BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,
 	
          Complainant,
 	
     v.
 	
PUGET SOUND ENERGY,
 	
          Respondent.
	Docket UE-240004
	Docket UG-240005

SECOND EXHIBIT (NONCONFIDENTIAL) TO THE
PREFILED DIRECT TESTIMONY OF

BIRUD D. JHAVERI

ON BEHALF OF PUGET SOUND ENERGY

FEBRUARY 15, 2024

2022 Energy Burden Analysis ("EBA") results

For 2022 Calendar Year

Puget Sound Energy (PSE) 2024 General Rate Case (GRC) (Dockets UE-240004/UG-240005) (Dockets UE-240004/UG-240005)
Exhibit BDJ-3 to Prefiled Direct Testimony of Birud D. Jhaveri BDJ-1T

PSE
PUGET SOUND ENERGY

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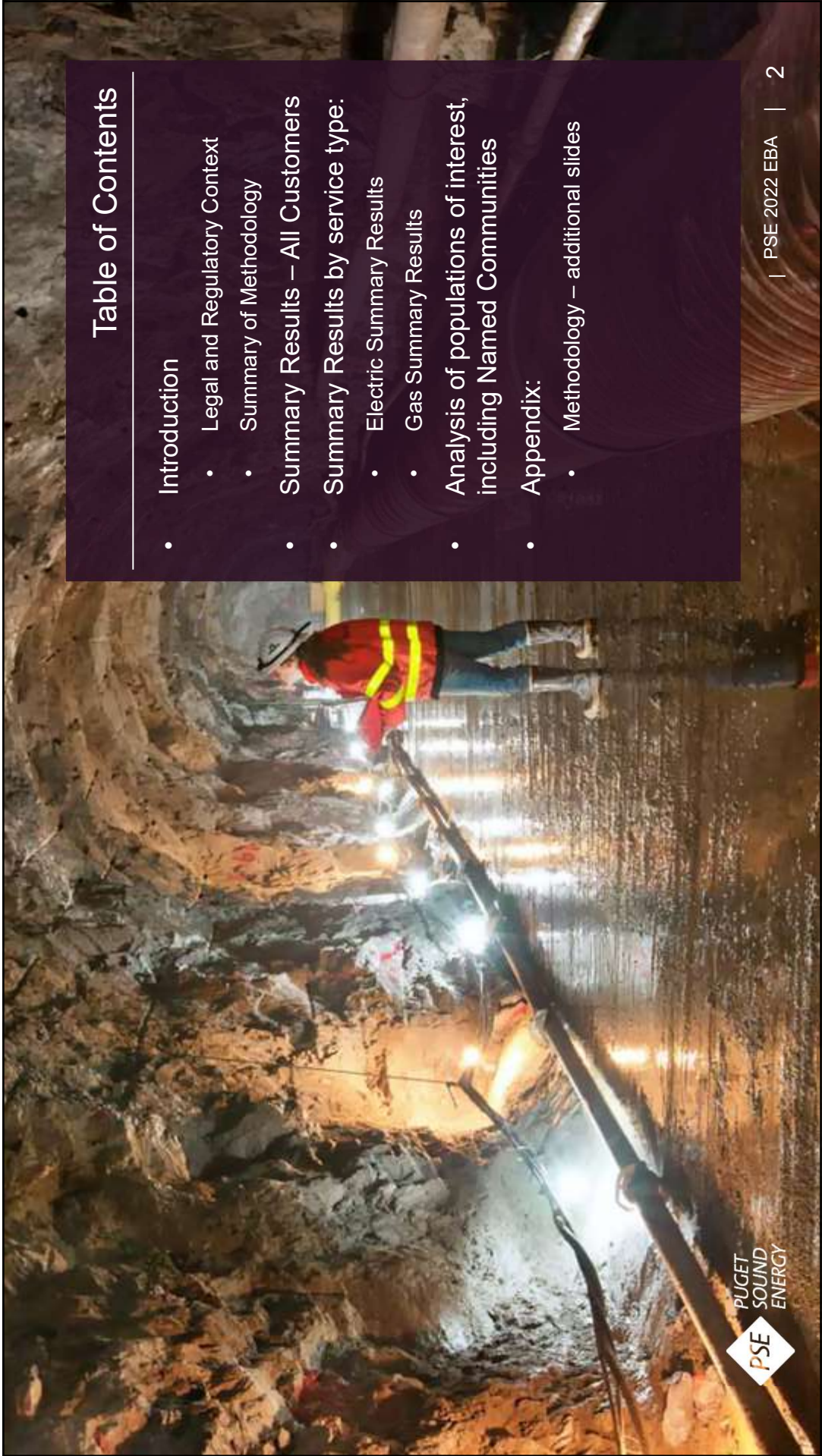
Introduction

Legal and Regulatory Context

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PSE conducted the EBA pursuant RCW 19.405.120

- PSE conducted its first energy burden analysis in 2020 to comply with RCW 19.405.120 (2019 Clean Energy Transformation Act (CETA) Section 120, Energy assistance for low-income households) which requires that:

  - all Washington electric utilities must provide energy assistance funding and programs to low-income households by July 31, 2021 ("*to the extent practicable, priority must be given to low-income households with a higher energy burden*");

  - all Washington electric utilities are required to assess energy assistance available to low-income households across the state, the energy burden of low-income households, and the need for more assistance, and provide their findings to the Washington State Department of Commerce ("Commerce").

  - Commerce is required to compile and aggregate these data and to publish biennial reports.

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About PSE's Energy Burden Analysis (EBA)

- Allows PSE to estimate the number of PSE's low-income (LI) customers, their respective energy burdens, and energy assistance need (EAN).

- Has served to analyze and better understand some of the shared characteristics of low-income, the higher energy-burdened customers, as well as highly impacted communities, vulnerable customers, and electric deepest need.

- Has allowed PSE to design and target products and energy assistance to better address the needs of its customers that are most in need of energy assistance.

- Has become an integral part of key reporting requirements by PSE (see next slide).

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PSE's energy burden analysis results are now an integral for many critical reporting requirements

- **Clean Energy Transformation Act (CETA):**
  - RCW 19.405.120 biannual Commerce reports
  - Clean Energy Implementation Plans (CEIP) benefits metrics and CEIP annual progress reports
  - CEIP implementation: 30% to named communities

- **PSE's General Rate Cases (GRC):**
  - **2022 GRC - 2023-2024 Multi-Year Rate Plan (MYRP):**
    - Residential Electric Block Study.
    - Bill Discount Rate development.
    - 2020 Energy Burden Analysis Report.
  - **2022 GRC (2023-2024 MYRP) Compliance:**
    - Annual MYRP reports: affordability and energy burden data

- **CEM (Customer Energy Management)** for 2024-2025 Biennial conservation plan (BCP)
- **RCW 80.28.068** PSE's new Bill Discount Rates (BDR)

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Introduction

Summary of methodology and definitions

Energy Burden Analysis Overview

Data
(Bills, Income, Demographic, and Geographic)

Data Sources

Data Download and Cleaning

Data Analysis

Data Matching of Various Datasets
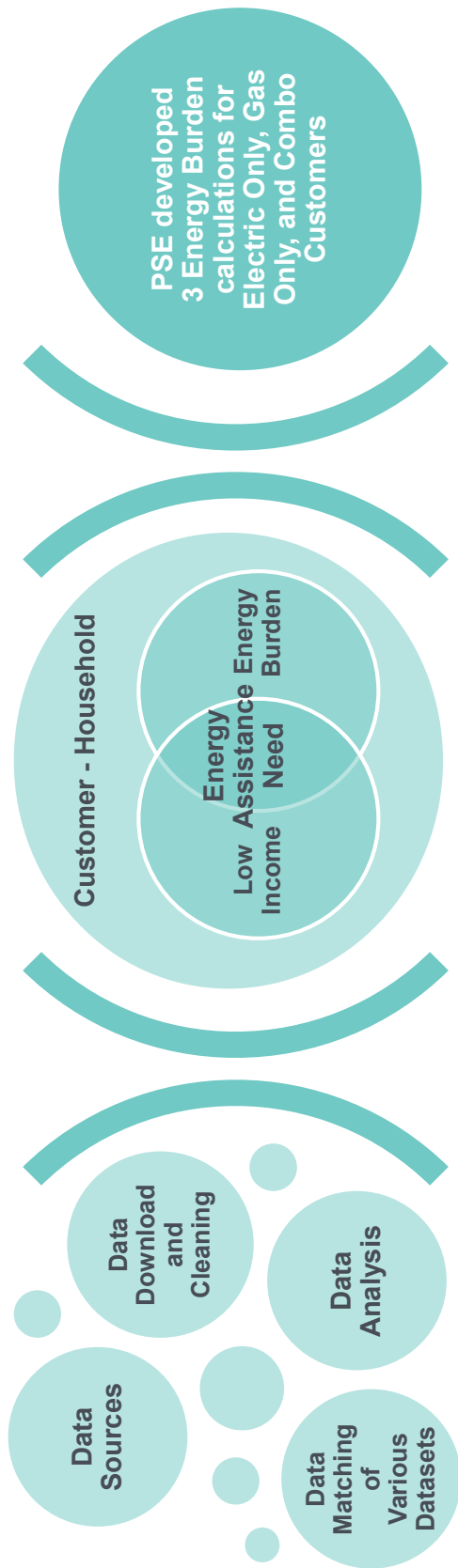
Definitions

Venn Diagram is for illustrative purpose only. It is not to scale.

