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# PSE Low-Income Household Needs Assessment

## FINAL REPORT

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**Prepared for:**

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# Acronyms, Terms, and Definitions

| Acronym/Term | Definition |
|---|---|
| ACS | American Community Survey |
| CETA | Clean Energy Transformation Act |
| EA | Energy Assistance program |
| FPL | Federal Poverty Level |
| GIS | Geographic Information System |
| HELP | Home Energy Lifeline Program |
| LIHEAP | Low-Income Home Energy Assistance Program |
| LIW | Low-Income Weatherization program |
| MW | Megawatt |
| PSE | Puget Sound Energy |
| PUMA | Public Use Microdata Area; referencing the geographic area for considering PUMS data |
| PUMS | Public Use Microdata Sample; referencing the source of data |
| SMI | State Median Income |

# Executive Summary

The 2019 *Macquarie Transfer Multiparty Stipulation Agreement* (Docket U-180680) required Puget Sound Energy (PSE) to conduct a low-income needs assessment study to "…provide a better understanding of the needs related to energy affordability of low-income households in PSE's service territory, including data related to energy efficiency, specifically weatherization needs and opportunities."[1]

To satisfy these requirements, PSE assembled a group of interested stakeholders and contracted with Cadmus to develop a study supporting these research objectives. Specifically, this study sought to identify the current need for PSE's weatherization and energy assistance programs. This involved identifying gaps in historical program coverage, characterizing underserved communities, and considering the geographic distribution need across PSE service territory. The main objective is to assist in identifying opportunities to better inform future policy, strategy, and marketing and outreach tactics.

Though initiated based on the Macquarie Transfer Agreement, this study will also provide PSE and its community partners resources to support similar objectives under Washington State's 2019 Clean Energy Transformation Act (CETA).[2] This legislation outlines a plan for electric utilities to decarbonize energy production with provisions to ensure clean energy benefits are equitably distributed.[3]

This needs assessment serves as foundational research and provides a set of tools to continue building upon this study as new data, assumptions, and strategies are considered going forward. Economic impacts from COVID-19 have substantially changed the current landscape, including the size and level of need of the eligible customer population. While this assessment has relied on historical data prior to COVID-19, the analytic framework will allow PSE to continue to update these underlying estimates, produce new maps and distributions, and gain context for the magnitude of these impacts as new data are incorporated into future revisions.

## *Approach and Key Findings*

Cadmus incorporated various datasets to develop geographic information system (GIS) layers, which yielded numerous maps of income-eligible customers within PSE's service territory. Cadmus used these layers to identify historically underserved areas and summarize their key features for potential future delivery of services. Data are available and presented at two levels – by Public Use Microdata Area

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1 Washington Utilities and Transportation Commission. March 11, 2019. Final Order 06 (DOCKET U-180680). https://www.utc.wa.gov/_layouts/15/CasesPublicWebsite/GetDocument.ashx?docID=1456&year=2018&docketNumber=180680

2 State of Washington. 66th Legislature. 2019 Regular Session. Senate Bill 5116 (Chapter 288). https://lawfilesext.leg.wa.gov/biennium/2019-20/Pdf/Bills/Session%20Laws/Senate/5116-S2.SL.pdf

3 Washington State Department of Commerce. 2019. Clean Energy Transformation Act (Version 08112020). https://www.commerce.wa.gov/wp-content/uploads/2020/08/CETA-section-48-draft-narrative-2020-04-14.docx

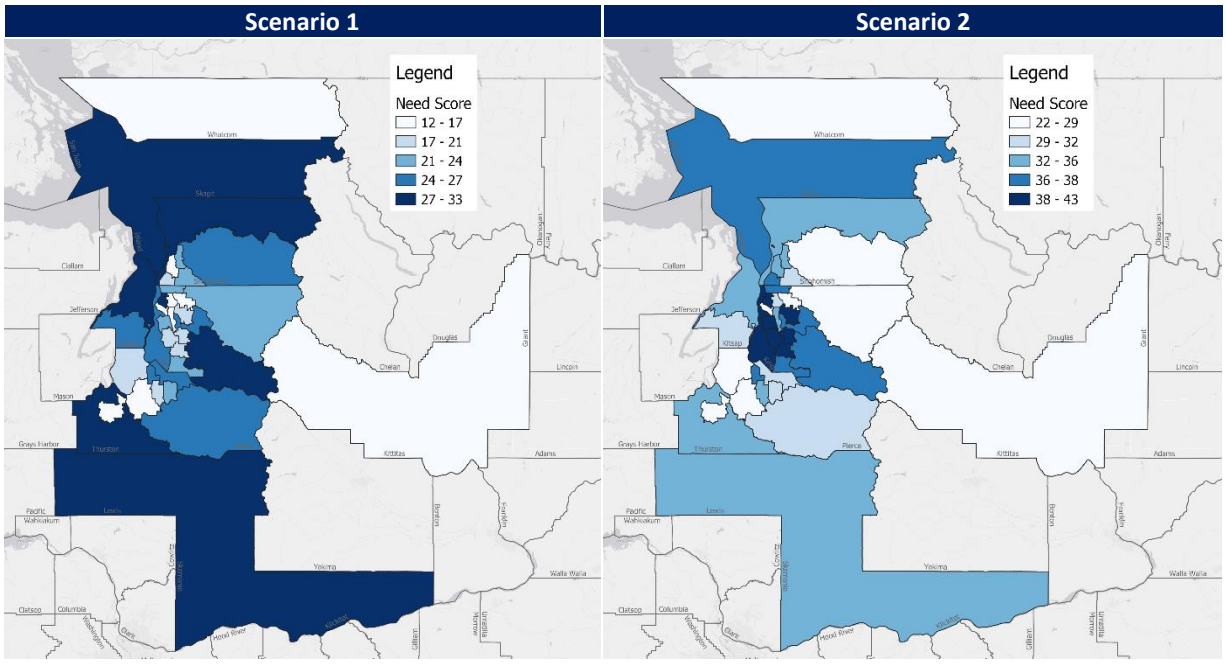
(PUMA) and by Census Block Group (see Research Approach section for more details). This report presents an excerpt of these maps. Cadmus will provide the full analytic code and shapefiles to PSE to use for future research.

Cadmus conducted an exercise to characterize underserved areas using various criteria that define need and impact earning potential. High-need criteria used for this assessment include a combination of the following:

- Households with children under 18 years of age
- Residents over 65 years of age
- Residents with a disability
- High energy burden
- Race/Ethnicity (i.e., non-white residents)
- Language (i.e., households with limited English proficiency)

This composite need scoring approach ranked geographies of income-eligible customers (at 200% of the Federal Poverty Level [FPL]) based on several distinct factors. For each criterion, we assigned Public Use Microdata Areas (PUMAs) scores based on the decile of the distribution (e.g., income-eligible households with children), and then summed scores to create a composite ranking. We determined composite need scores for two scenarios, scoring across different sets of criteria to identify high need geographies, as illustrated in Figure 1.

**Figure 1. Distribution of PUMAs by Composite Need Score – Scenario Comparison**

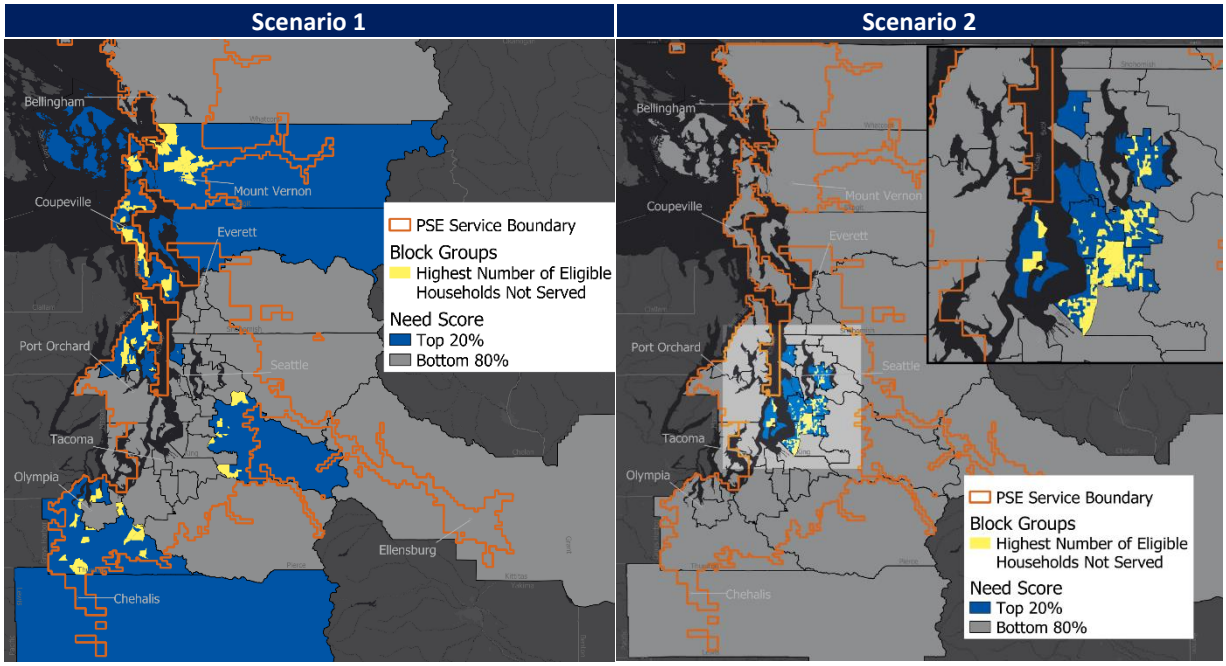



Note: Composite Need Scoring for Scenario 1 includes the following need criteria: households with children (under 18 years), age (residents over 65 years), disability, and energy burden (consistent with WA State Department of Commerce Weatherization Manual prioritization criteria). Scenario 2 includes the criteria from Scenario 1, as well as race/ethnicity (non-white) and limited English proficiency.

For each scenario, the quintiles of the distribution are presented to compare geographies with higher need scoring (shown in dark blue, representing those areas with highest need). The scoring approach is detailed under the *Composite Need Scoring* subsection in *Approach and Assumptions* section

Figure 2 shows the intersection of the top 20% of underserved Census block groups (i.e., highest concentration of unserved households at the 200% FPL) and PUMAs territories with the highest composite need score (top 20%) for each scenario. Approximately 95 Census block groups meet these criteria for Scenario 1 and 140 Census block groups for Scenario 2. Differences in need scoring criteria between scenarios clearly shape the geographic distribution and focus of how underserved customers can be prioritized in the future for energy program services.

**Figure 2. Underserved Census Block Groups with Highest Composite Need Scores by Scenario**




Note: Underserved households reflect those that are income-eligible at the 200% FPL and not previously served through PSE's energy assistance (EA) or Low-Income Weatherization (LIW) programs

We present findings based on the counts of eligible unserved households for both energy assistance and weatherization, respectively, focusing on high concentrations of absolute numbers of homes. Concentration of potential households allows for targeting that benefits from ***efficiency in delivery***, such as through neighborhood-based campaigns. Using the proportion of eligible, unserved homes relative to the total eligible population provides an opportunity for ***equity in delivery***—that is, to identify areas with historically higher proportions of unserved populations. This may speak to historic gaps in delivery due to limitations in implementation, such as funding or agency capacity, or it may relate to underserved customer groups that observe other barriers to participation.

## *Suggested Next Steps*

With the tools developed through this study, PSE can begin directing future research to drill deeper into an understanding of the drivers for underserved communities, methods of overcoming those barriers,

and continue pursuing ways to work closely with agency partners, particularly from a marketing and outreach perspective, to address local-level solutions.

We recommend PSE consider the following steps to apply this research and work with local partners to refine low-income program services:

- Consider further inquiries to better understand the factors contributing to underserved areas and populations, including barriers contributing to lack of participation of underserved groups
- Conduct deeper analysis and customer segmentation to better understand characteristics of identified underserved communities
- Develop strategies to inform targeted outreach, including messaging based on demographic profiles targeted to high-need areas
- Determine how these tools can support piloting new program designs, as well as CETA reporting requirements

## Study Objectives and Approach

In collaboration with PSE and other regional stakeholders, Cadmus developed a scope of research that covered several topics, with the primary goal of using secondary data to assess the coverage and need of income-eligible customer populations. Cadmus used a combination of PSE program participation and publicly available data to develop a series of maps to illustrate the distribution of underserved communities, considering different metrics, eligibility criteria, and demographic characteristics.

Based on this study's findings, PSE will consider how best to orient future research to better understand drivers for customer need and underserved areas, and how to develop program strategies to overcome these barriers going forward.

The current scope of research is detailed below:

- **Identify participation gaps:** To identify gaps in historic delivery and highlight concentrations of remaining eligible/served customers, Cadmus mapped households previously served by PSE programs and compared them to concentrations of eligible households throughout the service territory.
- **Assess characteristics of underserved communities:** Using the secondary data available, Cadmus conducted several assessments to help characterize eligible populations:
  - *Composite need scoring:* In an effort to characterize underserved populations and highlight areas with the highest need, Cadmus mapped distributions of eligible customers based on several factors that contribute to need of service and may impact earning potential (including several criteria currently used to prioritize weatherization service delivery). Using a scoring approach to rank geographies based on the distribution of eligible customers by each high-need factor, we developed a composite score by summing all factors within each geography to consider the prioritization of high-need areas.
  - *Top-down energy efficiency potential:* Using evaluated whole-house savings from PSE's Low-Income Weatherization program as a proxy for economic achievable potential, Cadmus developed a map showing the distribution of energy savings potential by Census block group based on geographic densities of eligible, unserved customers by PSE.
- **Provide PSE and partners a set of tools:** Cadmus' main objective was the creation of an approach that is flexible, replicable, and transparent. PSE and its community partners will have the tools to continue building on this assessment. Cadmus will provide PSE a set of annotated code used to process all underlying data, apply study assumptions, and develop GIS outputs for various assumptions and definitions of need.

# Research Approach

## *Development and Stakeholder Engagement*

As noted, Cadmus and PSE developed this research approach in response to the Macquarie Transfer Agreement. We presented the work plan to stakeholders early in the process (April 2020) to gain consensus and consider initial feedback. Stakeholders included staff from the Washington State Department of Commerce, Washington Utilities and Transportation Commission, Washington State Attorney General, the Energy Project, and NW Energy Coalition. We reconvened the original stakeholder group in August 2020 to present initial study findings and expanded it to include staff from community organizations currently serving as PSE partners in administering low-income programs. Based on feedback from this presentation, Cadmus and PSE made several revisions to the assessment, which are included in this report.

## *Data Sources*

To conduct a geospatial analysis and quantify eligibility and unmet needs for PSE's low-income programs, Cadmus reviewed a variety of available data sources including the following:

1. PSE historical participation data (Low-Income Weatherization [LIW] and Energy Assistance [EA])
2. PSE territory shapefiles
3. U.S. Census Bureau American Communities Survey and Public Use Microdata Sample (PUMS) data
4. Average LIW kilowatt-hour and therm household savings (from Cadmus' 2018 LIW evaluation)

Each of the data sources is discussed in more detail below.

### PSE Historical Participation Data

This study considered historical participation regarding two PSE low-income programs:

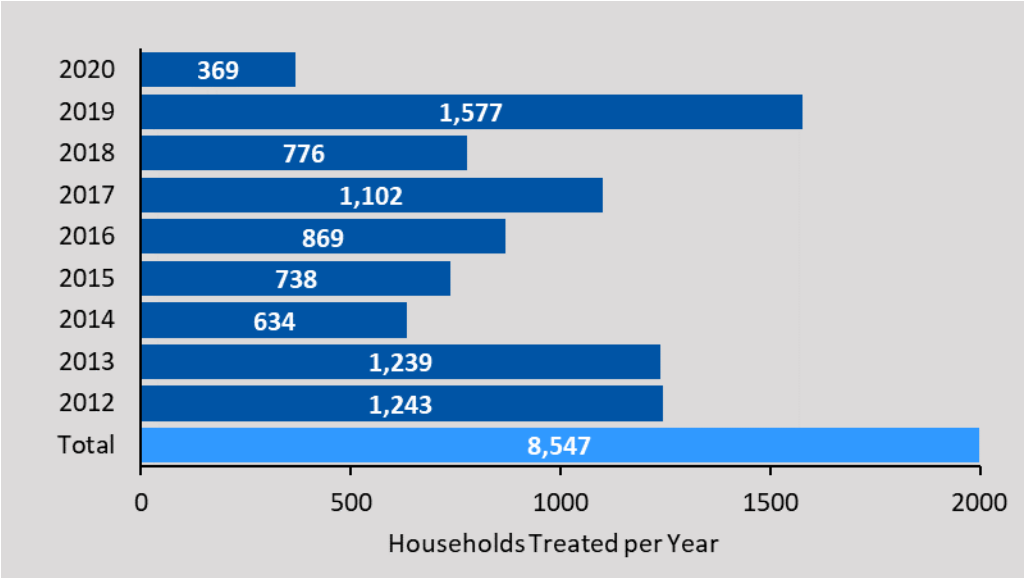
- **LIW program:** PSE's weatherization assistance program seeks to reduce customers' energy burden by providing holistic energy efficiency and education services to reduce energy use and associated costs. This program provides services to customers who meet income eligibility criteria of 200% of the FPL or 60% of the state median income (SMI), whichever is greater based on household size.[4] This study uses historical LIW participation for projects completed from January 2012 through March 2020 (N=8,547).
- **EA program:** PSE's bill assistance program, Home Energy Lifeline Program (HELP), provides electricity and gas bill payment assistance for customers meeting income eligibility of approximately 150% FPL. While PSE HELP provides the majority of funding for this program, customers receiving funding from the Low-Income Home Energy Assistance Program (LIHEAP),

[4] The SMI criteria range from 237% of FPL for a single-person household to 218% of FPL for a six-person household. For households with seven or more inhabitants, PSE uses the 200% FPL threshold.

