace
2. Natural gas central boiler
3. Something else [SPECIFY]
4. Not sure

QH2. How old is your heating system?

1. Less than 5 years old
2. 5 to less than 10 years old
3. to less than 15 years old
4. 15 years or older
5. Not sure

QH3. Do you use a thermostat to control heating in your home?

1. No, no thermostat
2. Yes, a standard manual thermostat (that you adjust manually for the temperature you want)
3. Yes, a programmable thermostat (that allows you to program a schedule to set the temperature up or down at different times of the day and/or days of the week)
4. Yes, a smart thermostat (that is connected to the internet and learns your schedule, so it can automatically adjust the temperature at different times of the day to maximize energy savings)

QH5. What type of water heating system do you use in your home?

Natural gas standard tank

1. Electric standard tank
2. Heat pump water heater
3. Electric whole-house tankless system
4. Electric point-of-use tankless system
5. Natural gas tankless system
6. Bottled gas (Propane, LPG) standard tank
7. Bottled gas whole house tankless system
8. Solar water heating system (not photovoltaic)
9. Something else [SPECIFY]
10. Not sure

QH6. How old is your water heating system?

1. Less than 5 years old
2. 5 to less than 10 years old
3. 10 to less than 15 years old
4. 15 years or older
5. Not sure

# Appendix A

## Recent Upgrades/Purchases

QR1. Which, if any, of the following items **have you purchased** for this residence in the **last 5 years**, and if these purchases have been made, were any of the new items specifically described as “high efficiency,” or ENERGY STAR-qualified purchases?”

	Purchased “Standard Efficiency”	Purchased “High Efficiency”
A new natural gas heating system	<input type="checkbox"/>	<input type="checkbox"/>
A new natural gas water heater	<input type="checkbox"/>	<input type="checkbox"/>
A new natural gas range/stove top	<input type="checkbox"/>	<input type="checkbox"/>

QR2. Has your household undertaken any of the following actions to save energy in your home during the last 5 years? (Check all that apply)

1. Added weather-stripping or caulking to windows or doors
2. Had the heating system tuned up to operate more efficiently
3. Installed new, more energy-efficient windows
4. Added insulation to ducts, ceilings, walls, attics and/or foundation
5. Added water pipe insulation
6. Installed a programmable or Smart thermostat

QR3. Which, if any, of the following items do you **plan to purchase** for this residence in the **next two years**, and if you plan to purchase new items specifically described as “high efficiency,” or ENERGY STAR-qualified purchases?”

	Plan to Purchase “Standard Efficiency”	Plan to Purchase “High Efficiency”
A new natural gas heating system	<input type="checkbox"/>	<input type="checkbox"/>
A new natural gas water heater	<input type="checkbox"/>	<input type="checkbox"/>
A new natural gas range/stove top	<input type="checkbox"/>	<input type="checkbox"/>

QR4. Do you plan to make any of the following improvements to your home in the next 2 years?

1. Add weather-stripping or caulking to windows or doors
2. Have the heating system tuned up to operate more efficiently
3. Install new, more energy-efficient windows
4. Add insulation to ducts, ceilings, walls, attics and/or foundation
5. Add water pipe insulation
6. Install a programmable or Smart thermostat

# Appendix A

## About Your Household

- QD1. How has the COVID-19 pandemic personally impacted your household? (CHECK ALL THAT APPLY)
1. I or someone in my household has lost my job/has less work due to COVID
  2. Someone in my household has health issues due to COVID
  3. My household has been negatively impacted financially due to COVID
  4. I am less comfortable having contractors in my home due to COVID
- QD2. What is the approximate square footage of your home? Please include only heated living space in your response and exclude unheated areas such as garages. *If you are not certain, please give your best estimate.*
1. Less than 500 sq. ft.
  2. 500 – 999 sq. ft.
  3. 1,000 – 1,499 sq. ft.
  4. 1,500 – 1,999 sq. ft.
  5. 2,000 – 2,499 sq. ft.
  6. 2,500 – 2,999 sq. ft.
  7. 3,000 – 3,499 sq. ft.
  8. 3,500 sq. ft. or more
- QD3. Approximately when was your home built? Your best estimate is fine.
1. Before 1970
  2. 1970-1979
  3. 1980-1989
  4. 1990-1999
  5. 2000-2009
  6. 2010- 2019
  7. 2020 to present
  8. Not sure
- QD4. What is your race/ethnicity? (CHECK ALL THAT APPLY)
1. Hispanic, Latino or Spanish Origin
  2. White
  3. Black or African American
  4. Native American or Alaska Native
  5. Chinese
  6. Vietnamese
  7. Filipino
  8. Korean
  9. Japanese
  10. Hawaiian or Pacific Islander
  11. Other