Customer - Household

Low Income

Energy Assistance Need

Energy Burden

Methodology

PSE developed 3 Energy Burden calculations for Electric Only, Gas Only, and Combo Customers

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Key Definitions

- **RCW 19.405.020 CETA (2019) Definitions:**

  - Section (15) **"Energy assistance"** means a program undertaken by a utility to reduce the household energy burden of its customers.

  - Section (17) **"Energy burden"** means the share of annual household income used to pay annual home energy bills.

  - Section (25) **"Low-income"** means household incomes as defined by the department or commission, provided that the definition may not exceed the higher of eighty percent of area median household income or two hundred percent of the federal poverty level, adjusted for household size.

- **Commerce Guidelines for CETA, RCW 19.405.120:**

  - Commerce set the threshold for determining **energy assistance need** at 6% energy burden.

  - An **affordable energy burden** should be at or below six percent of household income.

- **WAC 480-100-605 Clean Energy Transformation Standards Definitions:**

  - **"Energy assistance need"** as "the amount of assistance necessary to achieve an energy burden equal to six percent for utility customers."

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What is Energy Burden and Why do we Care?

$$\text{Energy Burden} = \frac{\text{Annual Household Energy Bill}}{\text{Annual Household Income}}$$

Energy bill includes electric, gas, and other heating fuel sources.

Customers with EB > 6% **are energy-burdened**

CETA (RCW 19.405.120): demonstrate progress through cumulative assessment of previous funding levels for energy assistance compared to the funding levels needed to meet 60% of the current EAN, or increasing energy assistance by 15% over the amount provided in 2018, whichever is greater by 2030; and 90% of the current EAN by 2050.

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Elements of Energy Burden Change

$$\text{Energy Burden} = \frac{\text{Bill}}{\text{Income}}$$

- Bill +
  - Rate increase
  - Higher usage
- Income -
  - Global catastrophes (e.g., COVID)
  - Economic recessions

- Bill -
  - Bill discount rate
  - Energy assistance
  - Lower usage (behavioral / EE)
- Income +
  - Economic growth

PSE Energy Burden Analysis Methodology (2019-2022 EBA) | 11

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Elements of Energy Burden Change: Simplified

$$\text{Energy Burden} = \frac{\text{Bill} \quad +}{\text{Income} \quad -}$$

Rate increase

Bill discount rate

Energy assistance

Not in PSE's control:
legislative & regulatory requirements, non-
PSE customers or non-PSE data

Not in PSE's control

PSE Energy Burden Analysis Methodology (2019-2022 EBA) | 12

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2022 EBA Results

Total Customer Base

PSE's 2022 Energy Burden Analysis: key results and takeaways

Calendar Year 2022

1.167 MM
Total Customer Base
(Energy Burden Analysis Study Population*)

536 K
Low-Income
(46%)

184 K (15.8%)
Low-Income Energy-Burdened

Gas Only
39,456
21%

Combo
34,360
19%

Electric
Only
110,911
60%

The Who & Why

- Most customers have low energy burden, and **16.2% are estimated to be energy-burdened** (including non low-income)

- **Majority of energy-burdened** customers are classified as *low-income*

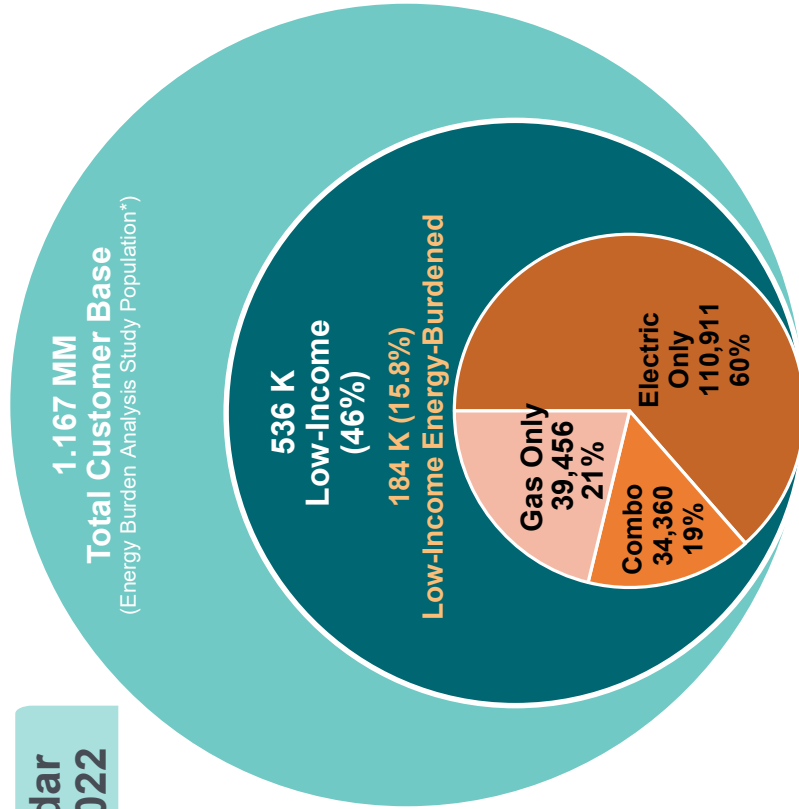- While just over *a third of low-income* **customers are energy-burdened**, energy burden tends to concentrate at lower end of income spectrum

- **Most energy-burdened customers are electric customers**

- **Energy-burdened customers use *more energy on average* than overall residential customers**

- **High energy burden** is more likely among *vulnerable customers*

*Note: Energy Burden Analysis includes roughly 80% of total customer base (based on 2022 10-K) because of several data challenges

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PSE PUGET SOUND ENERGY

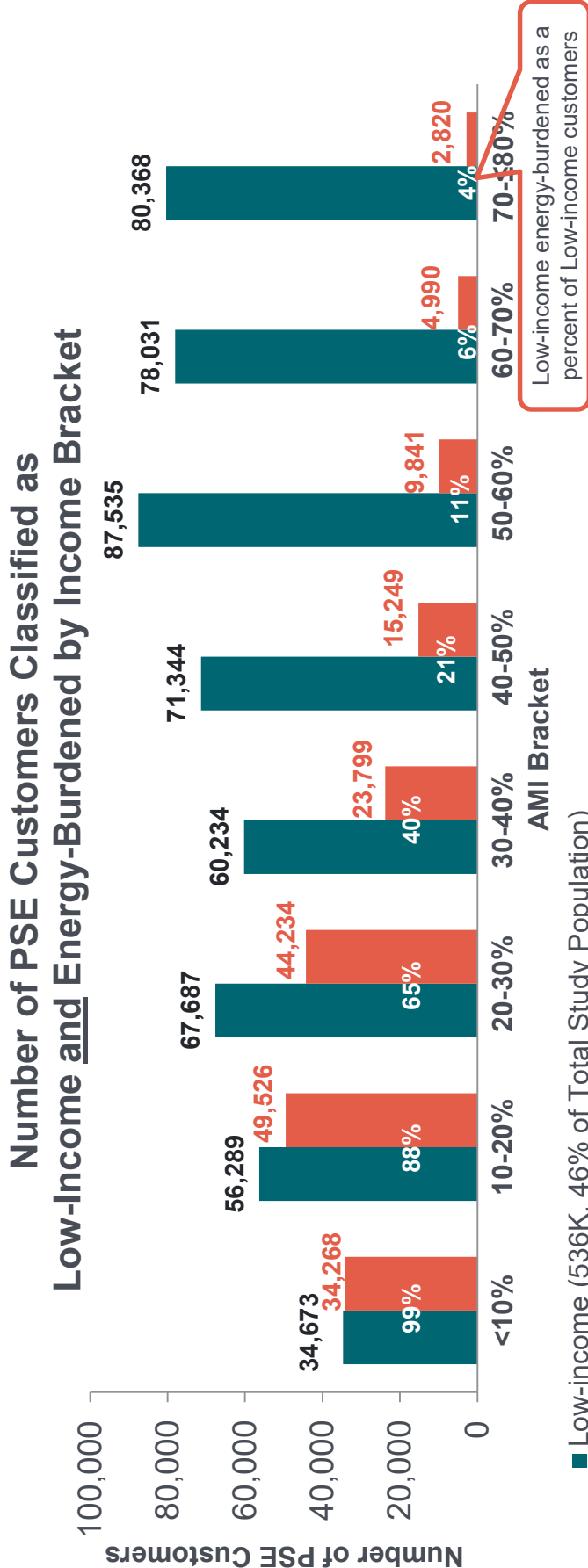# PSE's 2022 Energy Burden Analysis: Summary of Results

- ## Households classified as low-income per WA CETA's new definition:

  - About 536K (46%) of PSE's residential customers in the EBA study population* were estimated to earn 80% Area Median Income ("AMI") or below – i.e., classified as low-income.

    - By utility service type: 51% of Electric Only, 25% of Gas Only, and 24% of Combined Electric and Gas ("Combo") customers.

- ## Energy-burdened households:

  - About 185K of PSE's residential customers in the EBA* are estimated to be energy-burdened and low-income.

    - That's about 16% of total EBA study population, or 35% of customers classified as low-income.