Salvation Army, and other small funding sources were included in the study. Note, these other funding sources may differ regarding income eligibility, such as LIHEAP at 125% FPL. Since the EA program requires annual enrollment, Cadmus used data for participants who received assistance from October 2018 through September 2019 (N=34,167).

Cadmus received PSE participant tracking data files for the LIW and EA programs, including date of assistance and geographic coordinates of the household. Figure 3 breaks down the count of LIW projects used in this analysis by year. The data included projects from January 2012 through March 2020, for a total of 8,547 projects.[5]

**Figure 3. Historical PSE Weatherization Assistance Projects by Year ***




* Note, 2020 participation represents a partial year and is atypical due to COVID-19

Data for PSE's bill assistance program included customers who received assistance from October 2018 through September 2019, totaling 34,167 unique households. PSE's bill assistance dataset was divided into two categories: PSE HELP payments, which are provided by PSE, and non-PSE payments, tracked by PSE but provided by various other sources. Of the 34,167 households, 28,732 received assistance only from PSE and 26,846 received assistance from a combination of other sources.

The PSE data Cadmus used to determine the historically served population did not account for services occurring outside of PSE programs (beyond those assistance payments tracked by PSE, mentioned above) and, thus, understated the served population for both programs. Specifically, for the LIW program, the study data included historical participation beginning in 2012, but did not include projects completed during the American Reinvestment and Recovery Act, which substantially increased funding and associated volume of completed projects from 2009 through 2011. Furthermore, the study excluded

[5] These data contained single-family and multifamily projects. Each unit within a multifamily project was counted as an individual household.

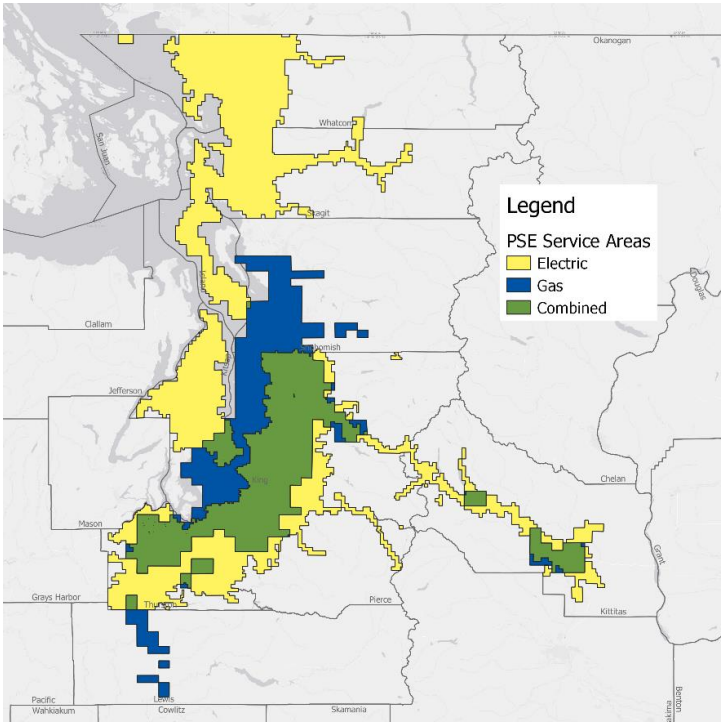
projects completed during the same time frame that PSE customers may have been served with non-PSE funding sources.[6]

Due to economic impacts associated with COVID-19, the level of PSE customers applying for energy assistance has increased substantially.[7] In light of these changes, we note that the current study is based on historical data under pre-COVID circumstances and reflects a different baseline condition with regard to the current income-eligible population. Going forward, PSE can update this analysis with new data for 2020 to assess the change in level of need associated with these events.

## PSE Service Territory Shapefiles

PSE provided Cadmus with a set of shapefiles defining its service area (Figure 4). The service territory extends over 10 counties in Washington, and gas and electric territories are not identical. Historical participants and eligible customers may subscribe to either gas (blue), electric (yellow), or both service types (green).

**Figure 4. PSE Service Territory**




[6] Data provided by Washington State University staff (who evaluate Washington's statewide weatherization program) indicated that between 2009 and 2020, approximately 2,225 units in PSE's territory were completed without PSE funds invested. This reflects a 20% to 25% increase in total projects within PSE's service territory. (Source: Email from Vince Schueler, Energy Program Performance at WSU Energy Extension Program. September 25, 2020).

[7] Note, PSE recently created the Crisis Affected Customer Assistance Program to help customers with employment impacts associated with COVID-19.

### Secondary Data on Income and Demographics

Cadmus used various data sources, including the U.S. Census Bureau American Community Survey (ACS) and PUMS datasets, to create a multidimensional and detailed demographic assessment. From the ACS and PUMS datasets, we used population and number of households below the 150% and 200% thresholds of FPL to estimate the number of eligible households and program participation rates within each Census block group or PUMA. We analyzed additional PUMS fields to characterize need such as the number of households with children under 18, people over age 65, or people with disabilities, as well as income and monthly energy bill amount to calculate energy burden.

### Energy Efficiency Potential Assumption

To develop a top-down approach to estimate energy efficiency potential, we used estimated savings from a recent PSE LIW program evaluation.[8] Cadmus conducted a billing analysis to estimate average participants' household energy savings.

Given the broad range of energy efficiency retrofits, health, safety and repair measures, and behavioral changes that occur through low-income weatherization programs, billing analysis is the gold standard for evaluating whole-house energy efficiency program energy savings by capturing the total change in household consumption.

For the current study, we used evaluated household savings to approximate an estimate of economic achievable potential, as it reflects a whole-house approach to energy efficiency contingent upon program cost-effectiveness screening (i.e., saving to investment ratios) under the existing delivery infrastructure and program design for low-income energy efficiency. Changes to the program delivery, measure mix, cost-effectiveness assumptions, and screening criteria all may affect future estimates of energy efficiency potential savings.

Note, this top-down approach is different than bottom-up methodologies used in conservation potential assessments that typically feed into integrated resource plans. Specifically, PSE uses an end-use forecasting approach to build up estimates of technical and technical-achievable potential by various sectors, building segments, and end uses. We used the top-down approach for this study to identify programmatic potential and consider it in relative terms based on geographic densities for this specific residential customer segment within PSE territory.

## *Study Coverage*

The geographic area of this study covers the entirety of PSE's service territory, including its electricity-only, gas-only, and dual-fuel subterritories. The data were broken out by subterritory when relevant to the analysis. PSE's service area includes portions of 10 counties in the state of Washington: Island, King, Kitsap, Kittitas, Lewis, Pierce, Skagit, Snohomish, Thurston, and Whatcom.

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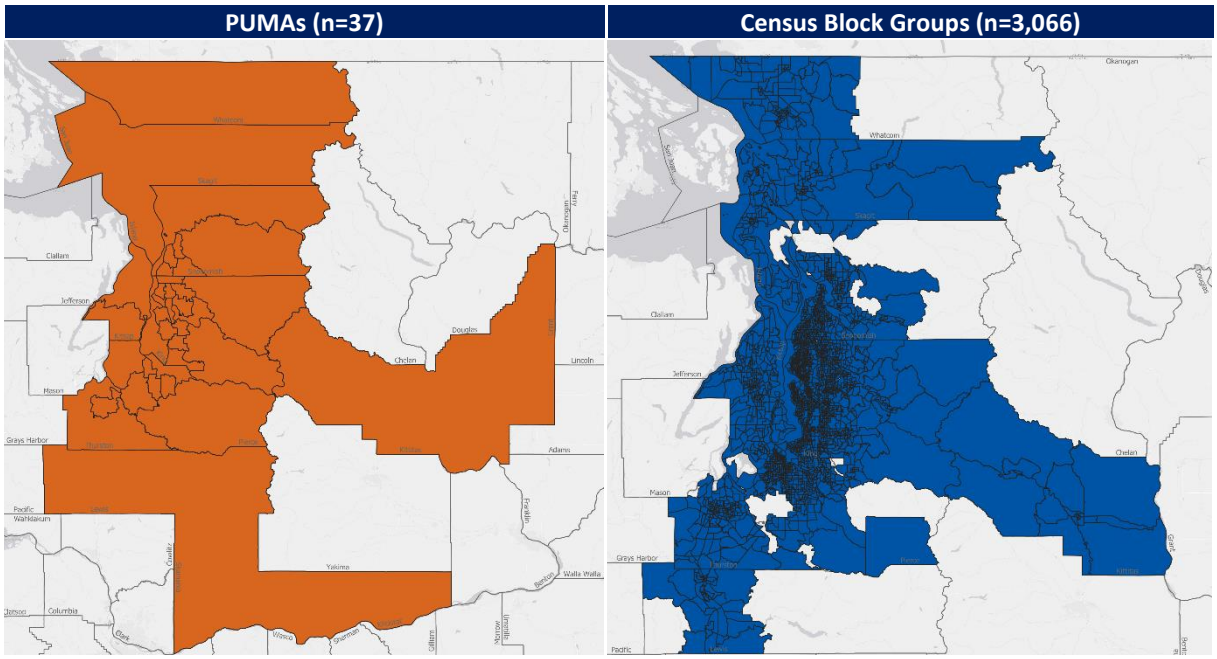
[8] Cadmus. 2018. *PSE Low-Income Weatherization Evaluation*. https://conduitnw.org/Handlers/conduit/FileHandler.ashx?RID=4264

Demographic data from the U.S. Census Bureau are reported in large geographic areas (PUMAs) and smaller geographic areas (Census block groups). Thirty-seven PUMAs intersect with the PSE service area, typically containing about 40,000 to 90,000 households each. In contrast, 3,066 Census block groups overlap with the PSE service area and typically contain about 600 to 1,000 households. Figure 5 presents each geographic grouping side by side. PUMAs and Census block groups do not align perfectly with the PSE service area, so Cadmus rescaled household counts for areas at the edge of PSE's service area to more accurately estimate the program participation rate in those areas.[9]

**Figure 5. PUMAs and Census Block Groups Overlapping PSE Territory**




## *Approach and Assumptions*

### Income Eligibility and Eligible Populations

When considering populations of eligible households, Cadmus relied on income-eligibility thresholds of 200% FPL for weatherization and 150% FPL for the energy assistance program, which differed slightly from the income eligibility criteria PSE uses for their LIW and EA programs.

#### *Income Eligibility by Program*

For energy assistance, the eligibility threshold for PSE's HELP program approximates 147% of the FPL. Cadmus used 150% FPL to approximate this threshold, since the granularity of Census block group data are limited by specific income thresholds. While different funding sources for the EA program have

[9] For areas that intersected with the PSE territory, the count of households or population was scaled proportionate to the geographic area (Census block group or PUMA) contained by the PSE service area.

different eligibility thresholds, we used the PSE HELP criterion because it is the largest source of program funding.

The income-eligibility criteria for the LIW program are 200% FPL, or 60% of the AMI, whichever is greatest. For households with six or fewer members, the 200% FPL threshold is greatest, while the 60% AMI threshold is greatest for households with seven or more members. For the purposes of this study, Cadmus used the 200% FPL threshold, since the granularity of the Census block group data was incompatible with the 60% AMI threshold. As a result, the counts of eligible households for houses with fewer members are underestimated using the 200% FPL assumption—the FPL equivalent for those households using the 60% AMI assumption ranges from approximately 218% to 237% FPL.

### *Determining Eligible Customers*

In addition to the income eligibility assumptions, this study relied on several additional assumptions to define the eligible population within PSE service territory:

- **Defining households:** This study focused on *households* as the primary unit of analysis. PUMS provided a variety of demographic and income data at the household level, which easily allows for estimating a discrete count of households by PUMA boundary for different levels of income eligibility. The analysis of Census block group data requires using population as a proxy for household to estimate the percentage of income-eligible households. Cadmus applied this by estimating the population percentage at a specific income threshold (e.g., 200% FPL) and applying that proportion to the count of total households within a given Census block group. This assumption allowed us to calculate an approximation for the program participation rate in these more granular geographic divisions.
- **PSE gas territory adjustment:** For geographies within PSE's gas-only service territory, the total number of eligible households may include those that are not PSE gas customers. To account for this, Cadmus scaled the count of eligible households by the proportion of households within that geography with gas heat. For Census block groups, this was based on the percentage of population meeting the eligibility threshold and the overall percentage of households in the Census block group with gas heat. This may deviate from the percentage of eligible households with gas heat, an intersection not available at the Census block group level. The intent of this adjustment is to reduce the potential to overestimate customers in these gas-only territories.

Using this approach to define income eligibility by program type, Cadmus estimated approximately 290,000 households within PSE territory are at or below 200% FPL and approximately 200,000 households are at or below 150% FPL.

## Metrics for Defining Underserved Customers

In considering distributions of underserved areas, characterized by the eligible, unserved households within a given geography, this study used two metrics that highlight different ways to define underserved: (1) the *number* of eligible, unserved households and (2) the *percentage* of eligible, unserved households.

The number of eligible, unserved households provides a *measure of efficiency* and will help PSE target areas with the largest number potential participants not yet served.

In contrast, the percentage of eligible, unserved households provides a *measure of equity* and will help PSE target areas that may have smaller eligible, unserved populations with particularly low participation rates. This metric may speak to gaps in current delivery, such as eligible customer populations with specific barriers to the current offerings, or resource and capacity issues based on delivery agencies in regard to the reach of current programs. Using percentage as the metric for characterizing underserved populations helps to address potential equity issues with current delivery, and may manifest into strategies to address barriers, such as with marketing or messaging efforts or delivery capacity and reach.

## Energy Burden Calculation

Cadmus calculated household energy burden using the PUMS data for inclusion in the composite need scoring assessment. We calculated it as the percentage of a household's income spent on all fuel types (including electricity, gas, and other fuels):

$$100 * \frac{Total\ annual\ fuel\ cost}{Annual\ household\ income}$$

We considered alternative methods for calculating energy burden for this study, such as using PSE customer data for EA participants where income and bill amounts were known. However, we selected the above methodology primarily because PSE data only track those low-income customers that have participated in their programs, rather than the nonparticipants that make up the underserved population.

The accuracy of energy burden within the self-reported PUMS data may be limited at the household level. However, the application of these data is to understand relative trends in energy burden at the PUMA level for the purpose of assessing relative need across PSE's service territory. Cadmus recommends that alternative approaches are considered in future research if the intent is to refine the assessment of energy burden to the level of the individual customer. We also recommend conducting future research to refine the estimates presented here for program targeting or considering alternative factors serving as a proxy for energy burden (e.g., poverty level).

## Map Development

The U.S. Census Bureau's TIGER/Line Shapefiles webpage provides GIS layers delineating the geographic area of each Census block group and PUMA for which the Bureau collects demographic data.[10] Cadmus joined the demographic data from the U.S. Census Bureau with the Census block group layer and PUMS data with the PUMA layer. We collected demographic data at the Census block group level to allow small-scale targeting of regions and neighborhoods that might qualify as having high need. We include

[10] U.S. Census Bureau. 2019. "TIGER/Line Shapefiles." https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-line-file.html

the following fields in this analysis: the number and percentage of households below 150% and 200% of FPL, children under 18, people over age 65, people with disabilities, energy burden, race/ethnicity, and limited English proficiency.

To allow for direct comparisons and calculations with Census data, Cadmus binned historical participants at the Census block group and PUMA levels. We used the geocoded participant data provided by PSE to create a point dataset of historical participants. We then joined this point layer containing billing data and other potentially relevant housing characteristics with the GIS layers to produce GIS datasets for analysis.[11]

Cadmus built GIS map layers using the polygon vector data from PSE. The data included three GIS layers to document PSE's service area: an electricity layer, a gas layer, and a combined electricity and gas (or duel-fuel) layer. We used this service area data to limit the numeric and geospatial data in the analysis to the geographic extent of PSE's service territory.

Additionally, Cadmus built maps showing the relation of tribal block groups to underserved areas. Tribal block groups are defined independently of the standard county-based block group and PUMA regions used in this study. There are 59 tribal block groups within PSE's service area.

## *Participation Gap Analysis*

### Assessment of Participation Gaps and Mapping Underserved Communities

Using PSE participant tracking data, Cadmus mapped historical program participants and compared them to the count of eligible households within a given geography. We created different maps to assess a range of various study elements:

- **Program type:** LIW, EA, and both programs combined
- **Income eligibility**: 150% FPL versus 200% FPL
- **Geography**: PUMA versus Census block group

Cadmus developed a series of maps showing distributions of eligible, unserved households across PSE's service territory (binned by quintile). To highlight the top bin of each of these distributions, the findings include a set of final maps that show the top 20% of geographies with highest counts of eligible, underserved customers for future targeting.

## *Composite Need Scoring*

To characterize the underserved populations, Cadmus developed a scoring approach to assess different factors that contribute to need of services and pose impacts on earning potential. The need scoring approach considered the distribution of income-eligible households (defined at the 200% FPL) across

[11] For display purposes, Cadmus used the NAD83/Washington North geographic projection.

PSE's territory by PUMA and ranked the geographies based on the proportion of households meeting one of several high-need criteria.