## Appendix A

QD5. What languages are commonly spoken in your home? (CHECK ALL THAT APPLY)

1. Spanish
2. English
3. Russian
4. Vietnamese
5. Thai
6. Lao
7. Other [SPECIFY]
- 8.

## INCENTIVE

*Those are all the questions we have for you today. Thank you for your participation!*

QI1. To show our appreciation for your time and effort, we will send you a \$25 gift card as a Thank You. The gift card will arrive via email from **[EMAIL ADDRESS]** and will let you choose from the most popular gift card brands (e.g., Amazon, Starbucks, etc.). Please provide the email address where you would like to receive the gift card below:

EMAIL: \_\_\_\_\_

Thank you! You will receive your gift card via email in 2-4 weeks.

## Appendix B

S1		Oregon	Washington	Total
First, we'd like to ask you a few questions to see if you qualify for the survey. Which of the following best describes your home? - Selected Choice	A house, (single family home detached from any other houses)	84.40%	66.70%	81.40%
	A house attached to one or more houses	6.50%	14.30%	7.80%
	An apartment/condo (multi-family home )in a building with 2-4 apartments/units	4.20%	4.80%	4.30%
	An apartment/condo (multi-family home) in a building that has 5 or more apartments/units	2.90%	14.30%	4.90%
	A mobile or manufactured home	2.00%	0.00%	1.60%
<b>Total</b>		100.00%	100.00%	100.00%

S2		Oregon	Washington	Total
Do you own or rent your home?	Own	73.30%	71.40%	73.00%
	Rent	26.70%	28.60%	27.00%
<b>Total</b>		100.00%	100.00%	100.00%

S3		Oregon	Washington	Total
Is your household billed by NW Natural for heating all or some of the space in your home?	Yes	100.00%	100.00%	100.00%
<b>Total</b>		100.00%	100.00%	100.00%

S4		Oregon	Washington	Total
Including yourself, how many individuals normally live in your home? Do not include anyone who is just visiting, those away in the military, or children who are away at college.	1	18.90%	25.40%	20.00%
	2	34.50%	28.60%	33.50%
	3	17.60%	7.90%	15.90%
	4	15.00%	20.60%	15.90%
	5	9.80%	7.90%	9.50%
	6	2.30%	4.80%	2.70%
	7	2.00%	3.20%	2.20%
	8 or more	0.00%	1.60%	0.30%
<b>Total</b>		100.00%	100.00%	100.00%



## Appendix B

S5		Oregon	Washington	Total
Which of the following categories includes your total household income in 2021? Please include the income of all the people living in your home.				
	Less than \$20,000	9.40%	11.10%	9.70%
	\$20,000 - \$24,999	8.80%	7.90%	8.60%
	\$25,000 - \$29,999	43.30%	41.30%	43.00%
	\$30,000 - \$34,999	5.50%	1.60%	4.90%
	\$35,000 - \$39,999	14.00%	9.50%	13.20%
	\$40,000 - \$44,999	2.60%	0.00%	2.20%
	\$45,000 - \$49,999	10.70%	19.00%	12.20%
	\$50,000 - \$54,999	1.60%	1.60%	1.60%
	\$55,000 - \$59,999	2.90%	4.80%	3.20%
	\$60,000 - \$64,999	0.30%	3.20%	0.80%
	\$65,000 - \$69,999	0.30%	0.00%	0.30%
	\$70,000 - \$74,999	0.30%	0.00%	0.30%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QB2a		Oregon	Washington	Total
Which of the following actions have you taken in the last year to lower your households natural gas bill? (CHECK ALL THAT APPLY) - Selected Choice Taken shorter showers				
	Not taken	53.70%	50.80%	53.20%
	Taken shorter showers	46.30%	49.20%	46.80%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QB2b		Oregon	Washington	Total
Which of the following actions have you taken in the last year to lower your households natural gas bill? (CHECK ALL THAT APPLY) - Selected Choice Taken colder showers				
	Not taken	84.00%	88.90%	84.90%
	Taken colder showers	16.00%	11.10%	15.10%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QB2c		Oregon	Washington	Total
Which of the following actions have you taken in the last year to lower your households natural gas bill? (CHECK ALL THAT APPLY) - Selected Choice Washed clothes in cold water				
	Not taken	44.00%	47.60%	44.60%
	Washed clothes in cold water	56.00%	52.40%	55.40%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QB2d		Oregon	Washington	Total
Which of the following actions have you taken in the last year to lower your households natural gas bill? (CHECK ALL THAT APPLY) - Selected Choice Lowered the temperature on my water heater				
	Not take	75.60%	76.20%	75.70%
	Lowered the temperature on my water heater	24.40%	23.80%	24.30%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