- ## Low-income and energy-burdened customers by utility service type:

  - Out of all customers estimated to be energy-burdened and low-income, 60% are PSE's Electric Only customers; 21% are PSE's Gas Only customers; and 19% are PSE's Combined Electric and Gas customers.

*Note: Energy Burden Analysis amounts to roughly 80% of PSE's total residential population based on 2022 10-K.

15 | Source: PSE's 2022 Energy Burden Study (EBA)

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Energy burden concentrates at lower end of the income spectrum

Number of PSE Customers Classified as Low-Income **and** Energy-Burdened by Income Bracket

Number of PSE Customers

AMI Bracket	Low-income	Low-income Energy-Burdened	%
<10%	34,673	34,268	99%
10-20%	56,289	49,526	88%
20-30%	67,687	44,234	65%
30-40%	60,234	23,799	40%
40-50%	71,344	15,249	21%
50-60%	87,535	9,841	11%
60-70%	78,031	4,990	6%
70-80%	80,368	2,820	4%

Low-income energy-burdened as a percent of Low-income customers

■ Low-income (536K, 46% of Total Study Population)
■ Low-income Energy-Burdened (184K, 16% of Total Study Population, 35% of All Low income Customers)

*Note: Energy burden analysis includes roughly 80% of total residential customer base (based on 2022 10-K) because of several data challenges

16 | Source: PSE's 2022 Energy Burden Study (EBA)

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As income increases, the proportion of energy-burdened customers decreases

Number of PSE Customers Classified as Low-Income and Energy-Burdened by Income Bracket

Number of PSE Customers (vertical axis)

AMI Bracket (horizontal axis)
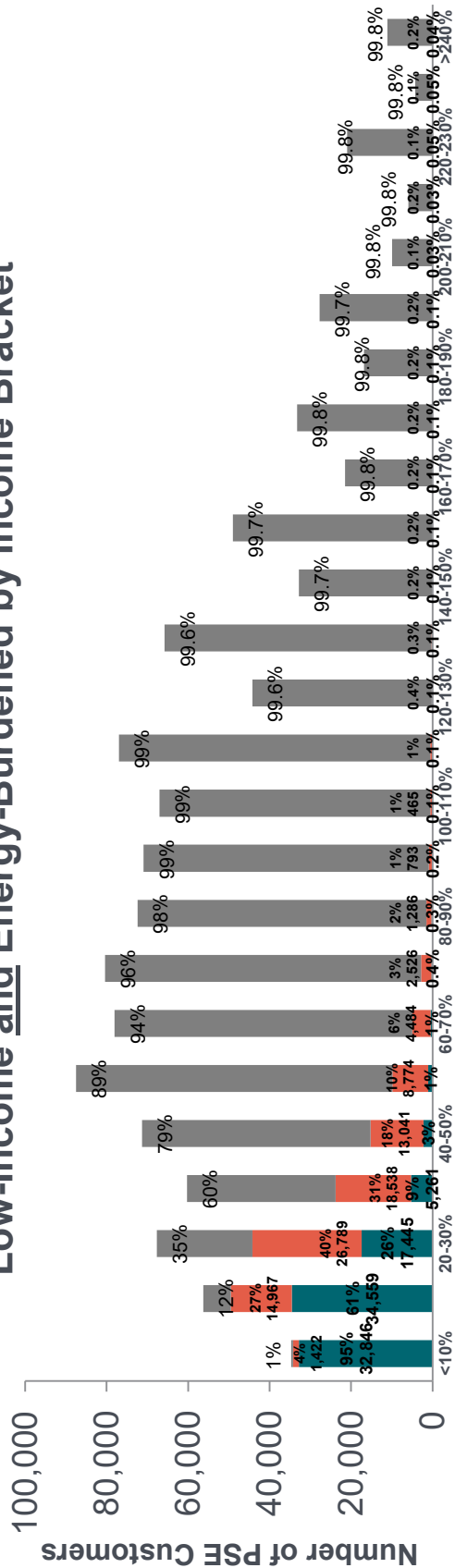
Legend: ■ SEB (>=10%) ■ EB (>=6% and <10%) ■ Non-EB & Non-SEB

*Note: Energy burden analysis includes roughly 80% of total residential customer base (based on 2022 10-K) because of several data challenges

**SEB: Severely Energy Burdened; EB: Energy-Burdened

17 | Source: PSE's 2022 Energy Burden Study (EBA)

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Median energy burden decreases significantly with increasing AMI, and for customers in the 0-40% AMI range, *median* energy burden is above 6%

Cumulative Number of PSE Customers versus Median Energy Burden by Income Bracket

Number of Customers in the EBA
(in teal are customers classified as low-income)

6% Energy Burden

AMI Bracket

Median Energy Burden
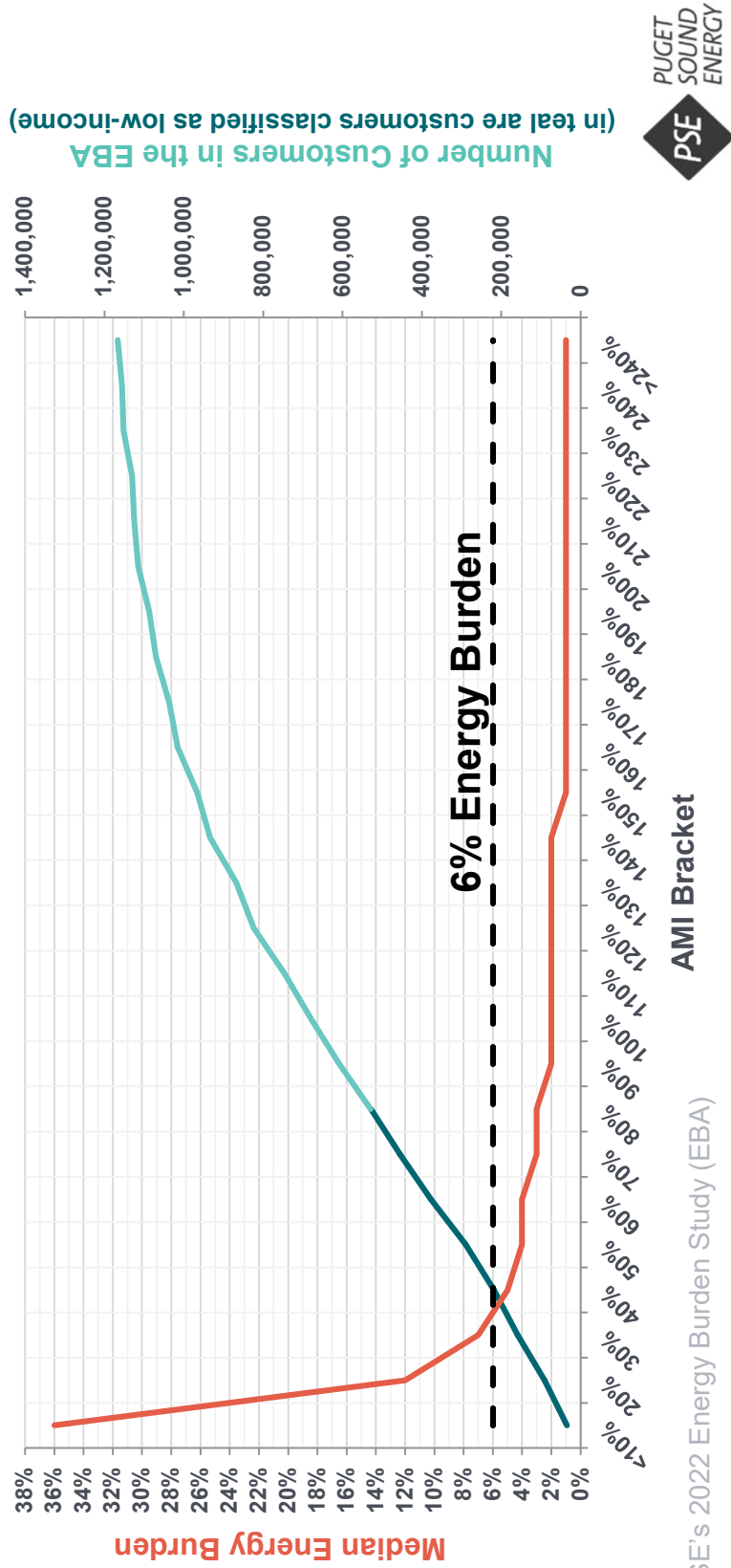
Median energy burden of estimated low-income and energy-burdened customers is 10%

Customer segment	Median energy burden
All customers in 2022 EBA	2.4%
Estimated Upper-income (income >115% AMI)	1.5%
Estimated Moderate-income (income >80% and ≤115% AMI)	2.1%
Estimated Low-income (income ≤80% AMI)	4.4%
Estimated Low-income & Non-HEB (EB≤6%)	3.3%
Estimated Low-income & Energy-burdened (EB>6%)	**10.1%**

PSE's 2022 Energy Burden Study (EBA) | 19

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A geographical view of Energy Burden across PSE service territory highlights areas with more energy-burdened customers on average