Cadmus identified factors based on several prioritization criteria already in use for delivering weatherization programs in Washington State, as well as other factors determined in discussion with PSE and based on stakeholder feedback.[12] High-need criteria used for this assessment include a combination of the following:

- Households with children under 18 years of age
- Residents over 65 years of age
- Residents with a disability
- High energy burden
- Race/Ethnicity (i.e., non-white residents)
- Language (i.e., households with limited English proficiency)

Once the variables were selected, Cadmus applied the following methodology for scoring:

- **Step 1:** For each PUMA intersecting the PSE service territory, we identified the percentage of income-eligible customers meeting each of the criteria (e.g., proportion of income-eligible households with children under 18 years of age).
- **Step 2:** Based on the above percentages, we calculated the decile ranking of each PUMA for each high-need variable.
- **Step 3:** We used the decile ranking as the score from 1 to 10 for each PUMA for a given indicator variable and repeated it for each variable.
- **Step 4:** We summed the scores for all indicators to produce a composite score for each PUMA.[13]

A variety of demographic and customer characteristics can be compared to look at a combined set of criteria relative to need. This report presents two scenarios for the composite need scoring and underserved Census block groups with the highest need:

- **Scenario 1:** Scoring included four high-need criteria (homes with children, residents over age 65, disability, and energy burden).
- **Scenario 2:** Scoring included all need criteria (including race/ethnicity and limited English proficiency).

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[12] Washington Department of Commerce. 2019. *Weatherization Manual.* Section: *Policy 1.2.1 Prioritizing Eligible Weatherization Clients.* http://www.commerce.wa.gov/wp-content/uploads/2019/07/Wx-Manual-2019-Jul-1-2019.docx

[13] Cadmus applied equal weighting to each of the high-need variable rankings to estimate the composite need score.

In response to stakeholder feedback, we included race/ethnicity and limited English proficiency as part of a second need scoring scenario. Multiple scenarios provide an opportunity to compare the demographic filters for considering differences in need associated with underserved areas.

Note, scores should only be considered relatively within each scenario, rather than across scenarios, since absolute scores will vary based on the number of need criteria used. For this reason, the distributions between Scenario 1 and Scenario 2 can be compared, rather than absolute scores.

All high-need variables are based on PUMS data, which allowed for consideration of factors within the subset of households that are income-eligible. Future research can investigate alternative weighting scenarios, additional variables to incorporate, and different data sources with more refined information or geographic granularity.

### *Underserved Block Groups within Highest Need PUMAs*

Finally, Cadmus developed a set of maps that showed the intersection of the highest concentrations of underserved households (based on the gap analysis) and those PUMAs with highest composite need scores. We identified underserved Census block groups with the highest need using these criteria:

- The block group was within the top 20% of all Census block groups by number of households not served by either the EA or LIW program.
- The block group was located within the PUMAs within the top 20% of composite need score.

### *Research Approach Caveats*

This section presents caveats to the assumptions Cadmus used in this research:

- **Coverage of historical participation**
  - *Non-PSE services:* While EA program tracking data included payments from some entities other than PSE's HELP, households may have received assistance from additional sources not included in this analysis. There are PSE customers that would have received weatherization services with non-PSE funding sources that are also not included in this analysis.
  - *Service Eligibility:* There are likely homes with income-eligible customers that may already be built to current codes and not require (nor be eligible for) LIW services. Additionally, some customers (e.g., renters in multifamily housing) may meet income eligibility requirements but are not authorized to make decisions on home improvements (e.g., requiring landlord approval) or enroll in PSE LI programs.
  - *Historical period:* The time period of historical data used for the study was limited. This is particularly notable for low-income weatherization, since pre-2012 projects likely included installed measures that have continued effects on energy consumption (e.g., lowering energy burden) that should be considered when assessing the population of served buildings. Additionally, including historically served projects also implicitly assumes that current occupants meet similar income eligibility as the original customers at the time of service.

- *Account movement:* To account for EA customers who moved, Cadmus used the most recent payment date to find the most current premise (or location) associated with each customer. Relocation was less of an issue for weatherization assistance, since its effect resides with the premise rather than the customer.

- **Units of measurement**
  - *Households versus population:* As noted, this analysis focused on the household as the primary unit of measurement, to approximate potential utility customer homes available to receive energy program services. PUMS data are derived from individual survey responses and often allow for estimates at the household level. Census ACS data on poverty level are based on populations. For this analysis, Cadmus assumed that the percentage of the income-eligible population was applied proportionately to estimate income-eligible households at the block group level.[14]
  - *Actual customer counts:* Additionally, counts of actual PSE customers within given geographies may vary from the estimates of households based on this analysis for the same geography—these are distinctions that PSE will be able to true up through cross-referencing its customer account data.
- **Identifying/characterizing eligible customers**
  - *Income-eligibility assumptions:* The assumptions used to set 200% FPL for LIW participants and 150% FPL for EA participants were driven by data availability and may underestimate and overestimate the eligible customer population, respectively.
  - *Gas service territory adjustment:* Cadmus adjusted the income-eligible customers counts within gas-only service territory since the full eligible population are not necessarily PSE gas customers. We scaled the eligible population based on the proportion of total households with gas heating for each geography.
  - *PSE territory overlap:* PSE's service territory does not perfectly overlap with U.S. Census Bureau geographies. In cases in which Census Bureau geographies extend beyond PSE's service territory, the demographic and other characteristics of the portion within PSE's service territory may differ from that of the entire geographic region quantified. To address this, Cadmus assumed a uniform spatial distribution of households within Census block groups to rescale household counts by the proportion of geographic overlap with the PSE service area. Because Census block group statistics offer the most granularity, we also used

[14] Data for the number of households below the 150% and 200% FPL thresholds are not available at the block group level. At the block group level, Cadmus used the percentage of individuals below a given poverty level threshold as a proxy for the percentage of households below that poverty level threshold. Cadmus found that the difference between percentage of population and percentage of households below 200% of FPL was between -5 and 3 percentage points at the PUMA level. Due to the relatively small difference, percentage of eligible population was determined to be a suitable proxy for the percentage of eligible households at the block group level.

them to rescale PUMA-level data for all fields except eligible household counts (per the limitation described above) and energy burden (which was not available at the block group level). This approach reduces the overestimation of the number of eligible households within the PSE service area but may still over- or under-estimate statistics within the PSE service area. The magnitude of this error depends on the difference between the densities of households in the portions of the Census block group that overlap and do not overlap the PSE service area.

- *Energy burden:* Cadmus estimated energy burden using PUMS data, which are derived from individual survey respondents' self-reported values for income and energy cost. As such, energy costs estimates may vary by respondent and may not reflect an average monthly cost, but rather the energy cost for a specific month, which may not account for the seasonality of annual energy costs. Additionally, this estimate does not account for other forms of payment assistance that would reduce the actual energy costs required for payment.
- *Scale:* PUMA data are derived from individual survey responses over large geographies while Census block groups provide more granular data.
- *Counts by attribute:* Due to differing sources and methodologies for data collection, PSE customer data may not perfectly align with secondary sources (e.g., PUMS respondent self-reports) regarding specific attributes, such as the number of households by specific building types within a given geography, though we would expect proportions to be similar.

# Findings: Mapping Results

Cadmus created a series of maps to illustrate the distribution and characteristics of underserved communities.

Maps vary by the following characteristics:

- **Program:** LIW, EA, or both
- **Geography:** PUMA or Census block group
- **Metrics***: Count* of eligible, unserved households or *percentage* of eligible, unserved households
- **Income eligibility:** LIW is below 200% FPL and EA is below 150% FPL

## *Saturation of Eligible Customers*

Figure 6 maps the percentage of households at or below 200% FPL. The darkest blue areas show PUMAs, with the highest percentage of households. The histogram in Figure 6 displays the distribution of PUMAs in the associated map. As the histogram shows, the top 19% of PUMAs (seven PUMAs total out 37 in PSE's territory) have the highest saturation of eligible households (between 29% and 43%). These PUMAs are located in Kittitas, Lewis, Whatcom, Pierce, and King counties. Most PUMAs are clustered in the bottom-middle of the distribution, in the 15% to 29% range.

The Census block group-level data provide a clearer picture of the geographic variation in concentrations of eligible customers. As shown in Figure 7, less than 1% of Census block groups (nine block groups total) have 80% to 100% of their population below 200% FPL. The majority of Census block groups (52%) have 0 to 20% of their population below 200% FPL.

**Figure 6. Percentage of Households Below 200% FPL by PUMA**

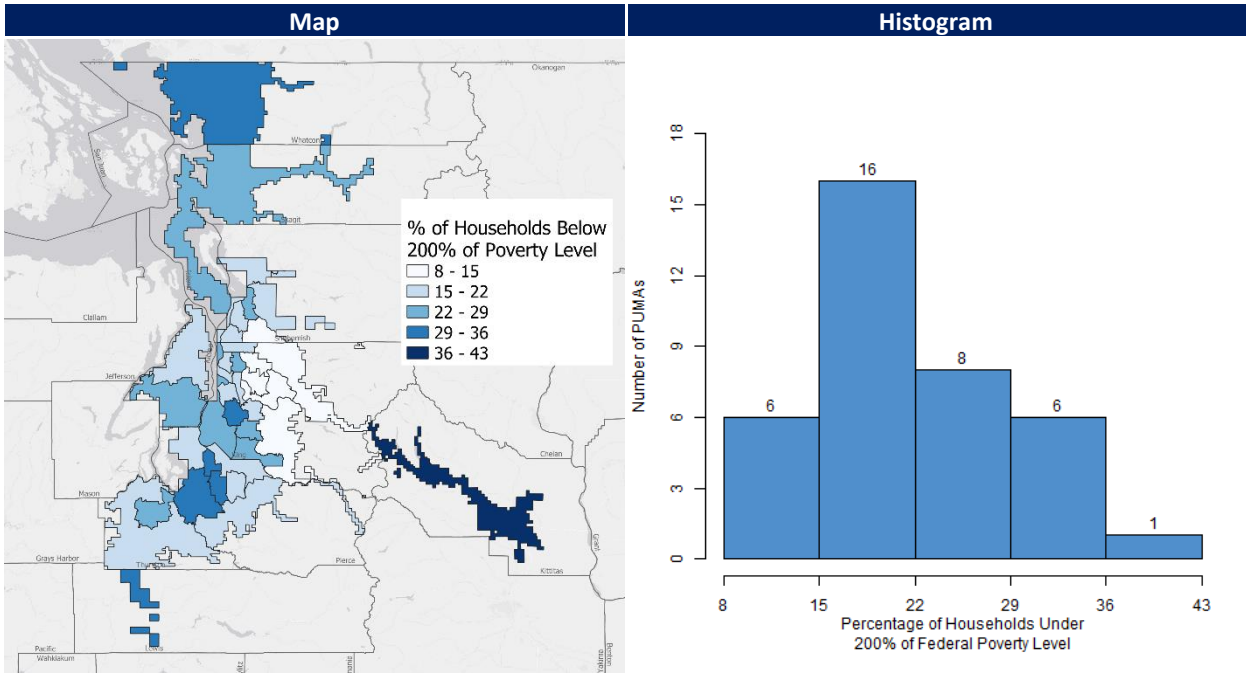
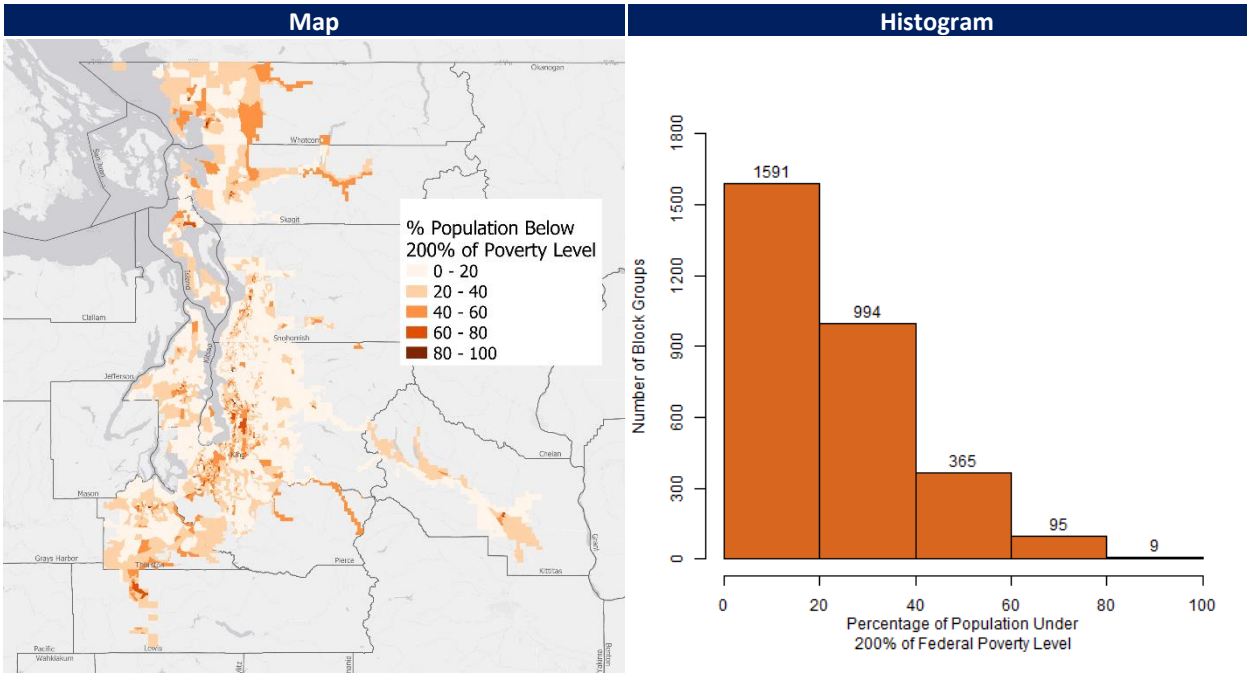


**Figure 7. Percentage of Population Below 200% FPL by Census Block Group**




## *Participation Gaps*

To identify gaps in historical program participation, Cadmus used PSE's LIW and EA program tracking data. We geocoded and mapped the individual households served through these programs and compared them against the population of households that met income eligibility for each program. For each geographic area (i.e., Census block group or PUMA), we calculated the number of eligible, unserved households by taking the difference between the historically served customers and the total eligible population. See the *Research Approach* section for details regarding the study parameters in how eligible, underserved customers were estimated.

The next section provides a series of maps presenting the PSE territory distributions for the eligible, unserved populations based on different programs, income-eligibility criteria, comparison metrics, and geographies. PSE and community partners can use this information to identify high concentrations of underserved customers and begin to consider ways to further assess or address these gaps in future research or program strategies.

Appendix A provides additional maps and distributions of income-eligible customers within PSE's service territory.

## Low-Income Weatherization

Figure 8 and Figure 9 present the distributions of underserved households eligible for the LIW program, by total number of household and percentage of eligible households, respectively. Income eligibility is set at 200% FPL, and each figure presents the distribution by PUMA and Census block group side by side.

As shown, upper quintiles of the distribution highlight those geographies with the highest concentration of eligible, unserved households. With annual LIW projects limited based on higher cost of service, much of the eligible customer population remains underserved, as noted by the range across the bins of the distribution.

**Figure 8. Distribution of Total Underserved Households for LIW (at 200% FPL) by Geography**

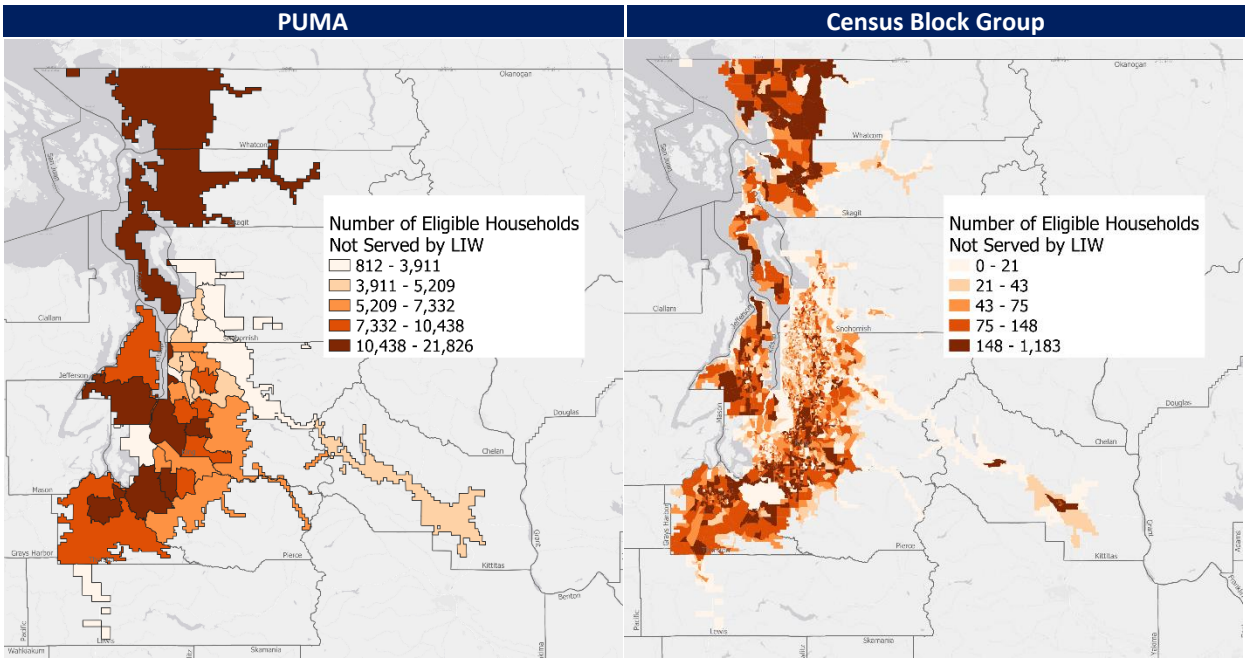
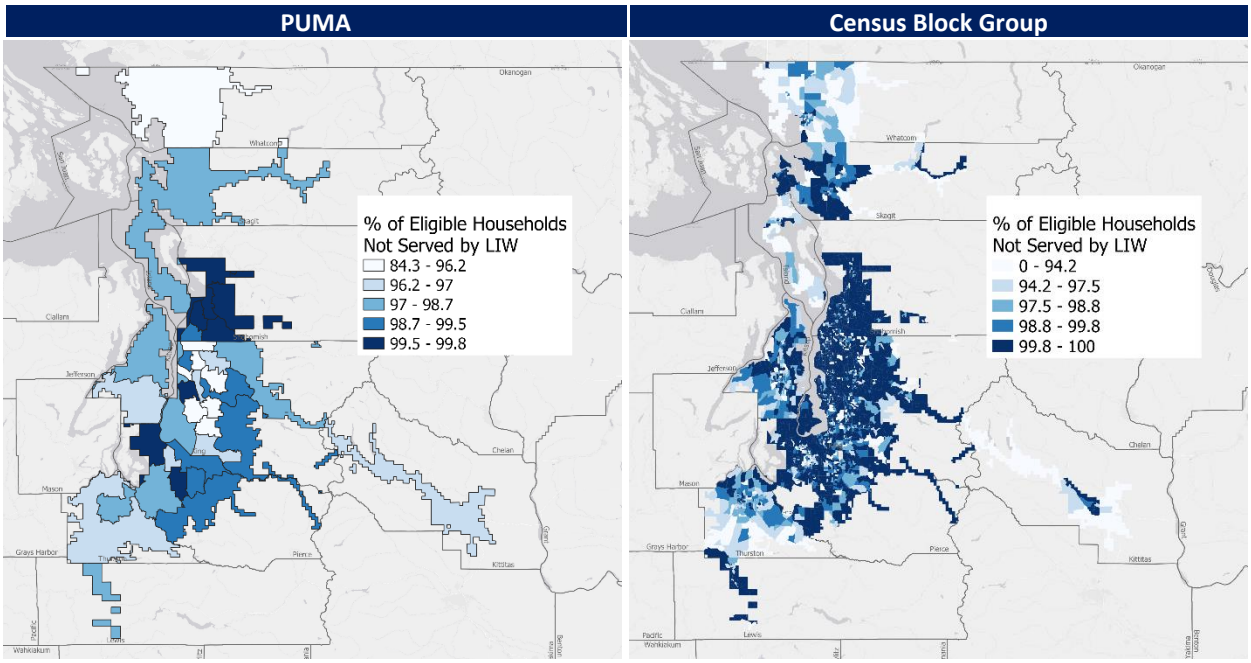