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QB2e		Oregon	Washington	Total
Which of the following actions have you taken in the last year to lower your households natural gas bill? (CHECK ALL THAT APPLY) - Selected Choice Added insulation	Not taken	89.60%	92.10%	90.00%
	Added insulation	10.40%	7.90%	10.00%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QB2f		Oregon	Washington	Total
Which of the following actions have you taken in the last year to lower your households natural gas bill? (CHECK ALL THAT APPLY) - Selected Choice Added window/door strips	Not taken	83.10%	81.00%	82.70%
	Added window/door strips	16.90%	19.00%	17.30%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QB2g		Oregon	Washington	Total
Which of the following actions have you taken in the last year to lower your households natural gas bill? (CHECK ALL THAT APPLY) - Selected Choice Had an energy audit	Not taken	98.40%	98.40%	98.40%
	Had an energy audit	1.60%	1.60%	1.60%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QB2h		Oregon	Washington	Total
Which of the following actions have you taken in the last year to lower your households natural gas bill? (CHECK ALL THAT APPLY) - Selected Choice Had a heating system tune up	Not taken	83.10%	81.00%	82.70%
	Had a heating system tune up	16.90%	19.00%	17.30%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QB2i		Oregon	Washington	Total
Which of the following actions have you taken in the last year to lower your households natural gas bill? (CHECK ALL THAT APPLY) - Selected Choice Other (Specify)	Not taken	78.80%	93.70%	81.40%
	Other (Specify)	21.20%	6.30%	18.60%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QB2j		Oregon	Washington	Total
Which of the following actions have you taken in the last year to lower your households natural gas bill? (CHECK ALL THAT APPLY) - Selected Choice None	Not Taken	86.60%	76.20%	84.90%
	None	13.40%	23.80%	15.10%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

## Appendix B

QP1		Oregon	Washington	Total
Are you aware of any NW Natural programs that can lower monthly bill payments or connect you to free weatherization services?	Yes	25.40%	23.80%	25.10%
	No	74.60%	76.20%	74.90%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QP2		Oregon	Washington	Total
In the last 5, years have you participated in any of these NW Natural programs?	Yes	23.10%	13.30%	21.50%
	No	76.90%	86.70%	78.50%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QP2A		Oregon	Washington	Total
Which programs have you participated in?	LIHEAP	38.90%	50.00%	40.00%
	GAP	5.60%	0.00%	5.00%
	Don't Know	55.60%	50.00%	55.00%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QP2C		Oregon	Washington	Total
How did you hear about the NW Natural program that you participated in? - Selected Choice	NW Natural customer service number	11.10%	50.00%	15.00%
	NW Natural website	11.10%	50.00%	15.00%
	An email from NW Natural	5.60%	0.00%	5.00%
	Information included in my bill	22.20%	0.00%	20.00%
	Mass media ad (TV, radio, etc.)	5.60%	0.00%	5.00%
	A community agency	11.10%	0.00%	10.00%
	A relative, friend or neighbor	16.70%	0.00%	15.00%
	Other (Please specify)	16.70%	0.00%	15.00%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QP2D		Oregon	Washington	Total
Has your participation in the program impacted your household finances and overall quality of life?	Participating in the program had a positive impact.	83.30%	50.00%	80.00%
	Participating in the program had no	16.70%	50.00%	20.00%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QP2e		Oregon	Washington	Total
What did your household do with the money you saved from participating in the program? - Selected Choice	Spent the money on essentials such as housing, groceries, transportation etc.	72.20%	0.00%	65.00%
	Put the money in savings.	0.00%	50.00%	5.00%
	Paid off debt (credit card bills, other unpaid/overdue bills).	5.60%	0.00%	5.00%
	Something else (Specify)	22.20%	50.00%	25.00%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