- Interactive maps illustrate census tracts with higher portions of PSE customers in the ranges of:
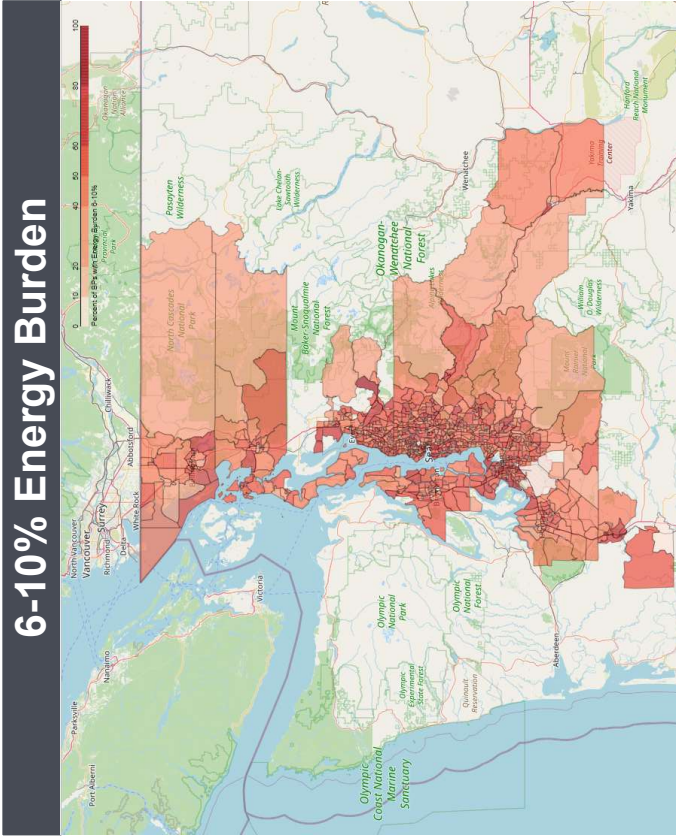
6-10% Energy Burden

Data shown here: EB from > 6% to equals to 10% EB
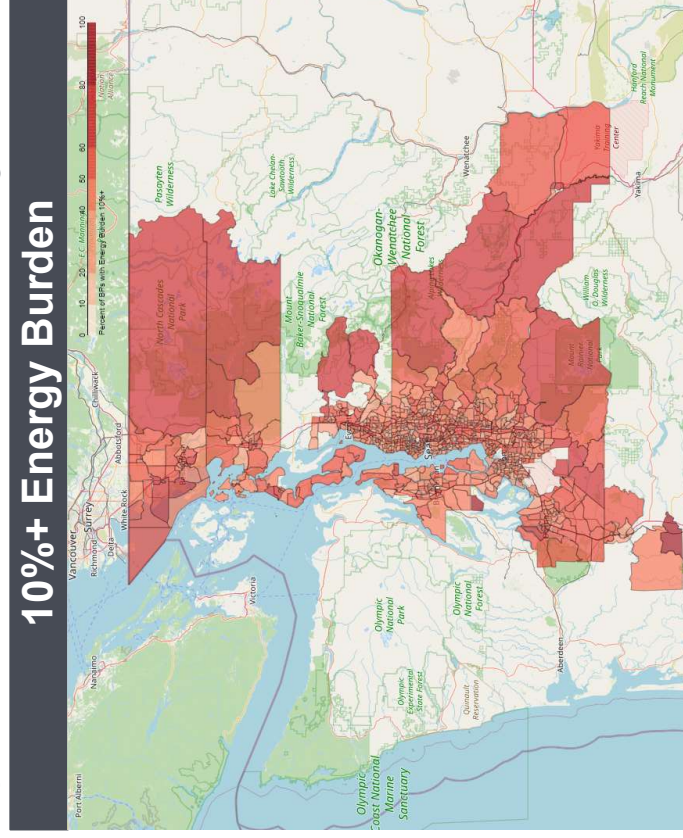
10%+ Energy Burden

Data shown here: EB > 10%
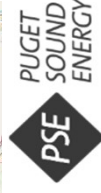
There are energy-burdened customers **within** each area

- Within each census tract, energy burden tends to reflect right-skewed shape

- As a result, talking about "average" energy burden within any geography is misleading

- Each geography will have many households with energy burden significantly higher than the average

Energy Burden Distribution for Tract ID 53033032203

Energy Burden Distribution for Tract ID 53035090102
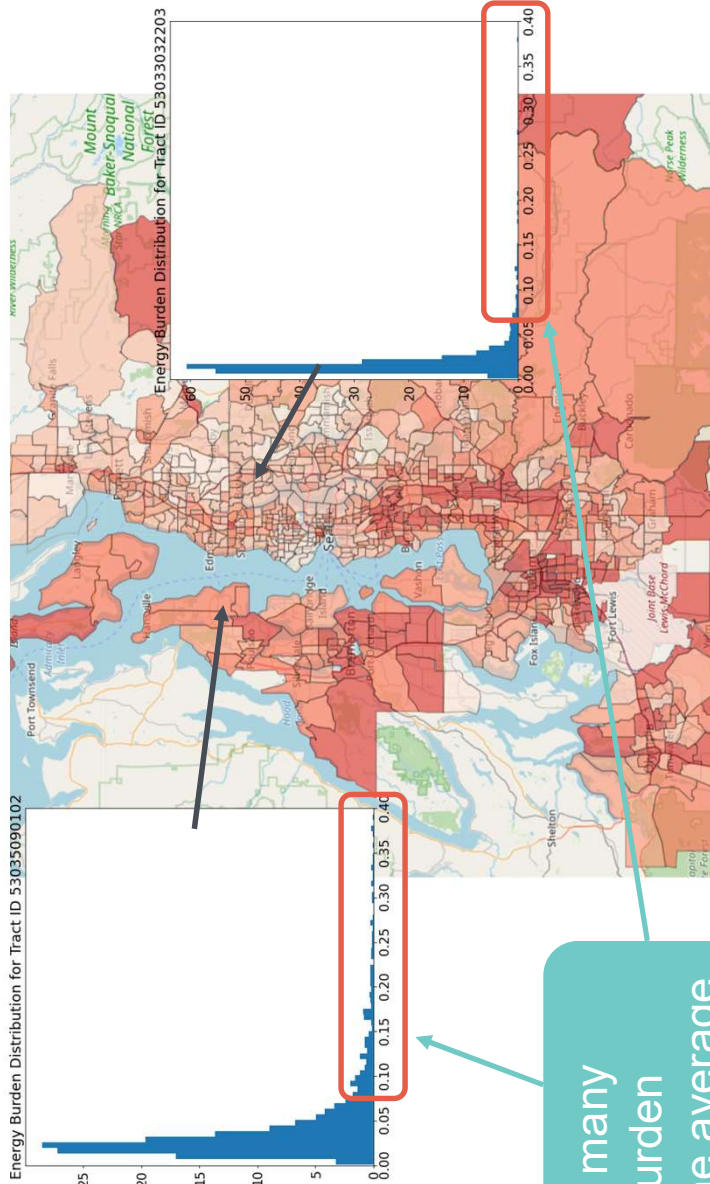
Source for map and histograms: PSE 2020 EBA

21 | PSE Energy Burden Analysis Methodology (2019-2022 EBA)

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Comparisons by county also show the importance of identifying customers classified as low-income and their energy burdens

Low-Income versus Low-Income and Energy-Burdened PSE Customers
(as a percent of total county/PSE study population)

- Low-Income
- Low-income and Energy-burdened
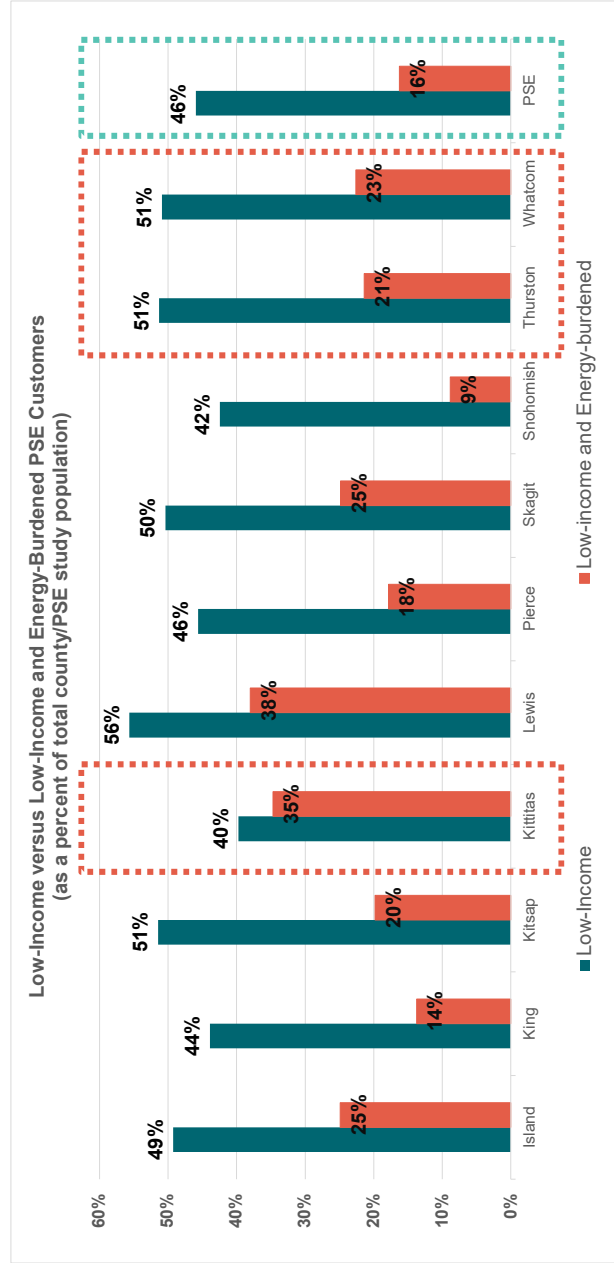
- Thurston, Whatcom, and Kitsap Counties have second highest percent of customers (51%) classified as low-income, and 20-23% were estimated to be energy-burdened.
- Kittitas County has a lower percentage of customers classified as low-income (40%) but majority of those customers are estimated as low-income and energy-burdened (35%).