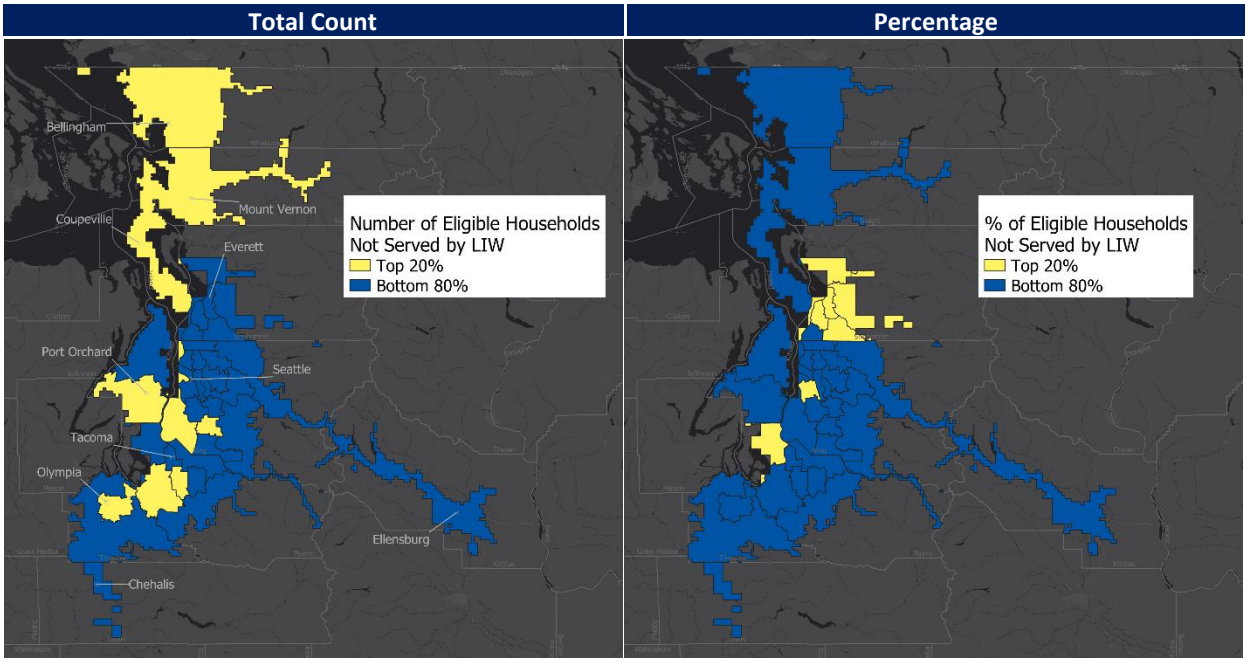

**Figure 9. Distribution (%) of Underserved Households for LIW (at 200% FPL) by Geography***




* PUMA percentages were binned by quintile. Because 65% of Census block groups were not served, these were grouped into the first bin, while quartiles were used to bin the remainder.

From the figures above, Figure 10 highlights the top 20% of PUMAs based on each metric (total count and percentage) quantifying the underserved population. While each metric identifies some differences in geographies by the top quintile of the distribution, the difference between bins in these distributions is marginal given the high level of eligible customers across the territory relative to the historic delivery.[15] Regarding total count, the PSE territories intersecting with Whatcom, Skagit, and Thurston PUMAs contain the highest concentration of unserved, income-eligible households.

**Figure 10. Top 20% of Underserved PUMAs for LIW (200% FPL) by Total Count and Percentage**




| PUMA Name | Households |
|---|---|
| Whatcom County – Bellingham | 21,826 |
| Skagit, Island & San Juan Counties | 17,235 |
| Thurston County - Olympia | 16,260 |
| Pierce County - Tacoma (South) | 12,914 |
| Kitsap County (South) | 12,721 |

| PUMA Name | % Households |
|---|---|
| Snohomish County (West Central) | 99.8 |
| Snohomish County (Central & Southeast) | 99.8 |
| Seattle (West) | 99.7 |
| Snohomish County (North) | 99.7 |
| Snohomish County (Central) | 99.7 |

## Energy Assistance

Figure 11 and Figure 12 present the distributions of underserved households eligible for the EA program, by total number of household and percentage of eligible households, respectively. Income eligibility is set at 150% FPL, and each figure presents the distribution by PUMA and Census block group side by side.

[15] Including non-PSE funded weatherization projects and additional years of delivery will help refine the accuracy of this distribution.

**Figure 11. Distribution of Total Underserved Households for EA (at 150% FPL) by Geography**

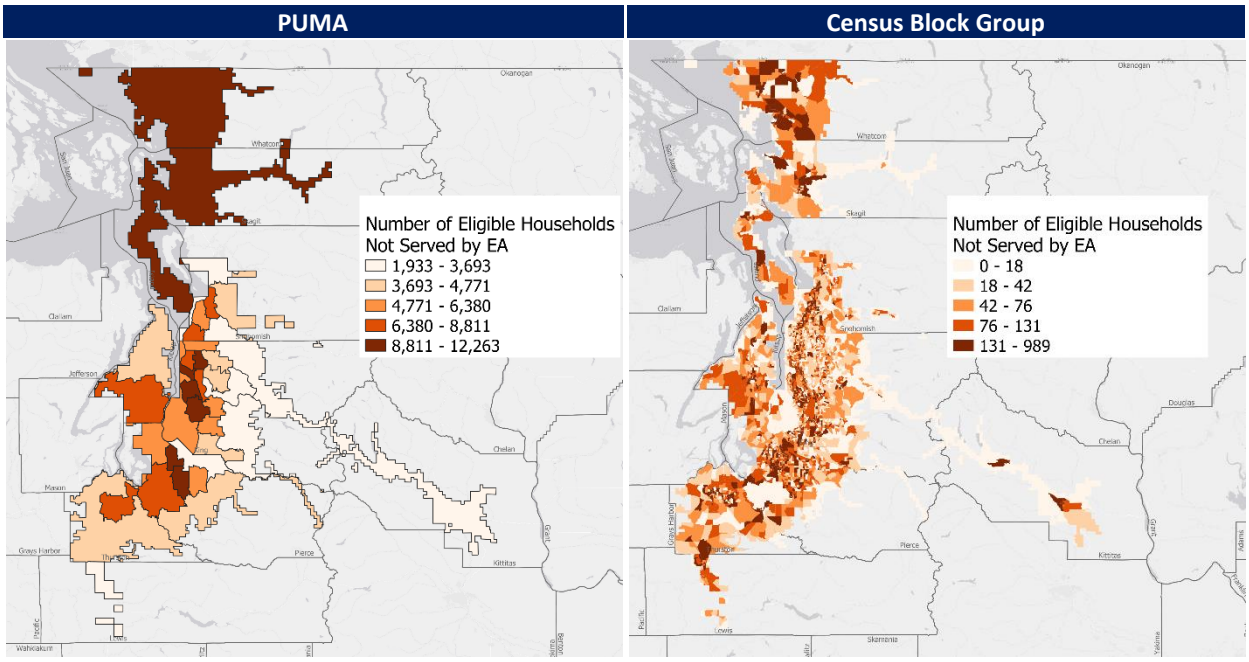
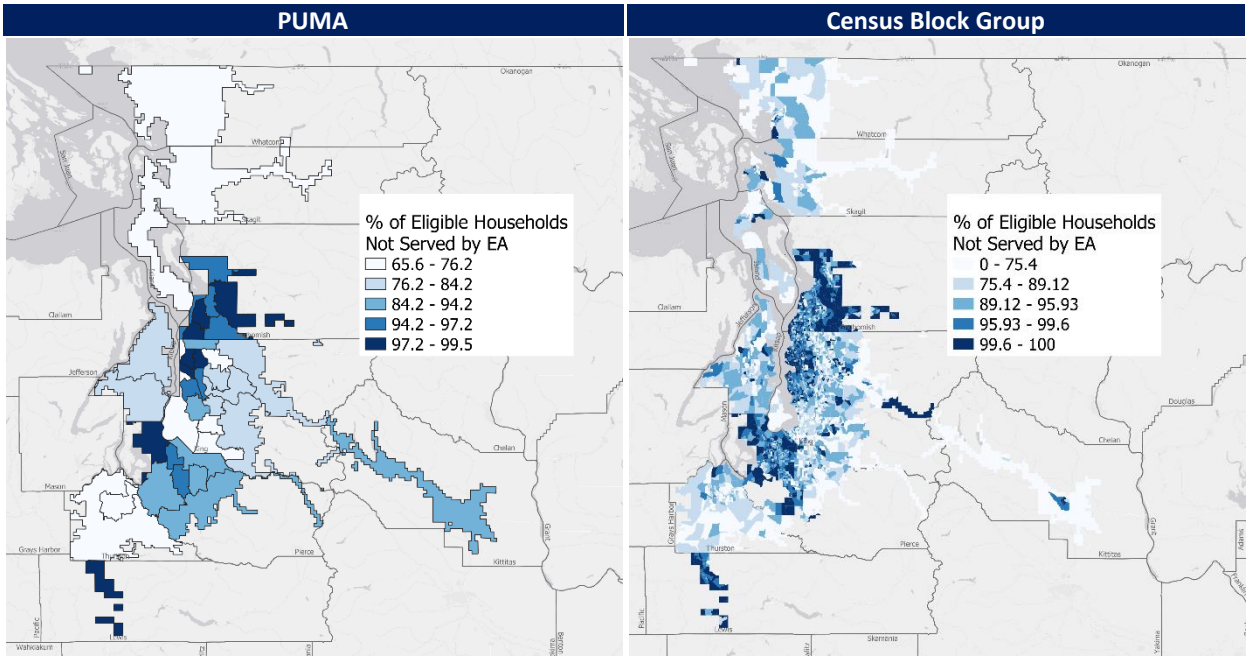



**Figure 12. Distribution (%) of Underserved Households for EA (at 150% FPL) by Geography**

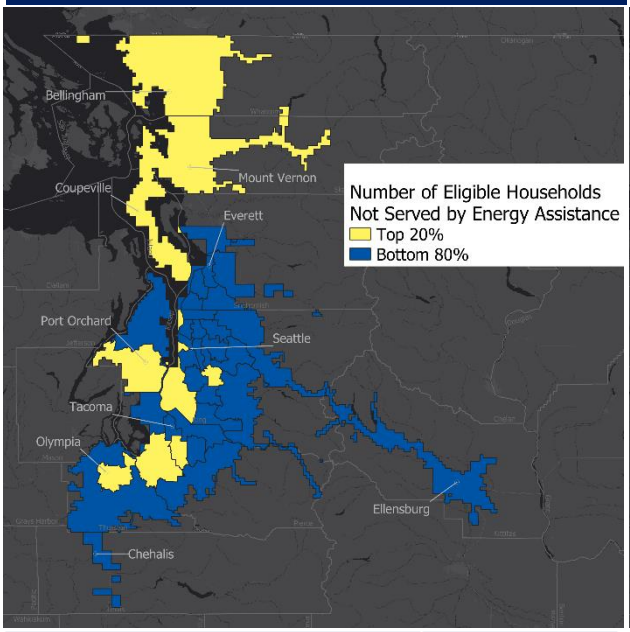



From the figures above, Figure 13 highlights the top 20% of the distribution based on each metric (total count and percentage) quantifying the underserved population. Differences in the top PUMAs between metrics highlight differences in concentrations of eligible, unserved households (by count) compared to higher proportions of underserved customers within each geography (by percentage). Similar to the LIW

program, the PSE territories intersecting with Whatcom, Skagit, and Thurston PUMAs contain the highest concentration of unserved, income-eligible households.

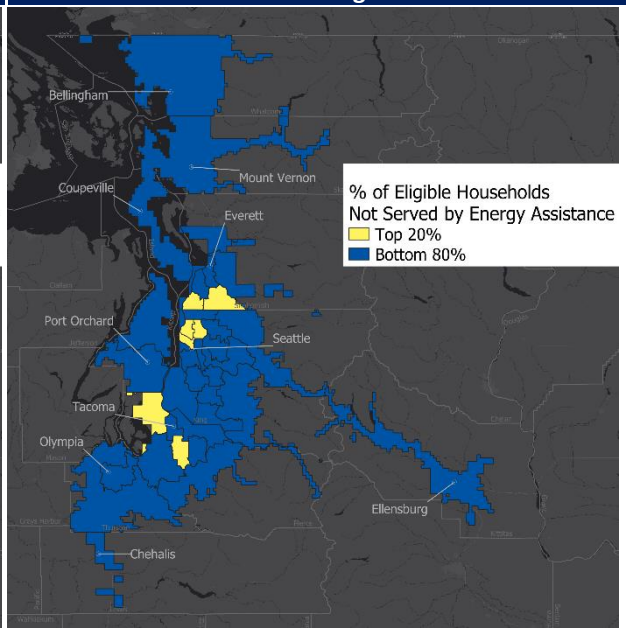
**Figure 13. Top 20% of Underserved PUMAs for EA (150% FPL) by Total Count and Percentage**

**Total Count**




| PUMA Name | Households |
|---|---|
| Whatcom County - Bellingham | 12,263 |
| Skagit, Island & San Juan Counties | 9,160 |
| Thurston County - Olympia | 8,579 |
| Pierce County - Tacoma (South) | 8,254 |
| Kitsap County (South) | 7,332 |

**Percentage**

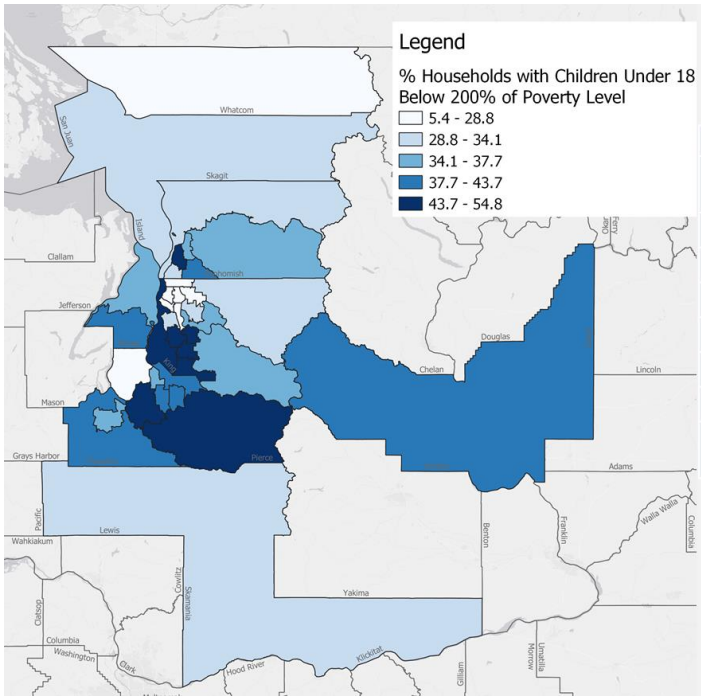



| PUMA Name | % Households |
|---|---|
| Seattle (Northeast) | 98.1 |
| Seattle (Downtown) – Queen Anne & Magnolia | 98.1 |
| Seattle (Northwest) | 97.0 |
| Pierce County (Northwest) | 96.0 |
| Pierce County - Tacoma (South) | 95.6 |

## *Composite Need Score*

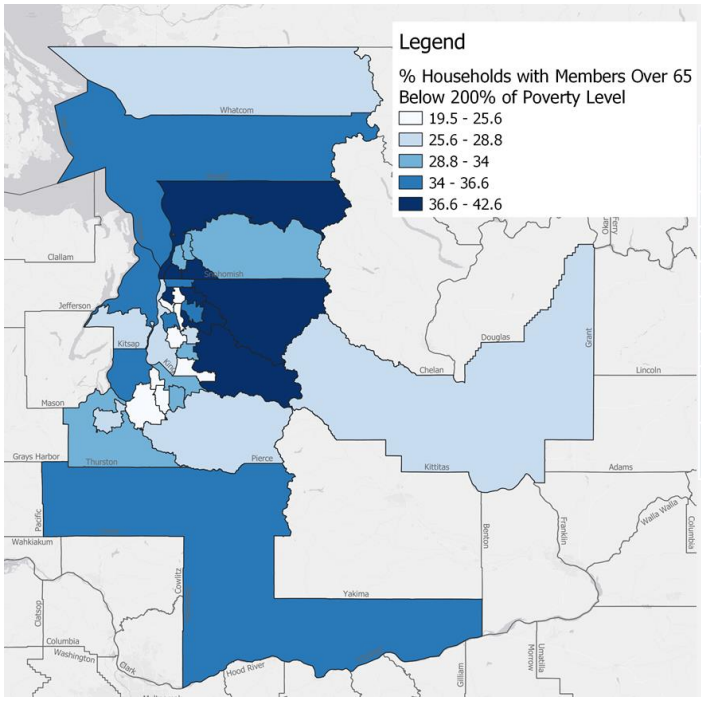
The following maps provide the PUMA-level distributions of eligible households (at 200% FPL) by different need criteria (Figure 14 through Figure 19). Each map presents the percentage of income-eligible households meeting each factor, along with an excerpt showing the top eight PUMA territories and associated household percentages by need criteria. These criteria include households with children under 18 years of age, residents over 65 years of age, residents with disability, higher relative energy burden, race/ethnicity (non-white), and limited English proficiency.