## Appendix B

QP3a		Oregon	Washington	Total
In the next 2 years, how likely are you to participate in a NW Natural program that can help you lower monthly payments?	Extremely likely	35.20%	38.10%	35.70%
	Somewhat likely	54.40%	52.40%	54.10%
	Not at all likely	10.40%	9.50%	10.30%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QP3b		Oregon	Washington	Total
How likely are you to participate in a NW Natural program that connects you to free weatherization services (such as home energy audits, insulation, duct sealing, window/door strips, storm windows and doors) in the next two years?	Extremely likely	37.80%	39.70%	38.10%
	Somewhat likely	45.60%	42.90%	45.10%
	Not at all likely	16.60%	17.50%	16.80%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QP4		Oregon	Washington	Total
Would make me more likely to participate	Instant discounts on weatherization products, appliances or other home improvement products that save energy at the retail stores where I frequently shop.	70.00%	58.70%	68.10%
	Weatherization products and other home improvement products that save energy provided to me for free.	87.60%	81.00%	86.50%
	Free installation of weatherization and other energy-efficiency home improvement products.	83.40%	77.80%	82.40%
	Rebates on weatherization products, appliances, or other home improvement products where I mail or submit an application online after I purchase the eligible product.	61.90%	49.20%	59.70%
	No- or low-interest financing for home improvements or upgrades that will save energy.	56.40%	52.40%	55.70%
	A free home energy audit where a contractor comes into my home and identifies energy-saving opportunities.	55.70%	57.10%	55.90%
	Access to an energy advisor with technical expertise that can answer questions and provide guidance on energy-saving purchases.	44.60%	39.70%	43.80%
	Having a representative from NW Natural come to my home and handle all aspects of product selection, installation, financing, and paperwork.	33.20%	30.20%	32.70%

## Appendix B

Having the opportunity to get additional incentives and cost savings for taking more than one energy efficiency action.	78.50%	79.40%	78.60%
Access to workshops/trainings on different energy-efficiency technologies hosted by energy industry professionals.	24.10%	28.60%	24.90%
Being able to finance weatherization products, appliances or other home improvement products that save energy through monthly payments on my NW Natural bill.	54.10%	50.80%	53.50%

Please rank the types of programs listed below based on how much of a meaningful impact the program would have on your household

QP5		Oregon	Washington	Total
RANK: A discount program that provides a percentage discount on my monthly NW Natural bill	1 Most Meaningful	61.20%	63.50%	61.60%
	2	28.00%	23.80%	27.30%
	3 Least Meaningful	10.70%	12.70%	11.10%
<b>Total</b>		100.00%	100.00%	100.00%

		Oregon	Washington	Total
RANK: A forgiveness program that eliminates or reduces my prior unpaid bills to NW Natural.	1 Most Meaningful	22.10%	17.50%	21.40%
	2	24.80%	33.30%	26.20%
	3 Least Meaningful	53.10%	49.20%	52.40%
<b>Total</b>		100.00%	100.00%	100.00%

		Oregon	Washington	Total
RANK: A time payment arrangement program where I negotiate a contract with NW Natural to pay a fixed amount for my natural gas service over a specific period of time (one to two years).	1 Most Meaningful	16.60%	19.00%	17.00%
	2	47.20%	42.90%	46.50%
	3 Least Meaningful	36.20%	38.10%	36.50%
<b>Total</b>		100.00%	100.00%	100.00%

QP6		Oregon	Washington	Total
If NW Natural offered you a 15% discount on your monthly NW Natural bill, on a scale of 0 to 10, how meaningful of an impact would that have on your household finances and overall well-being?	0	0.70%	1.60%	0.80%
	2	2.00%	0.00%	1.60%
	3	4.20%	3.20%	4.10%
	4	3.30%	0.00%	2.70%
	5	5.90%	7.90%	6.20%

## Appendix B

	6	9.40%	0.00%	7.80%
	7	13.00%	7.90%	12.20%
	8	16.00%	25.40%	17.60%
	9	6.20%	19.00%	8.40%
	10	39.40%	34.90%	38.60%
<b>Total</b>		100.00%	100.00%	100.00%

\*Only asked of respondents who gave a rating of 5 or lower on the above question.

QP7		Oregon	Washington	Total
If NW Natural offered you a 25% discount on your monthly NW Natural bill, on a scale of 0 to 10, how meaningful of an impact would that have on your household finances and overall well-being?	0	1.30%	12.50%	2.30%
	2	2.60%	0.00%	2.30%
	3	9.00%	0.00%	8.10%
	4	7.70%	25.00%	9.30%
	5	10.30%	25.00%	11.60%
	6	20.50%	0.00%	18.60%
	7	25.60%	37.50%	26.70%
	8	17.90%	0.00%	16.30%
	9	2.60%	0.00%	2.30%
	10	2.60%	0.00%	2.30%
<b>Total</b>		100.00%	100.00%	100.00%