Energy-burdened customers use more energy than overall EBA study population

Electric Billed avg. Usage (annual) by Customer Type

Electric usage (kWh)

- Non-Low Income PSE Customers
- Low-Income PSE Customers
- Low-Income and Energy-Burdened PSE Customers

Electric Usage by Electric Only Customers: 13,745 / 12,492 / 15,774

Electric Usage by Combo (Electric and Gas) Customers: 10,757 / 9,454 / 12,419
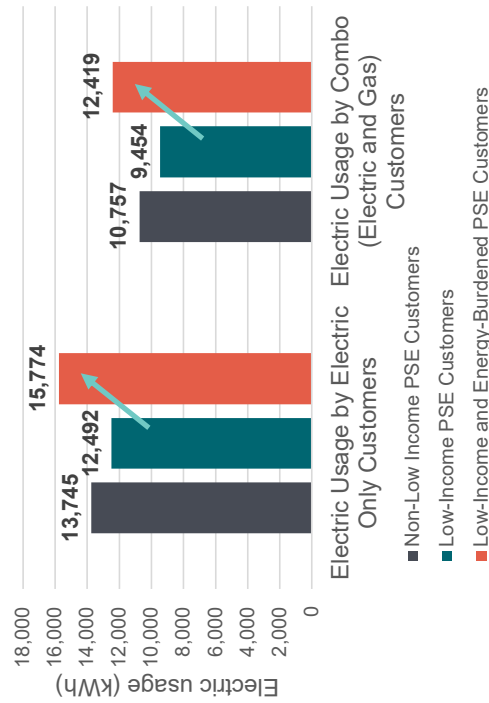
Gas Billed avg. Usage (annual) by Customer Type

Gas usage (therms)

- Non-Low Income PSE Customers
- Low-Income PSE Customers
- Low-Income and Energy-Burdened PSE Customers

Gas Usage by Combo Customers: 902 / 800 / 934

Gas Usage by Gas Only Customers: 792 / 743 / 861

- On average, Electric Only customers' usage is higher than Combo customers' electric usage.
- Classified low-income energy-burdened customers' electric usage is higher than for overall low-income customers in the EBA by about 30% on average

- Classified low-income energy-burdened customers' gas usage is higher than for overall low-income customers in the Energy Burden Analysis by about 16% on average

23 | Source: PSE's 2022 Energy Burden Study (EBA)

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Annual energy assistance need (EAN) – PSE portion

- PSE-bill portion of EAN is about 74% of total estimated EAN

- About 80% of PSE's EAN is for severely energy-burdened customers (EB>10%)

PSE-bill portion of EAN ($ million)	Estimated EAN for Low-Income HEB Customers*	Estimated EAN for Low-Income SEB Customers
Low-Income	$155.5 million	$124.0 million
Electric Only	$98.4 million	$80.3 million
Gas Only	$18.6 million	$14.2 million
Combo	$38.5 million	$29.5 million

*Note: HEB data is inclusive of SEB data.

PSE's 2022 Energy Burden Study (EBA) | 24

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PSE's Current Low Income Programs: Eligibility

1. Energy Efficiency (EE) program

2. Budget Payment Plan

3. Payment Arrangements

4. Efficiency Boost Program (90% AMI)

The greater of 200% FPL or 80% AMI (CETA definition):

5. PSE HELP (eff. Oct 1, 2021)

6. Warm Home Fund (eff. Oct 1, 2022)

7. Bill Discount Rate (eff. Oct 1, 2023)

8. Community Solar Income-Qualified (eff. Oct 1, 2023)

9. Temp. Arrearage Management Program (AMP) (eff. Oct 1, 2023)

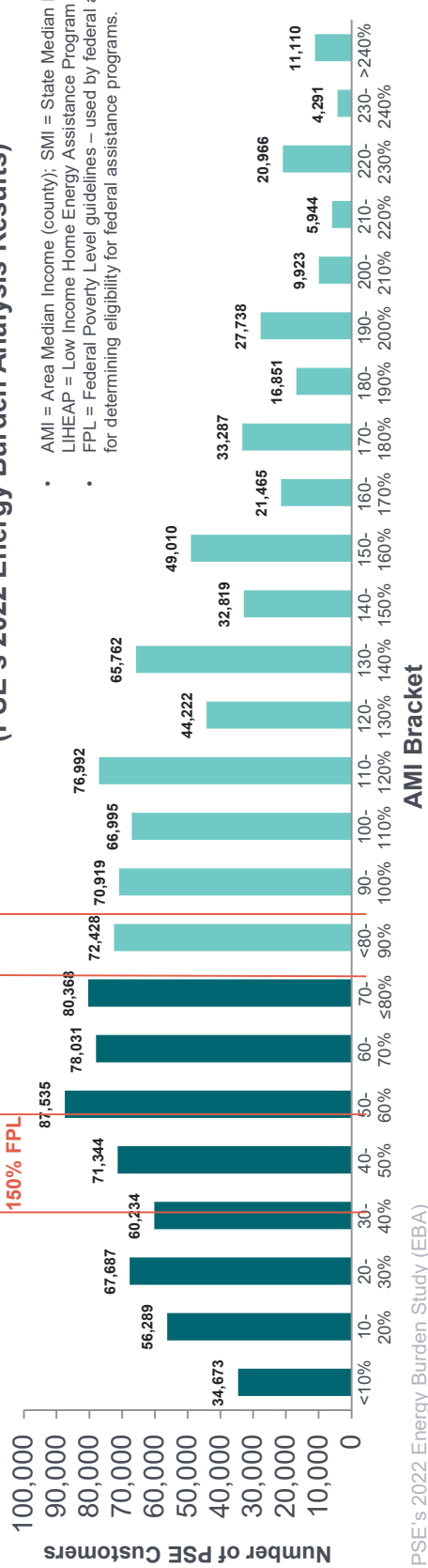10. PSE Low-Income Weatherization (LIW) (60%SMI/200%FPL or 80% AMI)

11. Federal LIHEAP (150% FPL)

Number of PSE Customers by Income Bracket
(PSE's 2022 Energy Burden Analysis Results)

- AMI = Area Median Income (county); SMI = State Median Income; LIHEAP = Low Income Home Energy Assistance Program
- FPL = Federal Poverty Level guidelines – used by federal agencies for determining eligibility for federal assistance programs.

Number of PSE Customers (y-axis)

AMI Bracket	Number of PSE Customers
<10% FPL	34,673
10-20% FPL	56,289
20-30% FPL	67,687
30-40% FPL	60,234
40-50% FPL	71,344
50-60% FPL	87,535
60-70% FPL	78,031
70-80% FPL	80,368
<80-90% AMI	72,428
90-100% AMI	70,919
100-110% AMI	66,995
110-120% AMI	76,992
120-130% AMI	44,222
130-140% AMI	65,762
140-150% AMI	32,819
150-160% AMI	49,010
160-170% AMI	21,465
170-180% AMI	33,287
180-190% AMI	16,851
190-200% AMI	27,738
200-210% AMI	9,923
210-220% AMI	5,944
220-230% AMI	20,966
230-240% AMI	4,291
>240% AMI	11,110

AMI Bracket (x-axis)
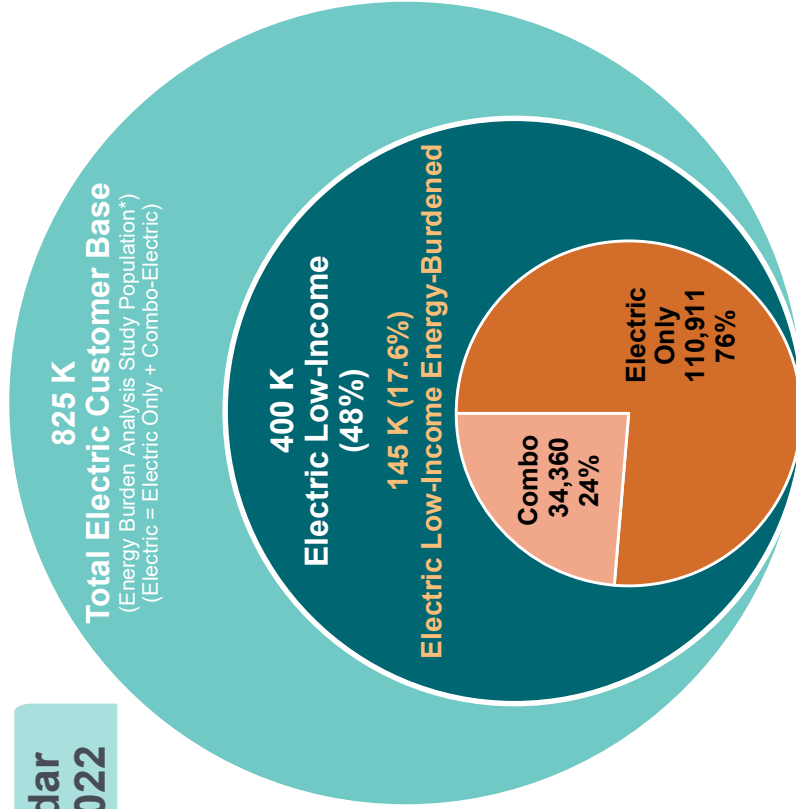
90% AMI

80% AMI

200% FPL

150% FPL

2022 EBA Summary

Electric utility (electric only and combined-electric customers)