**Figure 14. Distribution of Eligible Households (200% FPL) by High Need Criteria – Children Under 18**



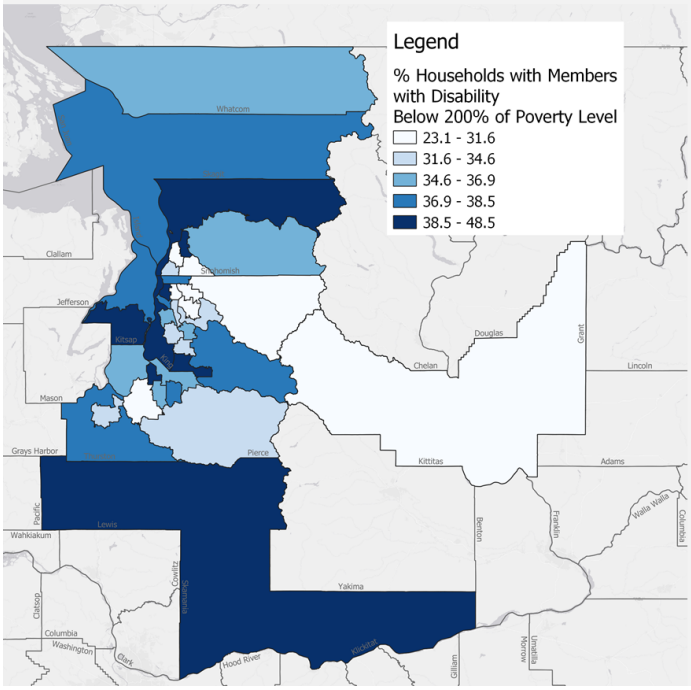

| PUMA Name | % Households |
|---|---|
| King County (Southwest Central) | 54.8 |
| Pierce County (West Central) | 49.6 |
| King County (Far Southwest) | 47.6 |
| King County (Southwest) | 47.0 |
| Pierce County (Southeast) | 45.5 |
| King County (West Central) | 44.1 |
| King County (Central) | 43.9 |
| Snohomish County (West Central) | 43.8 |

**Figure 15. Distribution of Eligible Households (200% FPL) by High Need Criteria – Adults Over 65**



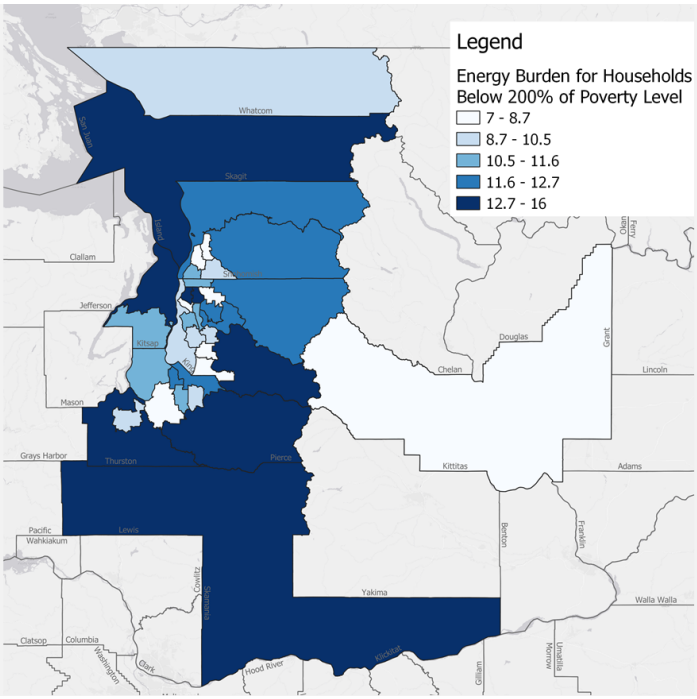

| PUMA Name | % Households |
|---|---|
| King County (Southeast) | 42.6 |
| Seattle (Northwest) | 39.0 |
| King County (Northeast) | 38.8 |
| Snohomish County (North) | 37.9 |
| King County (Central) | 37.9 |
| King County (Northwest) | 37.1 |
| Snohomish County (South Central) | 37.0 |
| Snohomish County (Southwest) | 36.7 |

**Figure 16. Distribution of Eligible Households (200% FPL) by High Need Criteria – Disability**



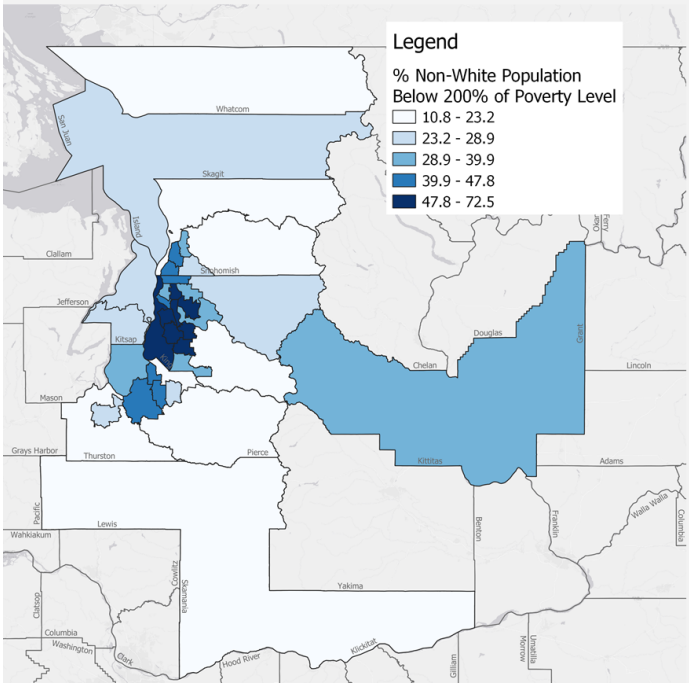

| PUMA Name | % Households |
|---|---|
| Snohomish County (North) | 48.5 |
| Kitsap County (South) | 48.0 |
| Lewis, Klickitat & Skamania Counties | 45.1 |
| Snohomish County (Central) | 42.0 |
| Pierce County - Tacoma (Central) | 41.2 |
| King County (Southwest) | 39.7 |
| Seattle (Northwest) | 39.3 |
| King County (Far Southwest) | 38.5 |

**Figure 17. Distribution of Eligible Households (200% FPL) by High Need Criteria – Energy Burden**



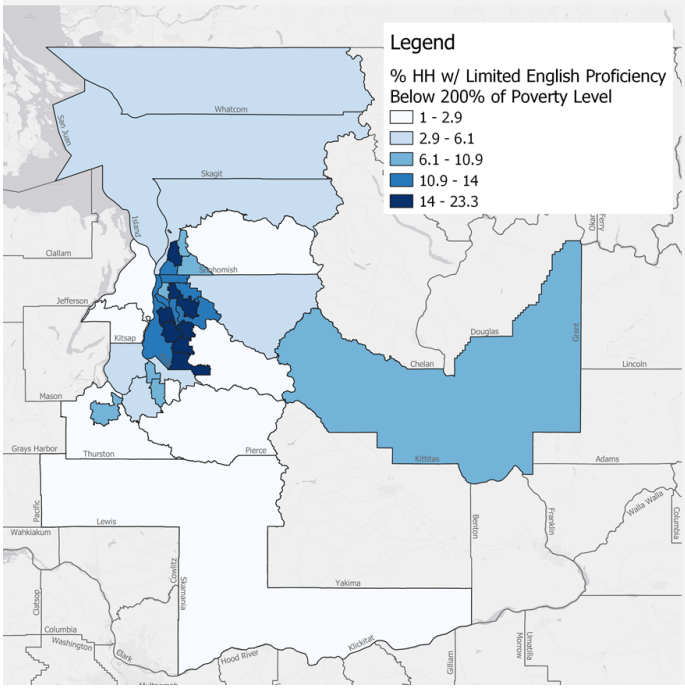

| PUMA Name | Average Energy Burden (% Income) |
|---|---|
| Seattle (Northeast) | 16.0 |
| King County (Southeast) | 16.0 |
| Thurston County (Outer) | 14.0 |
| Seattle (Northwest) | 13.6 |
| Pierce County (Southeast) | 13.4 |
| Skagit, Island & San Juan Counties | 13.2 |
| Lewis, Klickitat & Skamania Counties | 13.0 |
| Kitsap County (North) | 12.7 |

**Figure 18. Distribution of Eligible Households (200% FPL) by High Need Criteria – Race/Ethnicity**




| PUMA Name | % Population |
|---|---|
| Seattle (Southeast) | 72.5 |
| Seattle (West) | 68.4 |
| King County (West Central) | 66.1 |
| King County (Central) | 65.9 |
| King County (Southwest Central) | 60.2 |
| King County (Far Southwest) | 59.6 |
| Seattle (Northeast) | 50.2 |
| King County (Northwest Central) | 48.0 |

**Figure 19. Distribution of Eligible Households (200% FPL) by High Need Criteria – Limited English Proficiency**

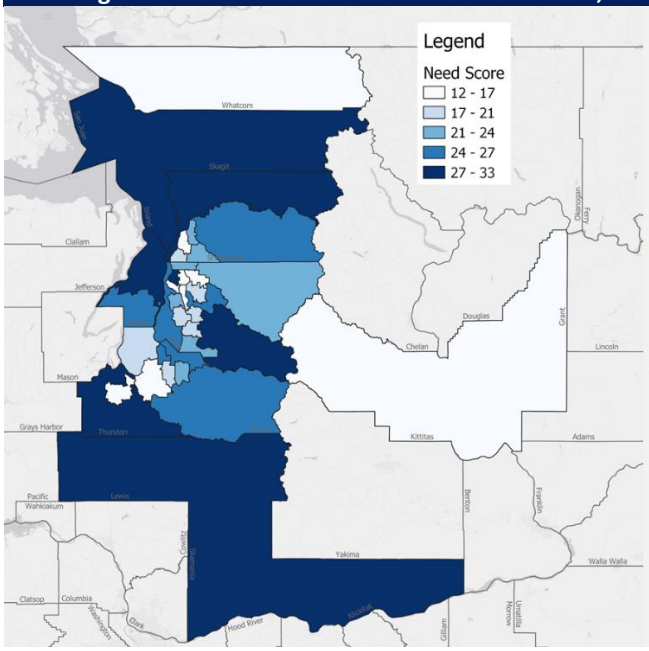



| PUMA Name | % Households |
|---|---|
| King County (West Central) | 23.3 |
| Snohomish County (West Central) | 21.7 |
| King County (Northwest Central) | 21.6 |
| Seattle (West) | 18.6 |
| King County (Southwest Central) | 18.4 |
| Seattle (Northeast) | 17.2 |
| King County (Central) | 15.6 |
| King County (Southwest) | 14.1 |

Figure 20 shows Scenario 1, which includes scoring from distributions of four high need criteria: households with children under 18, residents over 65, residents with disabilities, and energy burden. Figure 21 shows Scenario 2, which includes all former need criteria, with the addition of race/ethnicity (non-white) and limited English proficiency.

**Figure 20. Distribution of PUMAs by Composite Need Score – Scenario 1**

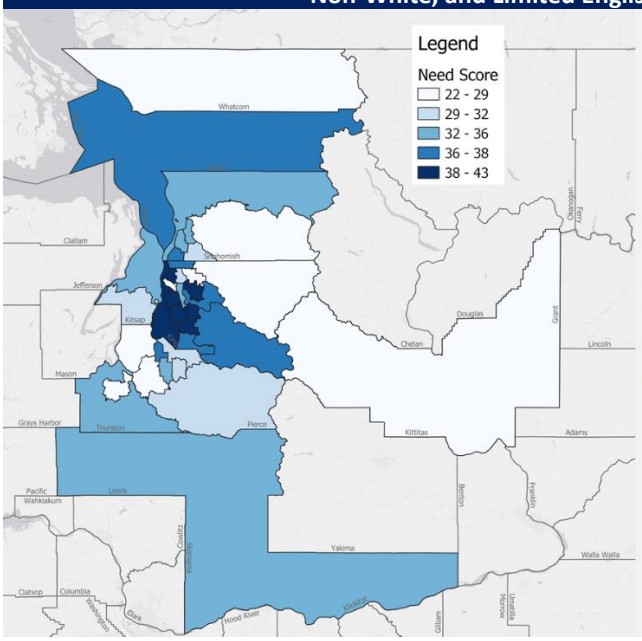
**High Need Variables: Households with Children, Over 65, Disability, and Energy Burden**




| PUMA Name | Need Score |
|---|---|
| King County (Southeast) | 33 |
| Thurston County (Outer) | 32 |
| Snohomish County (North) | 31 |
| Kitsap County (North) | 30 |
| Lewis, Klickitat & Skamania Counties | 30 |
| Seattle (Northwest) | 30 |
| Skagit, Island & San Juan Counties | 30 |

**Figure 21. Distribution of PUMAs by Composite Need Score – Scenario 2**

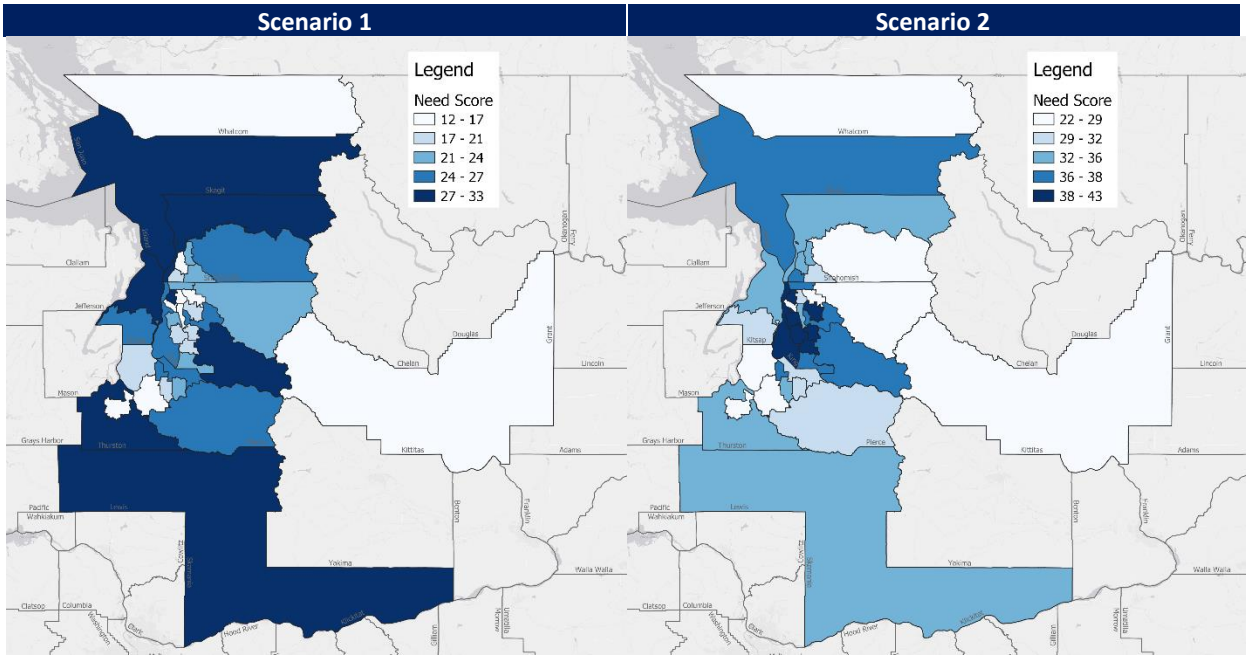
**High Need Variables: Households with Children, Over 65, Disability, Energy Burden, Non-White, and Limited English Proficiency**




| PUMA Name | Need Score |
|---|---|
| King County (Far Southwest) | 43 |
| Seattle (West) | 42 |
| Seattle (Northwest) | 41 |
| King County (Central) | 39 |
| King County (Northwest Central) | 39 |
| King County (Southwest Central) | 39 |
| King County (West Central) | 39 |

Figure 22 provides a side-by-side comparison of two composite need score scenarios. As shown, differences in composite need scoring scenarios highlight higher concentrations of eligible customers who identify as non-white and/or have limited English proficiency in urban areas around King County. In the absence of those two factors, the need scoring in Scenario 1 highlights a more diverse geography of high need PUMAs (in the top 20% of the distribution) outside of the Seattle area, including Skagit, Thurston, and Pierce counties.