QP8		Oregon	Washington	Total
What percentage discount would you need on your monthly NW Natural bill for it to have a meaningful impact on your household finances and overall well-being?	0	5.00%	0.00%	4.40%
	10	5.00%	0.00%	4.40%
	20	12.50%	0.00%	11.10%
	25	5.00%	0.00%	4.40%
	30	12.50%	0.00%	11.10%
	35	7.50%	0.00%	6.70%
	40	7.50%	0.00%	6.70%
	50	27.50%	60.00%	31.10%
	70	5.00%	0.00%	4.40%
	75	5.00%	20.00%	6.70%
	80	2.50%	0.00%	2.20%
	100	5.00%	20.00%	6.70%
<b>Total</b>		100.00%	100.00%	100.00%

QEE1		Oregon	Washington	Total
This is a MAJOR reason why I do not install energy-efficient products.	I do not know what energy-efficient products are available.	33.20%	22.20%	31.40%
	I do not believe that installing energy-efficient products will benefit my household.	6.20%	7.90%	6.50%
	I cannot afford the cost of energy-efficient products.	60.90%	63.50%	61.40%
	Energy-efficient products are not a priority in my household budget.	26.10%	33.30%	27.30%

## Appendix B

I do not trust the energy/cost savings claims made by the suppliers of energy-efficient products.	16.00%	20.60%	16.80%
Completing the paperwork/application for product rebates is too much of a hassle.	30.30%	23.80%	29.20%
Energy-efficient products do not always have all the features I want in a product.	21.80%	22.20%	21.90%
Energy-efficient products are low quality.	7.50%	12.70%	8.40%
I cannot find energy-efficient products in the places where I shop.	12.40%	11.10%	12.20%

	Oregon	Washington	Total
This is a MINOR reason why I do not install energy-efficient products.			
I do not know what energy-efficient products are available.	40.10%	46.00%	41.10%
I do not believe that installing energy-efficient products will benefit my household.	25.40%	31.70%	26.50%
I cannot afford the cost of energy-efficient products.	28.30%	25.40%	27.80%
Energy-efficient products are not a priority in my household budget.	39.10%	42.90%	39.70%
I do not trust the energy/cost savings claims made by the suppliers of energy-efficient products.	40.70%	42.90%	41.10%
Completing the paperwork/application for product rebates is too much of a hassle.	43.00%	58.70%	45.70%
Energy-efficient products do not always have all the features I want in a product.	45.30%	39.70%	44.30%
Energy-efficient products are low quality.	29.30%	30.20%	29.50%
I cannot find energy-efficient products in the places where I shop.	26.70%	28.60%	27.00%

QEE2			
	Oregon	Washington	Total
If NW Natural wanted to inform you about energy assistance, or programs or products that help you save energy, what would be the best way for them to communicate with you? - Selected Choice			
Personal email	58.00%	47.60%	56.20%
An insert in my bill/in the newsletter that accompanies my bill	30.30%	46.00%	33.00%
NW Natural website	5.90%	3.20%	5.40%
Radio advertisements	0.30%	0.00%	0.30%
TV advertisements	0.70%	1.60%	0.80%
Other	4.90%	1.60%	4.30%
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QEE3

## Appendix B

		Oregon	Washington	Total	
On a scale of 0 to 10, how much do you trust NW Natural as a source of information about energy-efficient products that can help you lower your monthly bill?	<b>0</b>	0.30%	0.00%	0.30%	
	<b>2</b>	0.30%	0.00%	0.30%	
	<b>4</b>	1.30%	0.00%	1.10%	
	<b>5</b>	6.50%	11.10%	7.30%	
	<b>6</b>	6.90%	1.60%	6.00%	
	<b>7</b>	12.10%	6.30%	11.10%	
	<b>8</b>	20.30%	30.20%	22.00%	
	<b>9</b>	20.60%	15.90%	19.80%	
	<b>10</b>	31.70%	34.90%	32.20%	
	<b>Total</b>		100.00%	100.00%	100.00%