Electric: PSE's 2022 EBA key results and takeaways

Calendar Year 2022

825 K
Total Electric Customer Base
(Energy Burden Analysis Study Population*)
(Electric = Electric Only + Combo-Electric)

400 K
Electric Low-Income
(48%)

145 K (17.6%)
Electric Low-Income Energy-Burdened

Combo
34,360
24%

Electric Only
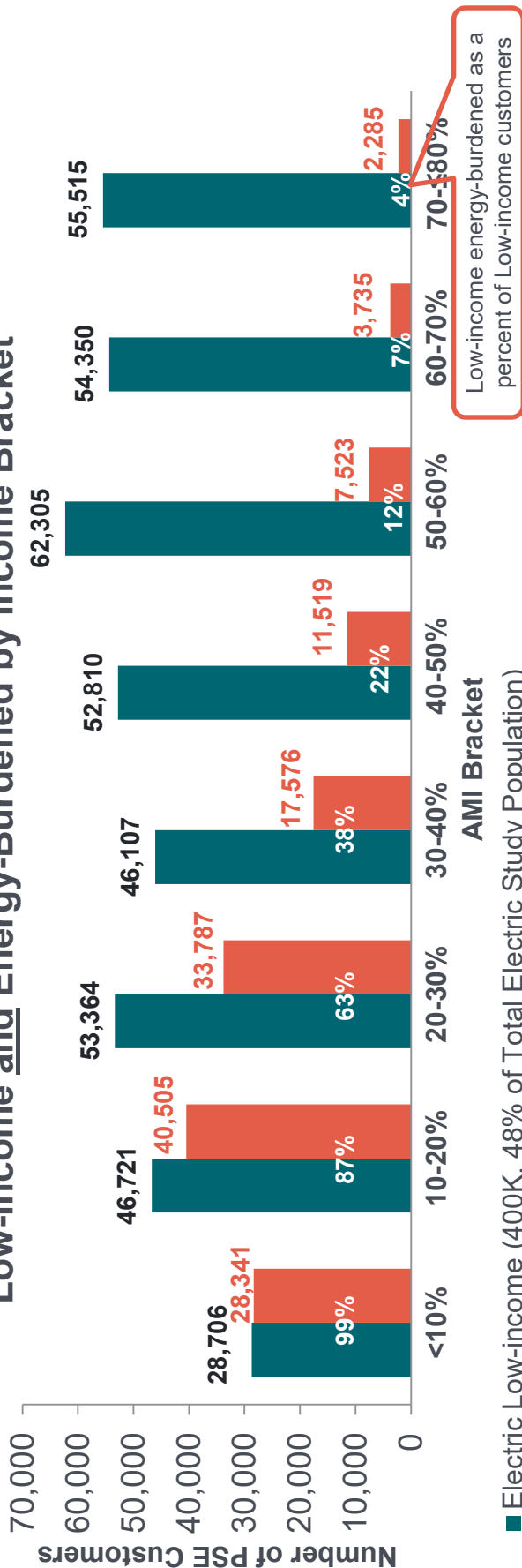**110,911**
76%

The Who & Why

- Most customers have low energy burden, and **18.1% are estimated to be energy-burdened** (including non low-income)

- **Majority of electric energy-burdened** customers are classified as *low-income*

- While **over a third of low-income customers are energy-burdened**, energy burden tends to concentrate at lower end of income spectrum

- Most electric energy-burdened customers are PSE's **electric only customers**

- Energy-burdened customers **use more energy on average** than overall residential customers

- **High energy burden** is more likely among *vulnerable customers*

*Note: Energy Burden Analysis includes roughly 77% of total electric customer base (based on 2022 10-K) because of several data challenges

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Electric: As income increases, the proportion of electric energy-burdened customers decreases

Number of Electric PSE Customers Classified as Low-Income <u>and</u> Energy-Burdened by Income Bracket

Low-income energy-burdened as a percent of Low-income customers

AMI Bracket	<10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%
Electric Low-income	28,706	46,721	53,364	46,107	52,810	62,305	54,350	55,515
Electric Low-income Energy-Burdened	28,341	40,505	33,787	17,576	11,519	7,523	3,735	2,285
Percent	99%	87%	63%	38%	22%	12%	7%	4%

Number of PSE Customers

■ Electric Low-income (400K, 48% of Total Electric Study Population)

■ Electric Low-income Energy-Burdened (145K, 18% of Total Study Population, 37% of All Low income Customers)

*Note: Energy burden analysis includes roughly 77% of total electric residential customer base (based on 2022 10-K) because of several data challenges

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Electric: PSE's Current Low Income Programs: Eligibility

1. Energy Efficiency (EE) program

2. Budget Payment Plan

3. Payment Arrangements

4. Efficiency Boost Program (90% AMI)

The greater of 200% FPL or 80% AMI (CETA definition):

5. PSE HELP (eff. Oct 1, 2021)

6. Warm Home Fund (eff. Oct 1, 2022)

7. Bill Discount Rate (eff. Oct 1, 2023)

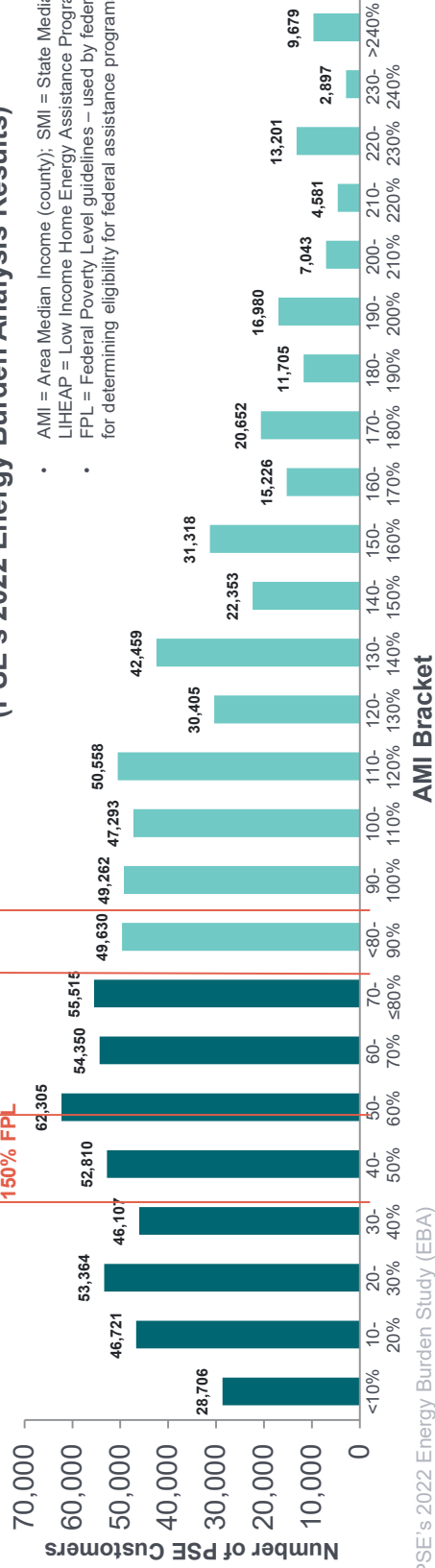8. Community Solar Income-Qualified (eff. Oct 1, 2023)

9. Temp. Arrearage Management Program (AMP) (eff. Oct 1, 2023)

10. PSE Low-Income Weatherization (LIW) (60%SMI/200%FPL or 80% AMI)

11. Federal LIHEAP (150% FPL)

PSE Electric Customers by Income Bracket
(PSE's 2022 Energy Burden Analysis Results)

- AMI = Area Median Income (county); SMI = State Median Income;
- LIHEAP = Low Income Home Energy Assistance Program
- FPL = Federal Poverty Level guidelines – used by federal agencies for determining eligibility for federal assistance programs.
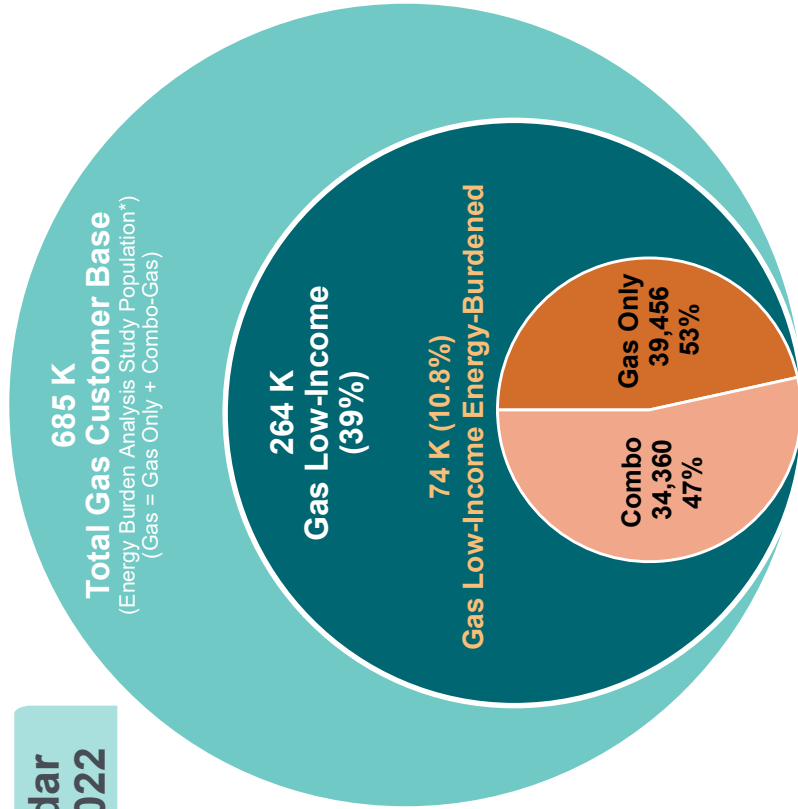
90% AMI