**Figure 22. Composite Need Scoring – High Need Scenario Comparison***



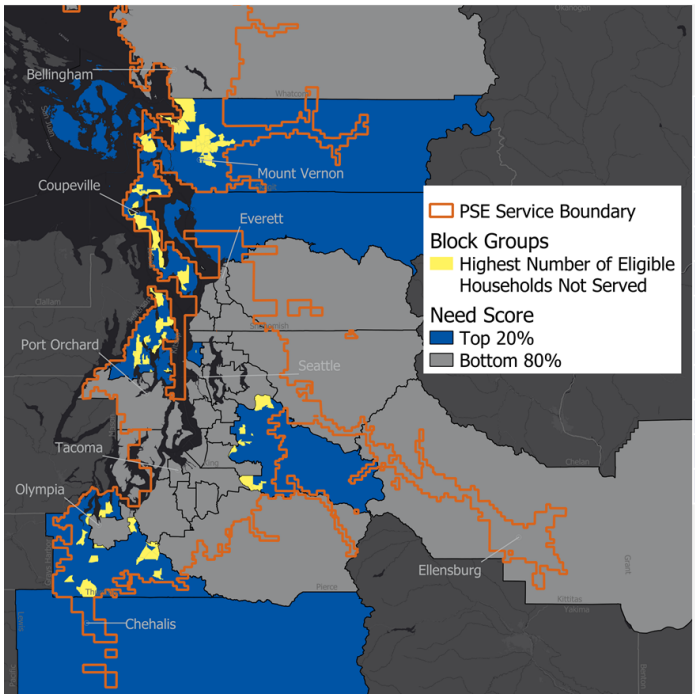

* Note, scores should only be considered relatively within each scenario, rather than across scenarios, since absolute scores will vary based on the number of need criteria used. For this reason, the distributions between Scenario 1 and Scenario 2 can be compared, rather than absolute scores

## *Underserved Block Groups with Highest Need*

To consider an approach to identify underserved geographies with the highest need, Cadmus developed a series of maps presenting the intersection of high-need PUMAs (based on the composite scoring criteria) and underserved Census block groups (based on the gap analysis). Specifically, Figure 23 and Figure 24 present maps with the top 20% of the eligible, unserved block groups (i.e., total concentration of households) which occur within the PUMA territories with the highest composite need score (top 20%). Approximately 95 block groups meet these criteria for Scenario 1 and 140 block groups for Scenario 2.

Additional maps showing the distribution of these high-need block groups relative to key demographics (i.e., race/ethnicity and limited English proficiency) and overlap with tribal block groups are presented in Appendix A.

**Figure 23. Underserved Block Groups with Highest Need – Need Score Scenario 1**



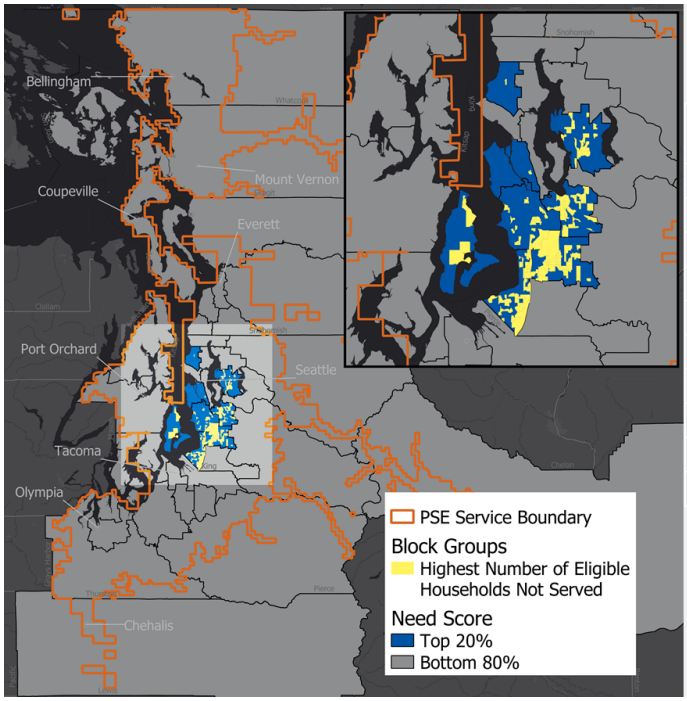

**Top 10 Census Block Groups by Households Not Served**

| Block Group | County | Households Not Served | Need Score |
|---|---|---|---|
| 530579524023 | Skagit | 524 | 30 |
| 530579523011 | Skagit | 501 | 30 |
| 530670120002 | Thurston | 465 | 32 |
| 530299709002 | Island | 457 | 30 |
| 530670124121 | Thurston | 428 | 32 |
| 530579518001 | Skagit | 415 | 30 |
| 530579523021 | Skagit | 407 | 30 |
| 530579522002 | Skagit | 391 | 30 |
| 530579523022 | Skagit | 339 | 30 |
| 530670124113 | Thurston | 322 | 32 |

**Criteria**
- Top 20% of number of households not served
- Top 20% of need score

**Block groups meeting these criteria: *95***

**Figure 24. Underserved Block Groups with Highest Need – Need Score Scenario 2**




**Top 10 Census Block Groups by Households Not Served**

| Block Group | County | Households Not Served | Need Score |
|---|---|---|---|
| 530330292062 | King | 540 | 39 |
| 530330260021 | King | 529 | 39 |
| 530330284031 | King | 520 | 39 |
| 530330300062 | King | 489 | 43 |
| 530330253023 | King | 439 | 39 |
| 530330297003 | King | 439 | 39 |
| 530330253013 | King | 437 | 39 |
| 530330254002 | King | 401 | 39 |
| 530330292041 | King | 369 | 39 |
| 530330295035 | King | 367 | 39 |

**Criteria**
- Top 20% of number of households not served
- Top 20% of need score

**Block groups meeting these criteria: *140***

## *Weatherization Savings Potential*

Figure 25 and Figure 26 show the geographic distribution of energy-efficiency potential for electric and natural gas savings, respectively, at the Census block group level. As noted, this reflects a top-down method to estimate potential that scales the number of eligible, unserved households within PSE's territory by evaluated estimates of whole-house energy savings based on a recent LIW program evaluation. We based the evaluated household-level savings on a billing analysis that captured total changes in consumption attributed to conservation measures, energy education, and other behavioral changes influenced by the program (e.g., take back). The average LIW participant savings serves as a proxy for considering economic-achievable potential, since this reflects programmatic delivery and cost-effectiveness thresholds that guide measure installations.

For electric savings in Figure 25, each Census block group reflects a weighted savings distributions based on the proportion of electric versus non-electric heating (based on total block group population, not specific to income). Average household savings is 2,021 kWh annually based on the full analysis sample, with savings of 3,029 kWh for electrically-heated and 659 kWh for non-electrically heated projects. A snapshot of the top 10 block groups with highest electric potential is also provided, which reflects both the number of eligible, unserved customers and the weighted savings potential based on higher saturations of electric heat.

**Figure 25. Distribution of Energy Efficiency Potential by Block Group for Eligible/Unserved Households (at 200% FPL) – Electric Savings (MWh)**

**Top 10 Block Groups**

| Block Group | County | Potential Savings (MWh) | % Households with Electric Heat |
|---|---|---|---|
| 530730012013 | Whatcom | 3,050 | 81% |
| 530379754011 | Kittitas | 2,737 | 86% |
| 530530718061 | Pierce | 2,222 | 96% |
| 530730001003 | Whatcom | 2,193 | 60% |
| 530730012011 | Whatcom | 2,133 | 83% |
| 530530716011 | Pierce | 1,922 | 85% |
| 530670105101 | Thurston | 1,907 | 94% |
| 530330292062 | King | 1,801 | 96% |
| 530530717041 | Pierce | 1,769 | 99% |
| 530330260021 | King | 1,607 | 97% |

**Annual savings per household: 2,021 kWh**

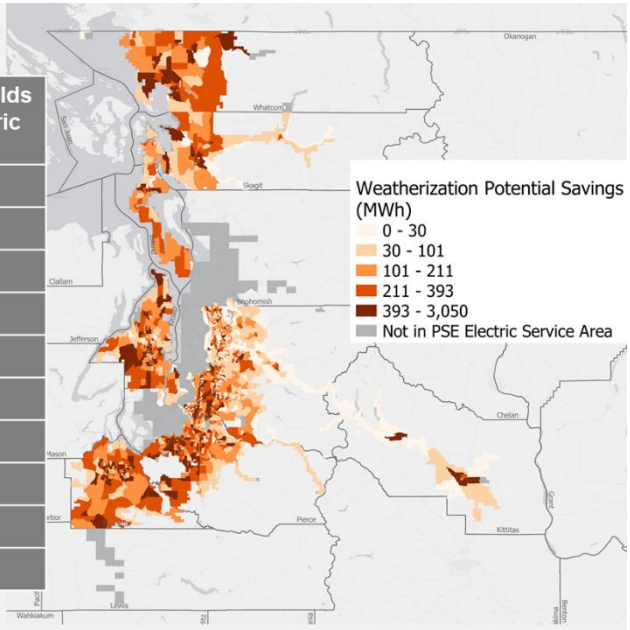


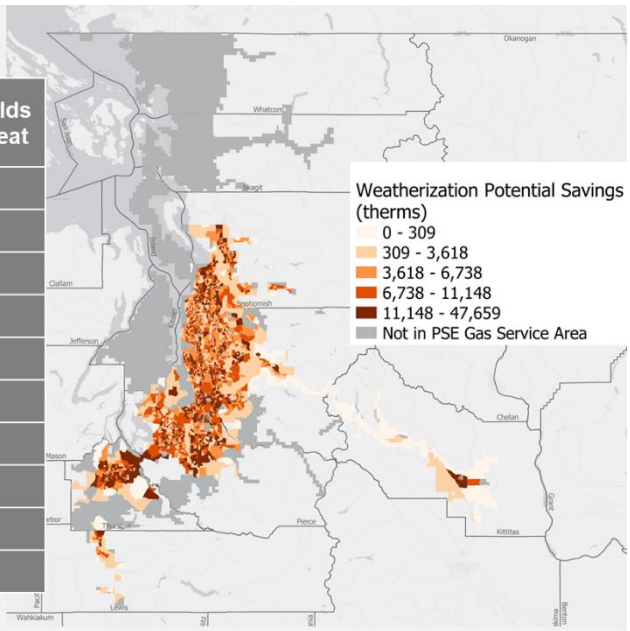

Figure 26 shows the gas savings potential occurring in Census block groups within PSE's gas-service territory. Based on the evaluation, average annual gas savings potential is 188 therms per household.

**Figure 26. Distribution of Energy Efficiency Potential by Block Group for Eligible/Unserved Households (at 200% FPL) – Natural Gas Savings (Therms)**

**Top 10 Block Groups**

| Block Group | County | Potential Savings (therms) | % Households with Gas Heat |
|---|---|---|---|
| 530330302022 | King | 47,659 | 83% |
| 530670120002 | Thurston | 46,994 | 51% |
| 530330295021 | King | 45,860 | 67% |
| 530330110022 | King | 43,456 | 50% |
| 530610418121 | Snohomish | 42,921 | 46% |
| 530330276002 | King | 41,876 | 69% |
| 530530731261 | Pierce | 39,686 | 50% |
| 530670122222 | Thurston | 38,660 | 66% |
| 530330298026 | King | 36,769 | 75% |
| 530610418122 | Snohomish | 36,040 | 43% |

**Annual savings per household: 188 therms**



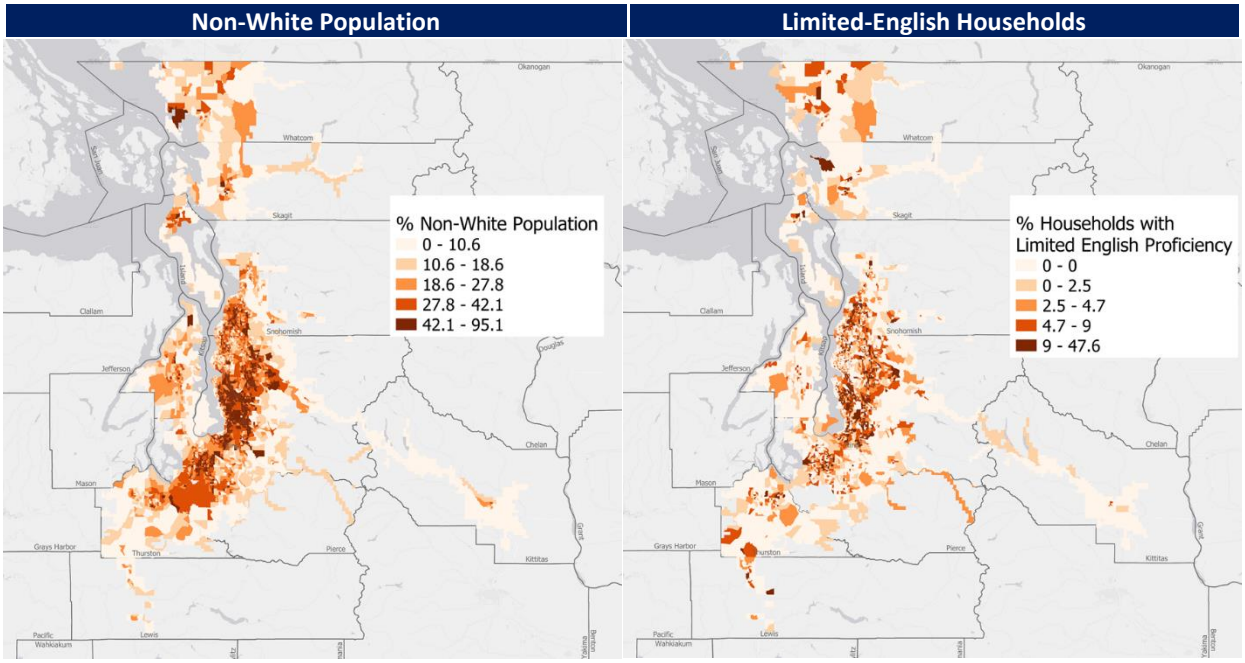
# Appendix A. Additional Maps and Details

This section provides some additional maps and distributions of income-eligible customer populations in PSE's service territory.

## *Territory-Level Distributions by Block Group*

Figure 27 presents the distribution of block groups within the PSE service territory for two key demographic factors: race/ethnicity (i.e., percentage of non-white population) and language (i.e., percentage of limited-English households). These distributions are not restricted to specific income eligibility and reflect the general distribution across all PSE customers.

**Figure 27. Distribution of Block Groups within PSE Territory**




* The bins in the Non-White Population map were calculated using quintiles. Because 44% of block groups contained no limited English proficiency households, those block groups were used to build the first bin in the associated map. Quartiles were used to bin the remainder of block groups by percentage of households with limited English proficiency.

## *Underserved Block Groups with Highest Need*

Figure 28 through Figure 30 present the distribution of the underserved block groups with highest need for different need score scenarios, demographic categories, and intersection with tribal block groups.

With PSE territory, there are 59 tribal block groups. In Scenario 1, of the 95 Census block groups identified for targeting, 10 overlap with tribal block groups. In Scenario 2, of the 140 Census block groups identified for targeting, two overlap with tribal block groups.