## Appendix B

QH1				
		Oregon	Washington	Total
Which one of the following space heating systems do you use to heat all or most of your home? - Selected Choice	Natural gas central air furnace	76.50%	81.00%	77.20%
	Natural gas central boiler	6.20%	1.60%	5.40%
	Something else	11.40%	9.50%	11.10%
	Not sure	5.90%	7.90%	6.20%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QH2				
		Oregon	Washington	Total
How old is your heating system?	Less than 5 years old	18.30%	7.90%	16.50%
	5 to less than 10 years old	18.00%	22.20%	18.70%
	10 to less than 15 years old	19.00%	12.70%	17.90%
	15 years or older	28.40%	36.50%	29.80%
	Not sure	16.30%	20.60%	17.10%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QH3				
		Oregon	Washington	Total
Do you use a thermostat to control heating in your home?	No, no thermostat	4.20%	0.00%	3.50%
	Yes, a standard manual thermostat (that you adjust manually for the temperature you want)	40.80%	42.90%	41.20%
	Yes, a programmable thermostat (that allows you to program a schedule to set the temperature up or down at different times of the day and/or days of the week)	44.40%	46.00%	44.70%
	Yes, a smart thermostat (that is connected to the internet and learns your schedule, so it can automatically adjust the temperature at different times of the day to maximize energy savings)	10.50%	11.10%	10.60%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QH5				
		Oregon	Washington	Total
What type of water heating system do you use in your home? - Selected Choice	Natural gas standard tank	55.40%	58.70%	56.00%
	Electric standard tank	22.00%	17.50%	21.20%
	Heat pump water heater	4.60%	3.20%	4.30%
	Electric whole-house tankless system	0.70%	0.00%	0.50%
	Electric point-of-use tankless system	0.00%	1.60%	0.30%
	Natural gas tankless system	4.30%	7.90%	4.90%
	Something else	2.00%	0.00%	1.60%
	Not sure	11.10%	11.10%	11.10%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

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QH6				
		Oregon	Washington	Total
How old is your water heating system?	Less than 5 years old	22.70%	23.80%	22.90%
	5 to less than 10 years old	23.00%	17.50%	22.10%
	10 to less than 15 years old	15.10%	22.20%	16.30%
	15 years or older	19.40%	17.50%	19.10%
	Not sure	19.70%	19.00%	19.60%
<b>Total</b>		100.00%	100.00%	100.00%

Which, if any, of the following items have you purchased for this residence in the last 5 years, and if these purchases have been made, were any of the new items specifically described as “high efficiency,” or ENERGY STAR-qualified purchases?”

QR1a				
A new natural gas heating system		Oregon	Washington	Total
	Did Not Purchase	80.20%	98.40%	83.30%
	Purchased “Standard Efficiency”	10.20%	0.00%	8.50%
	Purchased “High Efficiency”	9.60%	1.60%	8.20%
<b>Total</b>		100.00%	100.00%	100.00%

QR1b				
A new natural gas water heater		Oregon	Washington	Total
	Did Not Purchase	79.20%	85.70%	80.30%
	Purchased “Standard Efficiency”	11.60%	4.80%	10.40%
	Purchased “High Efficiency”	9.20%	9.50%	9.30%
<b>Total</b>		100.00%	100.00%	100.00%

QR1c				
A new natural gas range/stove top		Oregon	Washington	Total
	Did Not Purchase	87.50%	87.30%	87.40%
	Purchased “Standard Efficiency”	6.90%	9.50%	7.40%
	Purchased “High Efficiency”	5.60%	3.20%	5.20%
<b>Total</b>		100.00%	100.00%	100.00%

Which, if any, of the following items do you **plan to purchase** for this residence in the **next two years**, and if you plan to purchase new items specifically described as “high efficiency,” or ENERGY STAR-qualified purchases?”

QR3a				
A new natural gas heating system		Oregon	Washington	Total
	Do Not Plan to Purchase	88.70%	95.20%	89.80%
	Plan to Purchase “Standard Efficiency”	2.70%	1.60%	2.50%
	Plan to Purchase “High Efficiency”	8.60%	3.20%	7.70%
<b>Total</b>		100.00%	100.00%	100.00%

QR3b				
A new natural gas water heater		Oregon	Washington	Total
	Do Not Plan to Purchase	81.40%	87.30%	82.40%
	Plan to Purchase “Standard Efficiency”	3.70%	4.80%	3.80%
	Plan to Purchase “High Efficiency”	15.00%	7.90%	13.70%
<b>Total</b>		100.00%	100.00%	100.00%

QR3c				
A new natural gas range/stove top		Oregon	Washington	Total
	Do Not Plan to Purchase	85.00%	93.70%	86.50%
	Plan to Purchase “Standard Efficiency”	4.30%	3.20%	4.10%
	Plan to Purchase “High Efficiency”	10.60%	3.20%	9.30%
<b>Total</b>		100.00%	100.00%	100.00%

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QR4a				
		Oregon	Washington	Total
Do you plan to make any of the following improvements to your home in the next 2 years? Add weather-stripping or caulking to windows or doors	No	67.40%	71.40%	68.10%
	Add weather-stripping or caulking to windows or doors	32.60%	28.60%	31.90%
<b>Total</b>		100.00%	100.00%	100.00%