80% AMI

200% FPL

150% FPL

Number of PSE Customers (y-axis): 0, 10,000, 20,000, 30,000, 40,000, 50,000, 60,000, 70,000

Bar values and AMI Brackets:
- <10% / <20%: 28,706
- 10%-20% / 20%-30%: 46,721
- 20%-30% / 30%-40%: 53,364
- 30%-40% / 40%-50%: 46,107
- 40%-50% / 50%-60%: 52,810
- 50%-60% / 60%-70%: 62,305
- 60%-70% / 70%-80%: 54,350
- 70%- / ≤80%: 55,515
- <80% / 90%: 49,630
- 90%-100% / 100%-110%: 49,262
- 100%- / 110%: 47,293
- 110%-120% / 120%: 50,558
- 120%-130% / 130%: 30,405
- 130%-140% / 140%: 42,459
- 140%-150% / 150%: 22,353
- 150%-160% / 160%: 31,318
- 160%-170% / 170%: 15,226
- 170%-180% / 180%: 20,652
- 180%-190% / 190%: 11,705
- 190%-200% / 200%: 16,980
- 200%-210% / 210%: 7,043
- 210%-220% / 220%: 4,581
- 220%-230% / 230%: 13,201
- 230%-240% / 240%: 2,897
- >240%: 9,679

AMI Bracket (x-axis label)

Source: PSE's 2022 Energy Burden Study (EBA)

2022 EBA Summary

Natural Gas utility (gas only and combined – gas customers)

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Gas: PSE's 2022 EBA key results and takeaways

Calendar Year 2022

685 K
Total Gas Customer Base
(Energy Burden Analysis Study Population*)
(Gas = Gas Only + Combo-Gas)

264 K
Gas Low-Income
(39%)

74 K (10.8%)
Gas Low-Income Energy-Burdened

Gas Only
39,456
53%

Combo
34,360
47%

The Who & Why

- Most customers have low energy burden, and **11% are estimated to be energy-burdened** (including non low-income)

- **Majority of energy-burdened** customers are classified as *low-income*

- While just under a *third of low-income* **customers are energy-burdened**, energy burden tends to concentrate at lower end of income spectrum

- **Most energy-burdened customers are also electric customers (dual-fuel)**

- **Energy-burdened customers use *more energy on average*** than overall residential customers

- **High energy burden** is more likely among *vulnerable customers*

*Note: Energy Burden Analysis includes roughly 84% of total gas customer base (based on 2022 10-K) because of several data challenges

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Gas: As income increases, the proportion of natural gas energy-burdened customers decreases

Number of Natural Gas PSE Customers Classified as Low-Income and Energy-Burdened by Income Bracket

■ Gas Low-income (264K, 39% of Total Gas Study Population)

■ Gas Low-income Energy-Burdened (74K, 11% of Total Gas Study Population, 28% of All Low income Customers)
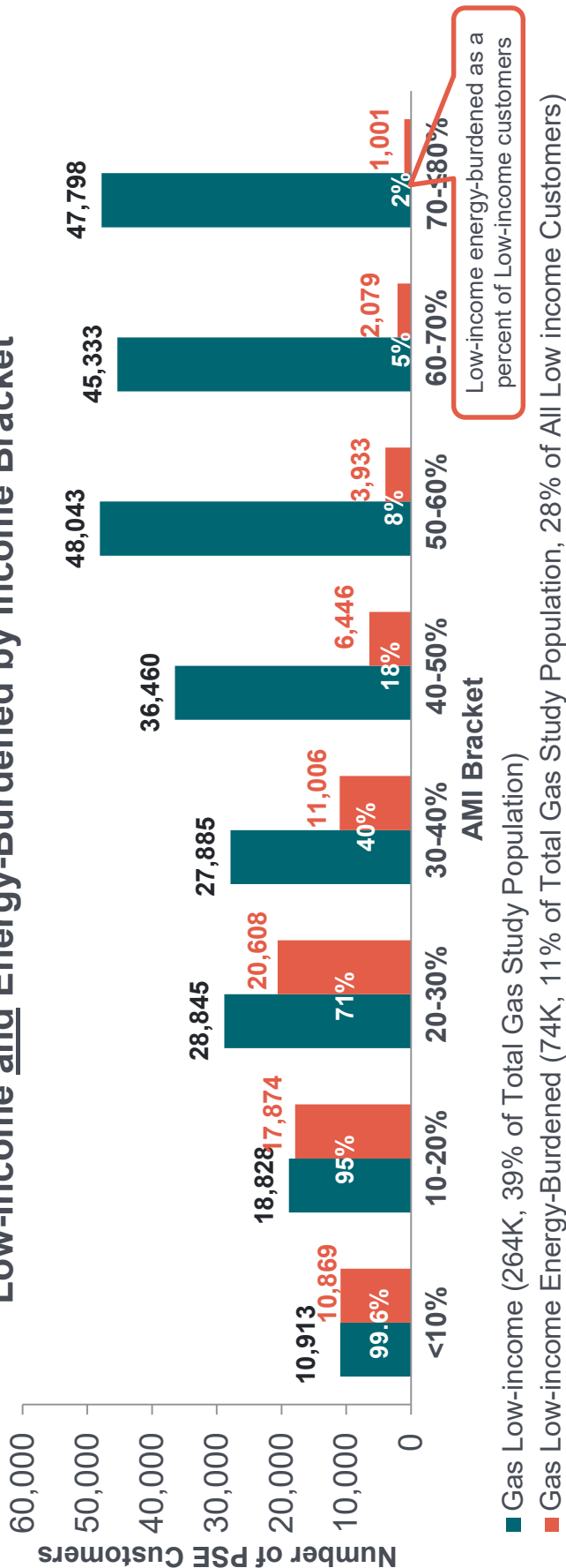
*Note: Energy burden analysis includes roughly 84% of total gas residential customer base (based on 2022 10-K) because of several data challenges

32 | PSE 2022 EBA

Gas: PSE's Current Low Income Programs: Eligibility

1. Energy Efficiency (EE) program

2. Budget Payment Plan

3. Payment Arrangements

4. Efficiency Boost Program (90% AMI)

The greater of 200% FPL or 80% AMI (CETA definition):

5. PSE HELP (eff. Oct 1, 2021)

6. Warm Home Fund (eff. Oct 1, 2022)

7. Bill Discount Rate (eff. Oct 1, 2023)

8. Community Solar Income-Qualified (eff. Oct 1, 2023)

9. Temp. Arrearage Management Program (AMP) (eff. Oct 1, 2023)

10. PSE Low-Income Weatherization (LIW) (60%SMI/200%FPL or 80% AMI)
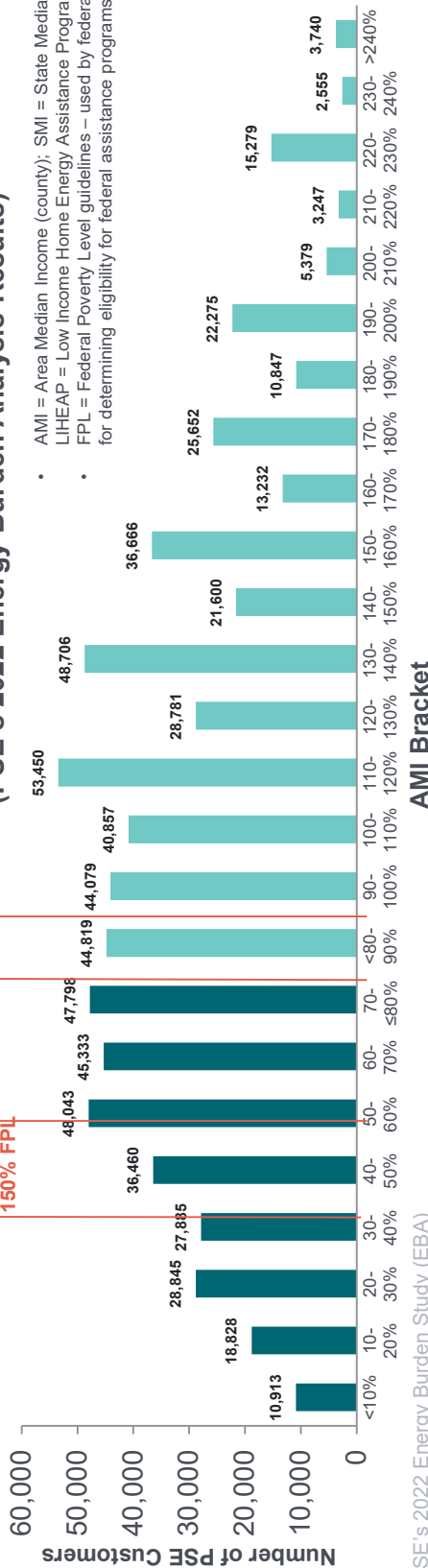
11. Federal LIHEAP (150% FPL)

PSE Gas Customers by Income Bracket
(PSE's 2022 Energy Burden Analysis Results)

- AMI = Area Median Income (county); SMI = State Median Income; LIHEAP = Low Income Home Energy Assistance Program
- FPL = Federal Poverty Level guidelines – used by federal agencies for determining eligibility for federal assistance programs.