**Figure 28. Underserved Block Groups with Highest Need – Intersection with Tribal Block Groups**

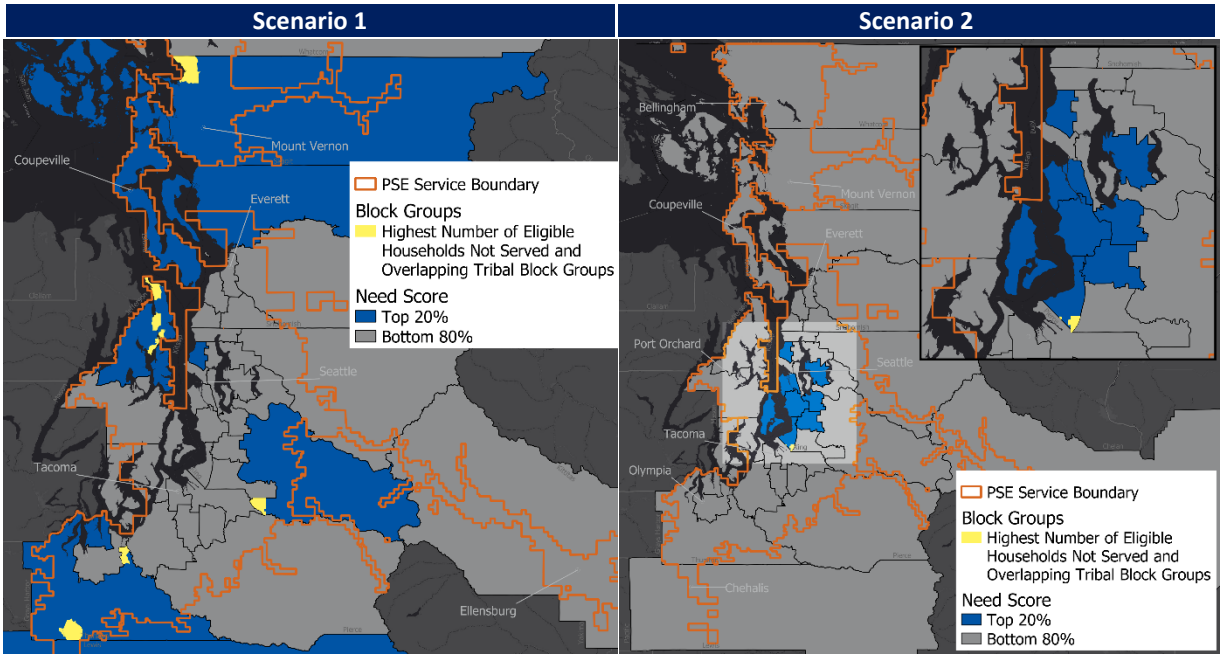


**Figure 29. Underserved Block Groups with Highest Need – Distribution by Race/Ethnicity**

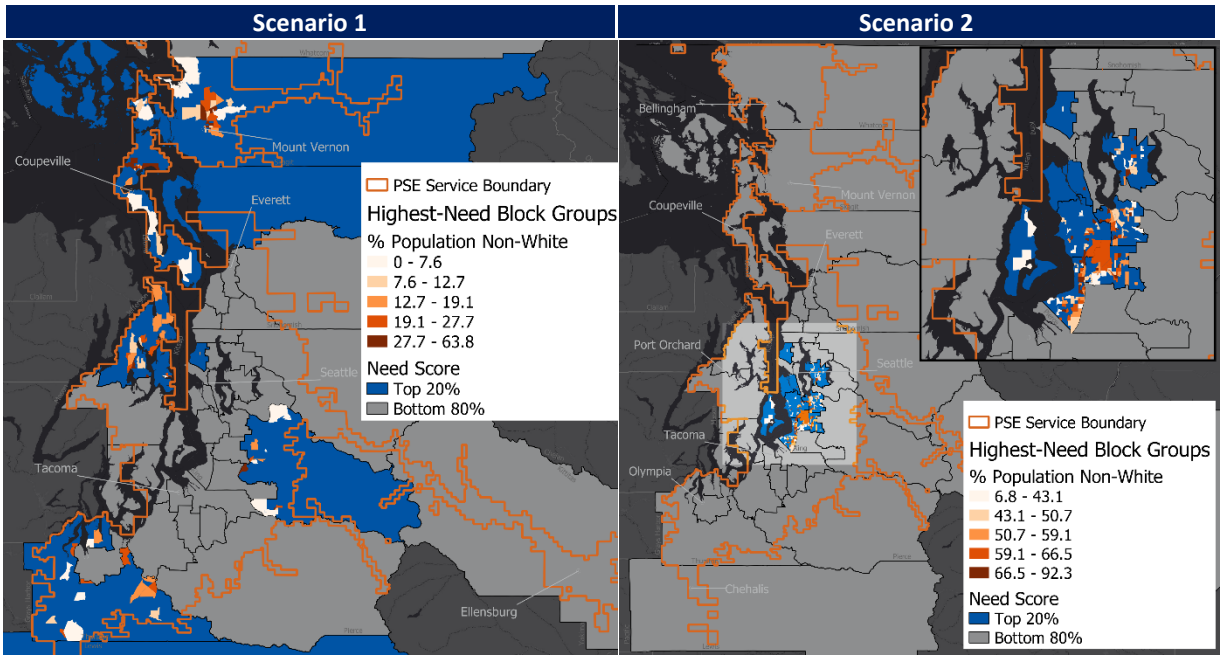
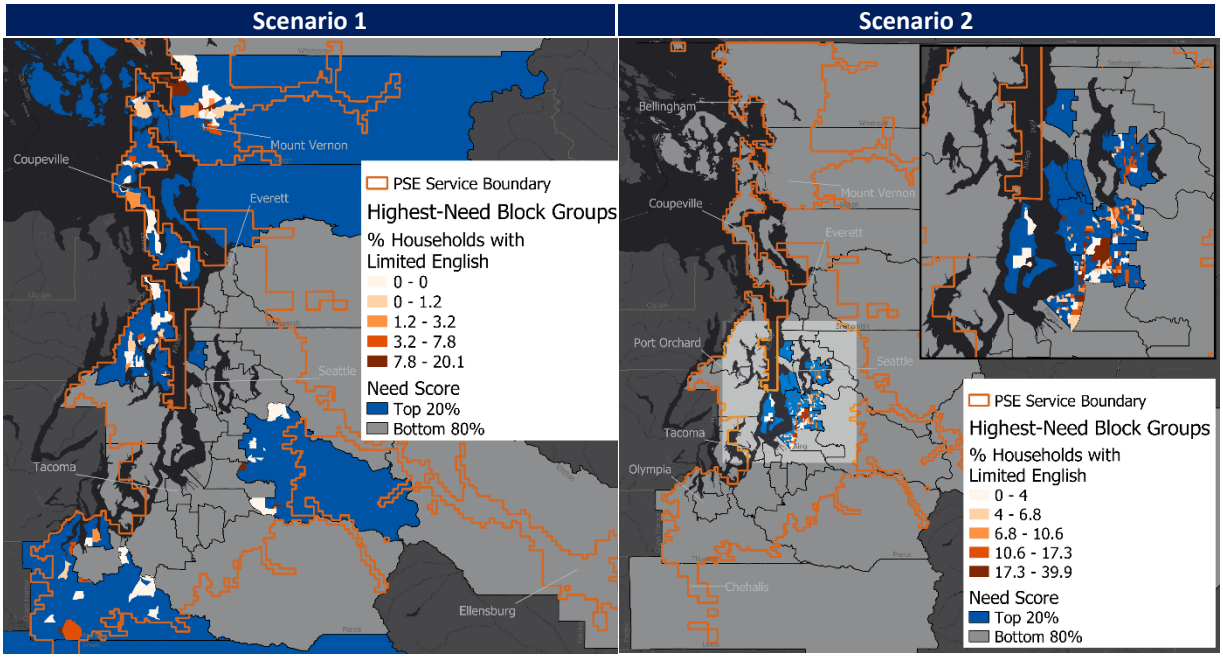



**Figure 30. Underserved Block Groups with Highest Need – Distribution by Limited English Proficiency**




* As in similar cases, the bins for Scenario 1 were calculated as block groups with no limited English proficiency households in the first bin and quartiles for the remainder. In Scenario 2, the highest-need block groups had a non-zero concentration of these households frequently enough that simple quintile binning could be used.

## *Tabular Distribution by PUMA*

Table 1 and Table 2 provide counts of households summarized by different income thresholds and need criteria. These counts are based on households for the 37 PUMAs overlapping within PSE service territory, which will include non-PSE households that occur outside the utility territory.

**Table 1. Distribution of Households by Income and Need Criteria – Total for PUMAs in PSE Territory**

| Category | Subgroup | Total Households (Overall) | Total Eligible Households (<200% FPL) | % Eligible Households of Total | Total Eligible Households | | % of Eligible Households | |
|---|---|---|---|---|---|---|---|---|
| | | | | | > 6% Energy Burden | > 10% Energy Burden | > 6% Energy Burden | > 10% Energy Burden |
| Age | With older adults (over 65) | 497,399 | 125,802 | 25% | 66,994 | 45,184 | 53% | 36% |
| | Without older adults | 1,452,875 | 293,082 | 20% | 151,728 | 102,171 | 52% | 35% |
| Children | With children (under 18) | 587,253 | 145,704 | 25% | 68,995 | 42,818 | 47% | 29% |
| | Without children | 1,363,021 | 273,180 | 20% | 149,727 | 104,537 | 55% | 38% |
| Disability | With disabilities | 458,393 | 151,206 | 33% | 81,135 | 55,284 | 54% | 37% |
| | Without disabilities | 1,491,881 | 267,678 | 18% | 137,587 | 92,071 | 51% | 34% |
| Tenure | Renters | 761,246 | 266,564 | 35% | 116,271 | 75,889 | 44% | 28% |
| | Owners | 1,189,028 | 152,320 | 13% | 102,451 | 71,466 | 67% | 47% |
| Housing Type | Single family | 1,285,003 | 187,882 | 15% | 124,801 | 87,166 | 66% | 46% |
| | Multifamily (2-4) | 116,012 | 41,190 | 36% | 19,612 | 12,390 | 48% | 30% |
| | Multifamily (5+) | 453,529 | 152,412 | 34% | 51,092 | 31,494 | 34% | 21% |
| | Mobile home/other | 95,730 | 37,400 | 39% | 23,217 | 16,305 | 62% | 44% |
| Age of Home | Built before 1980 | 905,046 | 214,407 | 24% | 119,345 | 81,790 | 56% | 38% |
| | Built in 1980 or later | 1,045,228 | 204,477 | 20% | 99,377 | 65,565 | 49% | 32% |
| English Proficiency | English Proficiency | 1,873,386 | 379,713 | 20% | 201,028 | 136,026 | 53% | 36% |
| | Limited English Proficiency | 76,888 | 39,171 | 51% | 17,694 | 11,329 | 45% | 29% |
| Race | White | 1,389,427 | 272,430 | 20% | 145,873 | 98,848 | 54% | 36% |
| | Non-White | 560,847 | 146,454 | 26% | 72,849 | 48,507 | 50% | 33% |
| Income | < 150% FPL | 288,031 | 288,031 | 100% | 176,045 | 127,219 | 61% | 44% |
| | 150-200% FPL | 130,853 | 130,853 | 100% | 42,677 | 20,136 | 33% | 15% |
| | > 200% FPL | 1,531,390 | 0 | 0% | 144,051 | 66,695 | 0% | 0% |

**Table 2. Distributions of Households by Need Criteria, Income Group, and PUMA**

| PUMA Name | Income Group | Total Households | Renter | | Gas Heat | | Electric Heat | | Limited English | | Children | | Seniors | | People with Disabilities | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. |
| Grant & Kittitas Counties PUMA | < 150% FPL | 12,355 | 8,093 | 66% | 613 | 5% | 11,015 | 89% | 1,239 | 10% | 4,851 | 39% | 2,749 | 22% | 3,587 | 29% |
| | 150% - 200% FPL | 5,519 | 2,964 | 54% | 393 | 7% | 4,768 | 86% | 443 | 8% | 1,995 | 36% | 1,874 | 34% | 2,055 | 37% |
| | > 200% FPL | 30,780 | 8,694 | 28% | 3,963 | 13% | 23,339 | 76% | 713 | 2% | 8,386 | 27% | 8,987 | 29% | 7,537 | 24% |
| King County (Central)--Renton City, Fairwood, Bryn Mawr & Skyway PUMA | < 150% FPL | 7,715 | 5,382 | 70% | 2,023 | 26% | 5,394 | 70% | 1,221 | 16% | 3,262 | 42% | 2,032 | 26% | 3,061 | 40% |
| | 150% - 200% FPL | 3,741 | 2,536 | 68% | 1,134 | 30% | 2,433 | 65% | 564 | 15% | 1,762 | 47% | 921 | 25% | 986 | 26% |
| | > 200% FPL | 41,642 | 15,635 | 38% | 19,949 | 48% | 20,047 | 48% | 2,490 | 6% | 12,375 | 30% | 9,099 | 22% | 8,002 | 19% |
| King County (Central)--Sammamish, Issaquah, Mercer Island & Newcastle Cities PUMA | < 150% FPL | 3,689 | 1,732 | 47% | 1,754 | 48% | 1,791 | 49% | 521 | 14% | 1,359 | 37% | 1,371 | 37% | 1,328 | 36% |
| | 150% - 200% FPL | 1,485 | 774 | 52% | 696 | 47% | 789 | 53% | 45 | 3% | 516 | 35% | 588 | 40% | 320 | 22% |
| | > 200% FPL | 49,964 | 11,201 | 22% | 33,025 | 66% | 15,264 | 31% | 1,948 | 4% | 21,314 | 43% | 10,384 | 21% | 6,654 | 13% |
| King County (Far Southwest)--Federal Way, Des Moines Cities & Vashon Island PUMA | < 150% FPL | 8,310 | 5,977 | 72% | 1,855 | 22% | 6,245 | 75% | 1,117 | 13% | 3,971 | 48% | 2,179 | 26% | 3,512 | 42% |
| | 150% - 200% FPL | 4,099 | 2,637 | 64% | 829 | 20% | 3,003 | 73% | 539 | 13% | 1,937 | 47% | 1,140 | 28% | 1,268 | 31% |
| | > 200% FPL | 35,957 | 12,829 | 36% | 16,295 | 45% | 18,136 | 50% | 1,366 | 4% | 9,863 | 27% | 10,231 | 28% | 8,252 | 23% |
| King County (Northeast)--Snoqualmie City, Cottage Lake, Union Hill & Novelty Hill PUMA | < 150% FPL | 2,583 | 1,321 | 51% | 563 | 22% | 1,572 | 61% | 180 | 7% | 787 | 30% | 908 | 35% | 821 | 32% |
| | 150% - 200% FPL | 1,654 | 664 | 40% | 654 | 40% | 825 | 50% | 60 | 4% | 445 | 27% | 738 | 45% | 388 | 23% |
| | > 200% FPL | 38,068 | 5,318 | 14% | 23,277 | 61% | 10,884 | 29% | 394 | 1% | 15,430 | 41% | 8,397 | 22% | 5,889 | 15% |
| King County (Northwest Central)--Greater Bellevue City PUMA | < 150% FPL | 6,135 | 4,041 | 66% | 1,948 | 32% | 3,977 | 65% | 1,608 | 26% | 1,720 | 28% | 2,054 | 33% | 1,701 | 28% |
| | 150% - 200% FPL | 2,312 | 1,171 | 51% | 933 | 40% | 1,309 | 57% | 213 | 9% | 1,000 | 43% | 849 | 37% | 741 | 32% |
| | > 200% FPL | 50,044 | 20,771 | 42% | 27,041 | 54% | 21,576 | 43% | 2,934 | 6% | 16,251 | 32% | 10,905 | 22% | 6,748 | 13% |
| King County (Northwest)--Redmond, Kirkland Cities, Inglewood & Finn Hill PUMA | < 150% FPL | 5,293 | 3,471 | 66% | 1,425 | 27% | 3,686 | 70% | 733 | 14% | 1,621 | 31% | 1,913 | 36% | 1,621 | 31% |
| | 150% - 200% FPL | 1,832 | 926 | 51% | 710 | 39% | 1,122 | 61% | 87 | 5% | 368 | 20% | 727 | 40% | 526 | 29% |
| | > 200% FPL | 52,175 | 20,791 | 40% | 26,045 | 50% | 25,064 | 48% | 2,234 | 4% | 17,248 | 33% | 9,761 | 19% | 6,190 | 12% |

| PUMA Name | Income Group | Total Households | Renter | | Gas Heat | | Electric Heat | | Limited English | | Children | | Seniors | | People with Disabilities | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. |
| King County (Northwest)--Shoreline, Kenmore & Bothell (South) Cities PUMA | < 150% FPL | 5,460 | 3,618 | 66% | 1,456 | 27% | 3,731 | 68% | 694 | 13% | 1,358 | 25% | 1,880 | 34% | 2,105 | 39% |
| | 150% - 200% FPL | 2,510 | 1,481 | 59% | 739 | 29% | 1,590 | 63% | 197 | 8% | 897 | 36% | 957 | 38% | 889 | 35% |
| | > 200% FPL | 40,417 | 10,596 | 26% | 22,215 | 55% | 15,786 | 39% | 1,126 | 3% | 13,081 | 32% | 10,631 | 26% | 6,935 | 17% |
| King County (Southeast)--Maple Valley, Covington & Enumclaw Cities PUMA | < 150% FPL | 3,581 | 1,357 | 38% | 1,022 | 29% | 1,932 | 54% | 132 | 4% | 1,207 | 34% | 1,563 | 44% | 1,219 | 34% |
| | 150% - 200% FPL | 2,413 | 809 | 34% | 760 | 31% | 1,147 | 48% | 15 | 1% | 880 | 36% | 989 | 41% | 1,004 | 42% |
| | > 200% FPL | 39,131 | 5,893 | 15% | 21,497 | 55% | 12,100 | 31% | 433 | 1% | 14,062 | 36% | 8,871 | 23% | 8,072 | 21% |
| King County (Southwest Central)--Kent City PUMA | < 150% FPL | 8,310 | 6,263 | 75% | 1,510 | 18% | 6,469 | 78% | 1,775 | 21% | 4,717 | 57% | 2,375 | 29% | 2,921 | 35% |
| | 150% - 200% FPL | 3,234 | 2,008 | 62% | 903 | 28% | 2,188 | 68% | 350 | 11% | 1,605 | 50% | 947 | 29% | 978 | 30% |
| | > 200% FPL | 31,546 | 10,725 | 34% | 15,879 | 50% | 14,637 | 46% | 1,789 | 6% | 9,775 | 31% | 7,300 | 23% | 6,661 | 21% |
| King County (Southwest)--Auburn City & Lakeland PUMA | < 150% FPL | 6,175 | 4,192 | 68% | 1,469 | 24% | 4,314 | 70% | 1,108 | 18% | 2,615 | 42% | 1,447 | 23% | 2,572 | 42% |
| | 150% - 200% FPL | 3,338 | 1,571 | 47% | 1,167 | 35% | 2,080 | 62% | 234 | 7% | 1,853 | 56% | 833 | 25% | 1,202 | 36% |
| | > 200% FPL | 31,481 | 9,049 | 29% | 14,618 | 46% | 14,482 | 46% | 1,323 | 4% | 10,027 | 32% | 7,352 | 23% | 6,714 | 21% |
| King County (West Central)--Burien, SeaTac, Tukwila Cities & White Center PUMA | < 150% FPL | 9,495 | 7,687 | 81% | 1,463 | 15% | 7,558 | 80% | 2,536 | 27% | 4,466 | 47% | 1,969 | 21% | 3,234 | 34% |
| | 150% - 200% FPL | 4,735 | 2,977 | 63% | 1,119 | 24% | 3,238 | 68% | 781 | 16% | 1,814 | 38% | 1,343 | 28% | 1,500 | 32% |
| | > 200% FPL | 33,695 | 12,706 | 38% | 14,006 | 42% | 16,606 | 49% | 1,588 | 5% | 9,089 | 27% | 8,652 | 26% | 8,104 | 24% |
| Kitsap County (North)--Bainbridge Island City & Silverdale PUMA | < 150% FPL | 5,604 | 3,201 | 57% | 659 | 12% | 4,008 | 72% | 232 | 4% | 1,967 | 35% | 1,870 | 33% | 2,173 | 39% |
| | 150% - 200% FPL | 3,424 | 1,458 | 43% | 473 | 14% | 2,296 | 67% | 16 | 0% | 1,127 | 33% | 1,393 | 41% | 1,263 | 37% |
| | > 200% FPL | 41,341 | 9,870 | 24% | 9,565 | 23% | 24,241 | 59% | 235 | 1% | 12,073 | 29% | 13,221 | 32% | 9,890 | 24% |
| Kitsap County (South)--Bremerton & Port Orchard Cities PUMA | < 150% FPL | 9,305 | 6,171 | 66% | 1,953 | 21% | 6,010 | 65% | 197 | 2% | 3,514 | 38% | 2,407 | 26% | 5,001 | 54% |
| | 150% - 200% FPL | 4,102 | 2,347 | 57% | 980 | 24% | 2,430 | 59% | 54 | 1% | 1,733 | 42% | 1,177 | 29% | 1,429 | 35% |
| | > 200% FPL | 37,887 | 10,582 | 28% | 12,360 | 33% | 19,387 | 51% | 187 | 0% | 10,215 | 27% | 10,922 | 29% | 11,480 | 30% |
| Lewis, Klickitat & Skamania Counties PUMA | < 150% FPL | 10,650 | 5,849 | 55% | 770 | 7% | 7,868 | 74% | 278 | 3% | 3,337 | 31% | 3,333 | 31% | 4,826 | 45% |
| | 150% - 200% FPL | 4,652 | 1,693 | 36% | 603 | 13% | 3,203 | 69% | 57 | 1% | 1,285 | 28% | 2,240 | 48% | 2,076 | 45% |
| | > 200% FPL | 28,184 | 6,348 | 23% | 3,805 | 14% | 18,585 | 66% | 181 | 1% | 7,115 | 25% | 10,245 | 36% | 8,857 | 31% |