QR4b				
		Oregon	Washington	Total
Do you plan to make any of the following improvements to your home in the next 2 years? Have the heating system tuned up to operate more efficiently	No	72.30%	63.50%	70.80%
	Have the heating system tuned up to operate more efficiently	27.70%	36.50%	29.20%
<b>Total</b>		100.00%	100.00%	100.00%

QR4c				
		Oregon	Washington	Total
Do you plan to make any of the following improvements to your home in the next 2 years? Install new, more energy-efficient windows	No	90.60%	92.10%	90.80%
	Install new, more energy-efficient windows	9.40%	7.90%	9.20%
<b>Total</b>		100.00%	100.00%	100.00%

QR4d				
		Oregon	Washington	Total
Do you plan to make any of the following improvements to your home in the next 2 years? Add insulation to ducts, ceilings, walls, attics and/or foundation	No	87.00%	84.10%	86.50%
	Add insulation to ducts, ceilings, walls, attics and/or foundation	13.00%	15.90%	13.50%
<b>Total</b>		100.00%	100.00%	100.00%

QR4e				
		Oregon	Washington	Total
Do you plan to make any of the following improvements to your home in the next 2 years? Add water pipe insulation	No	93.80%	96.80%	94.30%
	Add water pipe insulation	6.20%	3.20%	5.70%
<b>Total</b>		100.00%	100.00%	100.00%

QR4f				
		Oregon	Washington	Total
Do you plan to make any of the following improvements to your home in the next 2 years? Install a programmable or Smart thermostat	No	83.40%	82.50%	83.20%

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	Install a programmable or Smart thermostat	16.60%	17.50%	16.80%
<b>Total</b>		100.00%	100.00%	100.00%

QR4g		Oregon	Washington	Total
Do you plan to make any of the following improvements to your home in the next 2 years?	Not checked	59.90%	63.50%	60.50%
	None	40.10%	36.50%	39.50%
<b>Total</b>		100.00%	100.00%	100.00%

QD1a		Oregon	Washington	Total
How has the COVID-19 pandemic personally impacted your household? (CHECK ALL THAT APPLY) - Selected Choice I or someone in my household has lost my job/has less work due to COVID	No	71.00%	73.00%	71.40%
	I or someone in my household has lost my job/has less work due to COVID	29.00%	27.00%	28.60%
<b>Total</b>		100.00%	100.00%	100.00%

QD1b		Oregon	Washington	Total
How has the COVID-19 pandemic personally impacted your household? (CHECK ALL THAT APPLY) - Selected Choice Someone in my household has health issues due to COVID	No	87.90%	92.10%	88.60%
	Someone in my household has health issues due to COVID	12.10%	7.90%	11.40%
<b>Total</b>		100.00%	100.00%	100.00%

QD1c		Oregon	Washington	Total
How has the COVID-19 pandemic personally impacted your household? (CHECK ALL THAT APPLY) - Selected Choice My household has been negatively impacted financially due to COVID	No	62.50%	58.70%	61.90%
	My household has been negatively impacted financially due to COVID	37.50%	41.30%	38.10%
<b>Total</b>		100.00%	100.00%	100.00%

QD1d		Oregon	Washington	Total
How has the COVID-19 pandemic personally impacted your household? (CHECK ALL THAT APPLY) - Selected Choice I am less comfortable having contractors in my home due to COVID	No	69.40%	68.30%	69.20%
	I am less comfortable having contractors in my home due to COVID	30.60%	31.70%	30.80%
<b>Total</b>		100.00%	100.00%	100.00%

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QD1f				
		Oregon	Washington	Total
How has the COVID-19 pandemic personally impacted your household? (CHECK ALL THAT APPLY) - Not checked		70.70%	76.20%	71.60%
Selected Choice Other	Other	29.30%	23.80%	28.40%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QD2				
		Oregon	Washington	Total
What is the approximate square footage of your home? Please include only heated living space in your response and exclude unheated areas such as garages. If you are not certain, please give your best estimate.	Less than 500 sq. ft.	1.00%	0.00%	0.80%
	500 – 999 sq. ft.	17.70%	19.00%	17.90%
	1,000 – 1,499 sq. ft.	43.30%	25.40%	40.20%
	1,500 – 1,999 sq. ft.	21.70%	30.20%	23.10%
	2,000 – 2,499 sq. ft.	10.00%	17.50%	11.30%
	2,500 – 2,999 sq. ft.	4.30%	7.90%	5.00%
	3,000 – 3,499 sq. ft.	1.70%	0.00%	1.40%
	3,500 sq. ft. or more	0.30%	0.00%	0.30%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QD3				
		Oregon	Washington	Total
Approximately when was your home built? Your best estimate is fine.	Before 1970	52.70%	11.10%	45.50%
	1970-1979	11.30%	0.00%	9.40%
	1980-1989	5.00%	6.30%	5.20%
	1990-1999	11.00%	28.60%	14.00%
	2000-2009	10.70%	28.60%	13.80%
	2010- 2019	3.30%	12.70%	5.00%
	2020 to present	1.00%	0.00%	0.80%
	Not sure	5.00%	12.70%	6.30%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QD4				
		Oregon	Washington	Total
What is your race/ethnicity? (CHECK ALL THAT APPLY) Hispanic, Latino or Spanish Origin	No	89.60%	90.50%	89.70%
	Hispanic, Latino or Spanish Origin	10.40%	9.50%	10.30%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

		Oregon	Washington	Total
What is your race/ethnicity? (CHECK ALL THAT APPLY) White	No	18.20%	15.90%	17.80%
	White	81.80%	84.10%	82.20%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

		Oregon	Washington	Total
What is your race/ethnicity? (CHECK ALL THAT APPLY) Black or African American	No	96.40%	95.20%	96.20%
	Black or African American	3.60%	4.80%	3.80%

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<b>Total</b>		100.00%	100.00%	100.00%
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		Oregon	Washington	Total
What is your race/ethnicity? (CHECK ALL THAT APPLY) Native American or Alaska Native	No	97.40%	100.00%	97.80%
	Native American or Alaska Native	2.60%	0.00%	2.20%
<b>Total</b>		100.00%	100.00%	100.00%

		Oregon	Washington	Total
What is your race/ethnicity? (CHECK ALL THAT APPLY) Chinese	No	98.00%	98.40%	98.10%
	Chinese	2.00%	1.60%	1.90%
<b>Total</b>		100.00%	100.00%	100.00%

		Oregon	Washington	Total
What is your race/ethnicity? (CHECK ALL THAT APPLY) Vietnamese	No	97.70%	100.00%	98.10%
	Vietnamese	2.30%	0.00%	1.90%
<b>Total</b>		100.00%	100.00%	100.00%

		Oregon	Washington	Total
What is your race/ethnicity? (CHECK ALL THAT APPLY) Filipino	No	99.00%	98.40%	98.90%
	Filipino	1.00%	1.60%	1.10%
<b>Total</b>		100.00%	100.00%	100.00%

		Oregon	Washington	Total
What is your race/ethnicity? (CHECK ALL THAT APPLY) Korean	No	99.70%	98.40%	99.50%
	Korean	0.30%	1.60%	0.50%
<b>Total</b>		100.00%	100.00%	100.00%

		Oregon	Washington	Total
What is your race/ethnicity? (CHECK ALL THAT APPLY) Japanese	No	99.00%	100.00%	99.20%
	Japanese	1.00%	0.00%	0.80%
<b>Total</b>		100.00%	100.00%	100.00%

		Oregon	Washington	Total
What is your race/ethnicity? (CHECK ALL THAT APPLY) Hawaiian or Pacific Islander	No	97.70%	96.80%	97.60%
	Hawaiian or Pacific Islander	2.30%	3.20%	2.40%
<b>Total</b>		100.00%	100.00%	100.00%

		Oregon	Washington	Total

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What is your race/ethnicity? (CHECK ALL THAT APPLY) Other		Oregon	Washington	Total
No		94.80%	93.70%	94.60%
Other		5.20%	6.30%	5.40%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

QD5		Oregon	Washington	Total
What languages are commonly spoken in your home? (CHECK ALL THAT APPLY) - Selected Choice Spanish				
No		95.10%	95.20%	95.10%
Spanish		4.90%	4.80%	4.90%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

		Oregon	Washington	Total
What languages are commonly spoken in your home? (CHECK ALL THAT APPLY) - Selected Choice English				
No		6.20%	3.20%	5.70%
English		93.80%	96.80%	94.30%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

		Oregon	Washington	Total
What languages are commonly spoken in your home? (CHECK ALL THAT APPLY) - Selected Choice Russian				
No		99.30%	100.00%	99.50%
Russian		0.70%	0.00%	0.50%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

		Oregon	Washington	Total
What languages are commonly spoken in your home? (CHECK ALL THAT APPLY) - Selected Choice Vietnamese				
No		98.70%	100.00%	98.90%
Vietnamese		1.30%	0.00%	1.10%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

		Oregon	Washington	Total
What languages are commonly spoken in your home? (CHECK ALL THAT APPLY) - Selected Choice Other				
No		97.10%	95.20%	96.80%
Other		2.90%	4.80%	3.20%
<b>Total</b>		<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>