| PUMA Name | Income Group | Total Households | Renter | | Gas Heat | | Electric Heat | | Limited English | | Children | | Seniors | | People with Disabilities | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. |
| Pierce County (Central)--Tacoma City (Central) PUMA | < 150% FPL | 11,456 | 8,732 | 76% | 2,718 | 24% | 8,180 | 71% | 1,233 | 11% | 4,030 | 35% | 2,839 | 25% | 5,156 | 45% |
| | 150% - 200% FPL | 4,354 | 2,876 | 66% | 1,207 | 28% | 3,009 | 69% | 229 | 5% | 1,811 | 42% | 1,087 | 25% | 1,361 | 31% |
| | > 200% FPL | 35,286 | 15,255 | 43% | 13,394 | 38% | 19,867 | 56% | 990 | 3% | 9,177 | 26% | 7,021 | 20% | 7,786 | 22% |
| Pierce County (East Central)--Puyallup City & South Hill PUMA | < 150% FPL | 6,033 | 3,752 | 62% | 1,256 | 21% | 4,575 | 76% | 136 | 2% | 2,496 | 41% | 1,783 | 30% | 2,199 | 36% |
| | 150% - 200% FPL | 3,432 | 1,759 | 51% | 1,011 | 29% | 2,170 | 63% | 127 | 4% | 1,464 | 43% | 1,084 | 32% | 1,317 | 38% |
| | > 200% FPL | 37,587 | 10,406 | 28% | 17,899 | 48% | 18,339 | 49% | 325 | 1% | 13,295 | 35% | 8,549 | 23% | 8,942 | 24% |
| Pierce County (North Central)--Tacoma (Port) & Bonney Lake (Northwest) Cities PUMA | < 150% FPL | 4,158 | 2,024 | 49% | 983 | 24% | 2,713 | 65% | 179 | 4% | 1,595 | 38% | 1,250 | 30% | 1,476 | 35% |
| | 150% - 200% FPL | 2,509 | 1,165 | 46% | 505 | 20% | 1,826 | 73% | 68 | 3% | 948 | 38% | 956 | 38% | 884 | 35% |
| | > 200% FPL | 36,443 | 9,927 | 27% | 16,384 | 45% | 17,822 | 49% | 489 | 1% | 11,464 | 31% | 8,310 | 23% | 7,035 | 19% |
| Pierce County (Northwest)--Peninsula Region & Tacoma City (West) PUMA | < 150% FPL | 6,065 | 4,053 | 67% | 641 | 11% | 4,913 | 81% | 409 | 7% | 1,434 | 24% | 1,948 | 32% | 2,441 | 40% |
| | 150% - 200% FPL | 3,137 | 1,864 | 59% | 537 | 17% | 2,475 | 79% | 13 | 0% | 958 | 31% | 1,292 | 41% | 895 | 29% |
| | > 200% FPL | 37,199 | 9,133 | 25% | 12,489 | 34% | 21,324 | 57% | 456 | 1% | 10,077 | 27% | 13,067 | 35% | 9,043 | 24% |
| Pierce County (South Central)--Tacoma City (South), Parkland & Spanaway PUMA | < 150% FPL | 9,618 | 6,555 | 68% | 1,091 | 11% | 8,063 | 84% | 948 | 10% | 3,691 | 38% | 1,951 | 20% | 3,823 | 40% |
| | 150% - 200% FPL | 4,837 | 2,804 | 58% | 624 | 13% | 3,963 | 82% | 404 | 8% | 2,287 | 47% | 1,052 | 22% | 1,476 | 31% |
| | > 200% FPL | 32,950 | 10,709 | 33% | 8,651 | 26% | 22,137 | 67% | 972 | 3% | 10,007 | 30% | 8,024 | 24% | 9,302 | 28% |
| Pierce County (Southeast)--Graham, Elk Plain & Prairie Ridge PUMA | < 150% FPL | 5,019 | 2,000 | 40% | 402 | 8% | 3,734 | 74% | 79 | 2% | 1,994 | 40% | 1,463 | 29% | 1,781 | 35% |
| | 150% - 200% FPL | 3,071 | 836 | 27% | 630 | 21% | 1,909 | 62% | 0 | 0% | 1,689 | 55% | 864 | 28% | 934 | 30% |
| | > 200% FPL | 31,321 | 3,876 | 12% | 8,881 | 28% | 16,799 | 54% | 62 | 0% | 10,361 | 33% | 7,566 | 24% | 8,676 | 28% |
| Pierce County (West Central)--Lakewood City & Joint Base Lewis-McChord PUMA | < 150% FPL | 8,810 | 7,175 | 81% | 1,845 | 21% | 6,806 | 77% | 414 | 5% | 4,626 | 53% | 1,378 | 16% | 2,922 | 33% |
| | 150% - 200% FPL | 4,506 | 3,305 | 73% | 1,084 | 24% | 3,332 | 74% | 377 | 8% | 1,973 | 44% | 1,214 | 27% | 928 | 21% |
| | > 200% FPL | 29,908 | 13,912 | 47% | 11,499 | 38% | 17,462 | 58% | 751 | 3% | 9,011 | 30% | 7,446 | 25% | 7,028 | 23% |
| Seattle City (Downtown)--Queen Anne & Magnolia PUMA | < 150% FPL | 9,995 | 9,155 | 92% | 1,540 | 15% | 7,604 | 76% | 1,215 | 12% | 603 | 6% | 2,345 | 23% | 4,035 | 40% |
| | 150% - 200% FPL | 3,349 | 2,894 | 86% | 614 | 18% | 2,428 | 72% | 453 | 14% | 115 | 3% | 895 | 27% | 989 | 30% |
| | > 200% FPL | 68,954 | 45,961 | 67% | 17,412 | 25% | 46,949 | 68% | 1,395 | 2% | 7,218 | 10% | 9,211 | 13% | 6,488 | 9% |

| PUMA Name | Income Group | Total Households | Renter | | Gas Heat | | Electric Heat | | Limited English | | Children | | Seniors | | People with Disabilities | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. |
| Seattle City (Northeast) PUMA | < 150% FPL | 10,011 | 8,403 | 84% | 1,498 | 15% | 7,562 | 76% | 1,941 | 19% | 1,282 | 13% | 1,575 | 16% | 2,328 | 23% |
| | 150% - 200% FPL | 2,554 | 2,015 | 79% | 343 | 13% | 1,893 | 74% | 217 | 8% | 271 | 11% | 908 | 36% | 702 | 27% |
| | > 200% FPL | 40,378 | 16,182 | 40% | 17,779 | 44% | 18,483 | 46% | 1,210 | 3% | 10,297 | 26% | 9,263 | 23% | 5,823 | 14% |
| Seattle City (Northwest) PUMA | < 150% FPL | 7,622 | 5,266 | 69% | 1,791 | 23% | 5,408 | 71% | 667 | 9% | 1,100 | 14% | 2,968 | 39% | 3,245 | 43% |
| | 150% - 200% FPL | 3,510 | 2,097 | 60% | 1,155 | 33% | 2,004 | 57% | 366 | 10% | 861 | 25% | 1,369 | 39% | 1,129 | 32% |
| | > 200% FPL | 62,366 | 29,404 | 47% | 27,132 | 44% | 30,094 | 48% | 1,231 | 2% | 13,137 | 21% | 10,042 | 16% | 7,491 | 12% |
| Seattle City (Southeast)--Capitol Hill PUMA | < 150% FPL | 8,329 | 6,692 | 80% | 1,528 | 18% | 6,139 | 74% | 1,143 | 14% | 2,295 | 28% | 2,160 | 26% | 2,688 | 32% |
| | 150% - 200% FPL | 2,449 | 1,698 | 69% | 650 | 27% | 1,556 | 64% | 298 | 12% | 804 | 33% | 595 | 24% | 1,033 | 42% |
| | > 200% FPL | 43,962 | 19,659 | 45% | 21,782 | 50% | 19,297 | 44% | 1,063 | 2% | 9,262 | 21% | 8,361 | 19% | 6,312 | 14% |
| Seattle City (West)--Duwamish & Beacon Hill PUMA | < 150% FPL | 9,395 | 6,660 | 71% | 2,395 | 25% | 6,261 | 67% | 1,828 | 19% | 3,231 | 34% | 3,262 | 35% | 3,604 | 38% |
| | 150% - 200% FPL | 3,444 | 2,118 | 61% | 1,088 | 32% | 2,141 | 62% | 566 | 16% | 994 | 29% | 1,259 | 37% | 837 | 24% |
| | > 200% FPL | 47,091 | 16,859 | 36% | 21,417 | 45% | 20,579 | 44% | 1,818 | 4% | 11,294 | 24% | 10,158 | 22% | 7,762 | 16% |
| Skagit, Island & San Juan Counties PUMA | < 150% FPL | 15,918 | 8,936 | 56% | 3,743 | 24% | 9,144 | 57% | 869 | 5% | 5,350 | 34% | 5,301 | 33% | 6,580 | 41% |
| | 150% - 200% FPL | 7,184 | 3,207 | 45% | 2,159 | 30% | 3,124 | 43% | 244 | 3% | 2,497 | 35% | 3,114 | 43% | 2,249 | 31% |
| | > 200% FPL | 67,225 | 16,485 | 25% | 21,967 | 33% | 25,598 | 38% | 850 | 1% | 15,705 | 23% | 25,162 | 37% | 17,870 | 27% |
| Snohomish County (Central & Southeast)--Lake Stevens & Monroe Cities PUMA | < 150% FPL | 5,019 | 2,426 | 48% | 1,012 | 20% | 3,153 | 63% | 101 | 2% | 1,728 | 34% | 1,416 | 28% | 1,822 | 36% |
| | 150% - 200% FPL | 3,418 | 1,486 | 43% | 718 | 21% | 2,278 | 67% | 0 | 0% | 1,180 | 35% | 1,396 | 41% | 1,241 | 36% |
| | > 200% FPL | 39,159 | 7,362 | 19% | 14,562 | 37% | 17,244 | 44% | 449 | 1% | 14,541 | 37% | 8,293 | 21% | 8,455 | 22% |
| Snohomish County (Central)--Everett City (Central & East) & Eastmont PUMA | < 150% FPL | 8,269 | 6,395 | 77% | 1,339 | 16% | 6,558 | 79% | 1,049 | 13% | 2,633 | 32% | 2,684 | 32% | 3,753 | 45% |
| | 150% - 200% FPL | 3,774 | 2,273 | 60% | 871 | 23% | 2,853 | 76% | 261 | 7% | 1,578 | 42% | 1,143 | 30% | 1,302 | 34% |
| | > 200% FPL | 34,859 | 13,203 | 38% | 14,083 | 40% | 19,535 | 56% | 1,069 | 3% | 9,360 | 27% | 7,246 | 21% | 7,666 | 22% |
| Snohomish County (North)--Marysville & Arlington Cities PUMA | < 150% FPL | 6,416 | 3,521 | 55% | 1,190 | 19% | 4,169 | 65% | 209 | 3% | 1,700 | 26% | 2,311 | 36% | 3,251 | 51% |
| | 150% - 200% FPL | 3,491 | 1,809 | 52% | 537 | 15% | 2,560 | 73% | 113 | 3% | 1,173 | 34% | 1,445 | 41% | 1,555 | 45% |
| | > 200% FPL | 43,294 | 9,266 | 21% | 14,473 | 33% | 20,287 | 47% | 380 | 1% | 13,781 | 32% | 11,558 | 27% | 11,249 | 26% |

| PUMA Name | Income Group | Total Households | Renter | | Gas Heat | | Electric Heat | | Limited English | | Children | | Seniors | | People with Disabilities | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. | Count | Pct. |
| Snohomish County (South Central)--Bothell (North), Mill Creek Cities & Silver Firs PUMA | < 150% FPL | 3,133 | 1,431 | 46% | 1,138 | 36% | 1,751 | 56% | 281 | 9% | 1,319 | 42% | 1,052 | 34% | 764 | 24% |
| | 150% - 200% FPL | 1,830 | 927 | 51% | 840 | 46% | 971 | 53% | 160 | 9% | 737 | 40% | 785 | 43% | 380 | 21% |
| | > 200% FPL | 41,409 | 7,873 | 19% | 25,615 | 62% | 13,539 | 33% | 841 | 2% | 17,336 | 42% | 8,020 | 19% | 6,543 | 16% |
| Snohomish County (Southwest)--Edmonds, Lynnwood & Mountlake Terrace Cities PUMA | < 150% FPL | 6,542 | 4,259 | 65% | 1,668 | 25% | 4,527 | 69% | 899 | 14% | 2,126 | 32% | 2,418 | 37% | 2,241 | 34% |
| | 150% - 200% FPL | 2,337 | 1,184 | 51% | 766 | 33% | 1,546 | 66% | 130 | 6% | 867 | 37% | 840 | 36% | 691 | 30% |
| | > 200% FPL | 38,284 | 11,470 | 30% | 19,233 | 50% | 17,417 | 45% | 858 | 2% | 10,103 | 26% | 10,604 | 28% | 7,571 | 20% |
| Snohomish County (West Central)--Mukilteo & Everett (Southwest) Cities PUMA | < 150% FPL | 6,248 | 4,637 | 74% | 1,334 | 21% | 4,755 | 76% | 1,631 | 26% | 2,772 | 44% | 1,912 | 31% | 1,893 | 30% |
| | 150% - 200% FPL | 3,000 | 2,103 | 70% | 868 | 29% | 1,908 | 64% | 385 | 13% | 1,282 | 43% | 806 | 27% | 937 | 31% |
| | > 200% FPL | 39,256 | 15,363 | 39% | 18,243 | 46% | 19,459 | 50% | 1,932 | 5% | 11,085 | 28% | 7,662 | 20% | 7,303 | 19% |
| Thurston County (Central)--Olympia, Lacey & Tumwater Cities PUMA | < 150% FPL | 11,640 | 8,401 | 72% | 2,555 | 22% | 8,531 | 73% | 798 | 7% | 3,585 | 31% | 3,203 | 28% | 4,137 | 36% |
| | 150% - 200% FPL | 4,992 | 3,364 | 67% | 1,261 | 25% | 3,615 | 72% | 238 | 5% | 2,117 | 42% | 1,552 | 31% | 1,397 | 28% |
| | > 200% FPL | 51,024 | 19,125 | 37% | 24,472 | 48% | 24,098 | 47% | 948 | 2% | 14,259 | 28% | 14,059 | 28% | 11,372 | 22% |
| Thurston County (Outer) PUMA | < 150% FPL | 5,689 | 2,565 | 45% | 415 | 7% | 4,059 | 71% | 82 | 1% | 2,426 | 43% | 1,670 | 29% | 2,229 | 39% |
| | 150% - 200% FPL | 3,094 | 1,284 | 41% | 384 | 12% | 1,966 | 64% | 13 | 0% | 1,368 | 44% | 1,177 | 38% | 1,094 | 35% |
| | > 200% FPL | 31,632 | 5,334 | 17% | 6,112 | 19% | 17,619 | 56% | 309 | 1% | 9,030 | 29% | 9,518 | 30% | 7,758 | 25% |
| Whatcom County--Bellingham City PUMA | < 150% FPL | 17,986 | 12,171 | 68% | 4,786 | 27% | 11,190 | 62% | 810 | 5% | 4,607 | 26% | 4,771 | 27% | 7,149 | 40% |
| | 150% - 200% FPL | 7,531 | 3,916 | 52% | 2,624 | 35% | 3,645 | 48% | 362 | 5% | 2,138 | 28% | 2,543 | 34% | 2,051 | 27% |
| | > 200% FPL | 59,491 | 16,910 | 28% | 28,936 | 49% | 18,799 | 32% | 378 | 1% | 15,445 | 26% | 17,499 | 29% | 13,727 | 23% |