Source: PSE's 2022 Energy Burden Study (EBA)

Analysis of Populations of Interest

Populations of Interest:

Low-income (LI)

2022 EBA: HHs with annual income ≤80% AMI, HH adjusted

- CETA: Area Median Income (AMI) ≤80% or ≤200% Federal Poverty Level (FPL), whichever is highest, adjusted for HH size

Low-income and Energy-Burden (LI-HEB)

2022 EBA: LI-HEB: EB > 6% and LI-SEB: EB > 10%

- Energy Burden (EB): Annual home energy expenses as a % of annual HH income [CETA]
- **High energy burden (HEB):** HHs with energy burden above 6% [CETA / Commerce]
- **Severe energy burden (SEB):** HHs with energy burden above 10% [APPRISE / DOE]

Highly Impacted Community (HIC)

CETA: A community designated by the Department of Health based on the cumulative impact analysis required by RCW 19.504.140 or a community located in census tracts that are fully or partially on "Indian country."

High Vulnerability Population (High VP)

High VP: Census block groups with High level VPs. PSE identified Vulnerable Populations in conjunction with its Clean Energy Implementation Plan a methodology described in PSE's CEIP and using feedback from PSE's Equity Advisory Group.
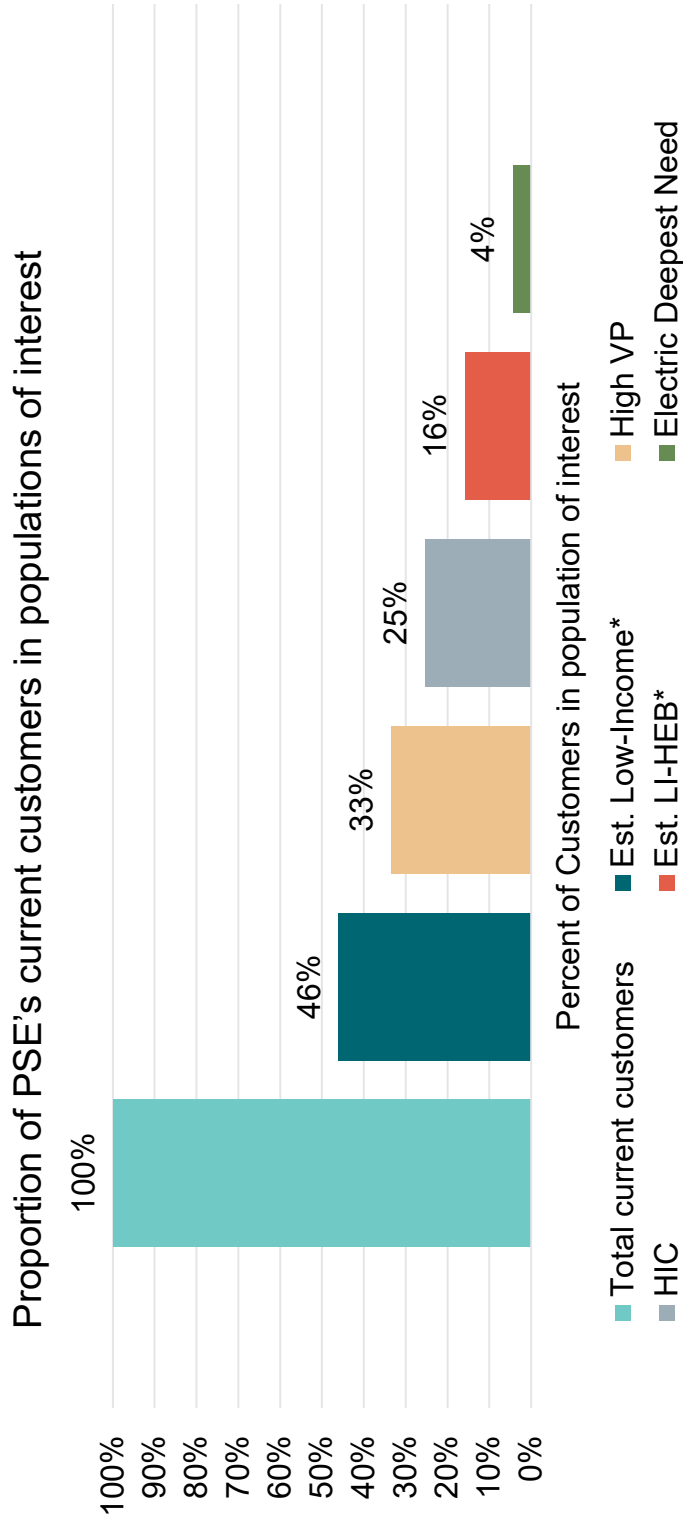
CETA: HIC - Communities that experience a disproportionate cumulative risk from environmental burdens due to: adverse socioeconomic factors, including unemployment, high housing and transportation costs relative to income, access to food and health care, linguistic isolation, and sensitivity factors, such as low birth weight and higher rates of hospitalization.

Electric Deepest Need (DN or eDN)

PSE with EAG, LIAC, and CRAG per Order 08 of 2021 CEIP: Electric customers with severe energy burdens ("SEB", energy burden at or above 10%), plus additions from: PSE used a spatial analysis technique to identify clusters of individual electric customers with SEB and included customers in the top 50th percentile of block groups with high counts of severely-energy-burdened customers.
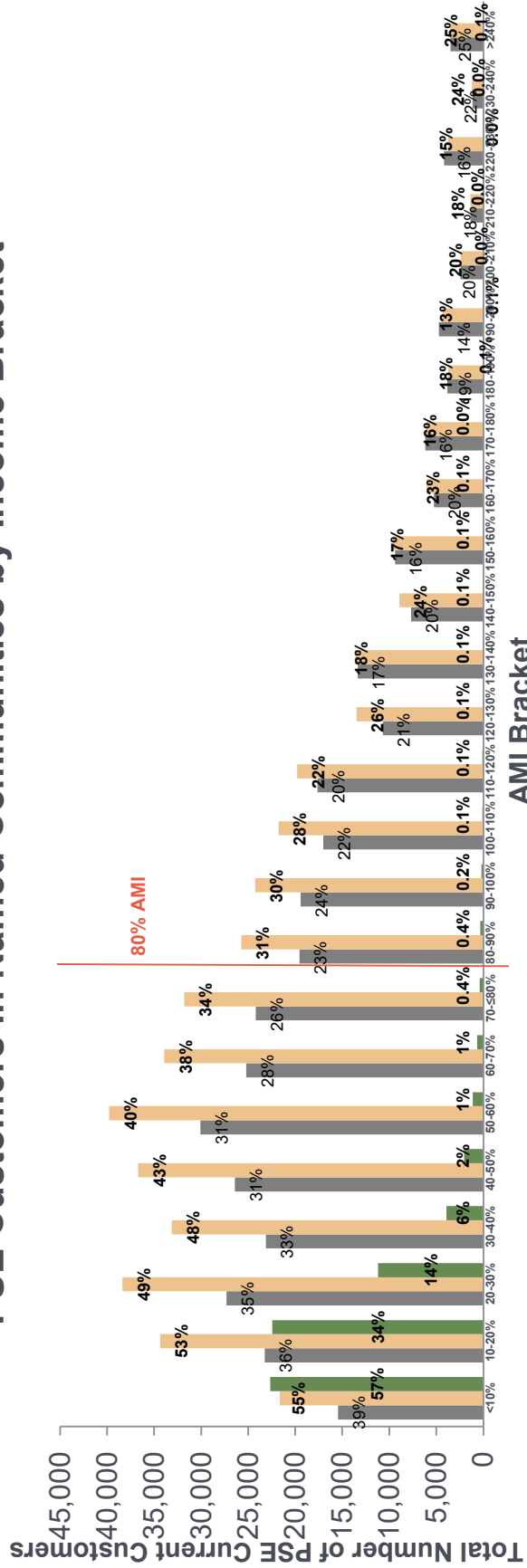
Named Communities

Percentage of PSE customers estimated in various populations of interest

Proportion of PSE's current customers in populations of interest

100%

46%

33%

25%

16%

4%

Percent of Customers in population of interest

Total current customers
HIC

Est. Low-Income*
Est. LI-HEB*

High VP
Electric Deepest Need

36 | *LI and LI-HEB based on 2022 EBA results

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Customers in Named Communities by AMI bracket

PSE Customers in Named Communities by Income Bracket

Customers in HIC   **Customers in High VP**   **Electric Deepest Need Customers**

MP1

Identifying the overlap between Named Communities and low-income customers

1,507,772 Customers Total
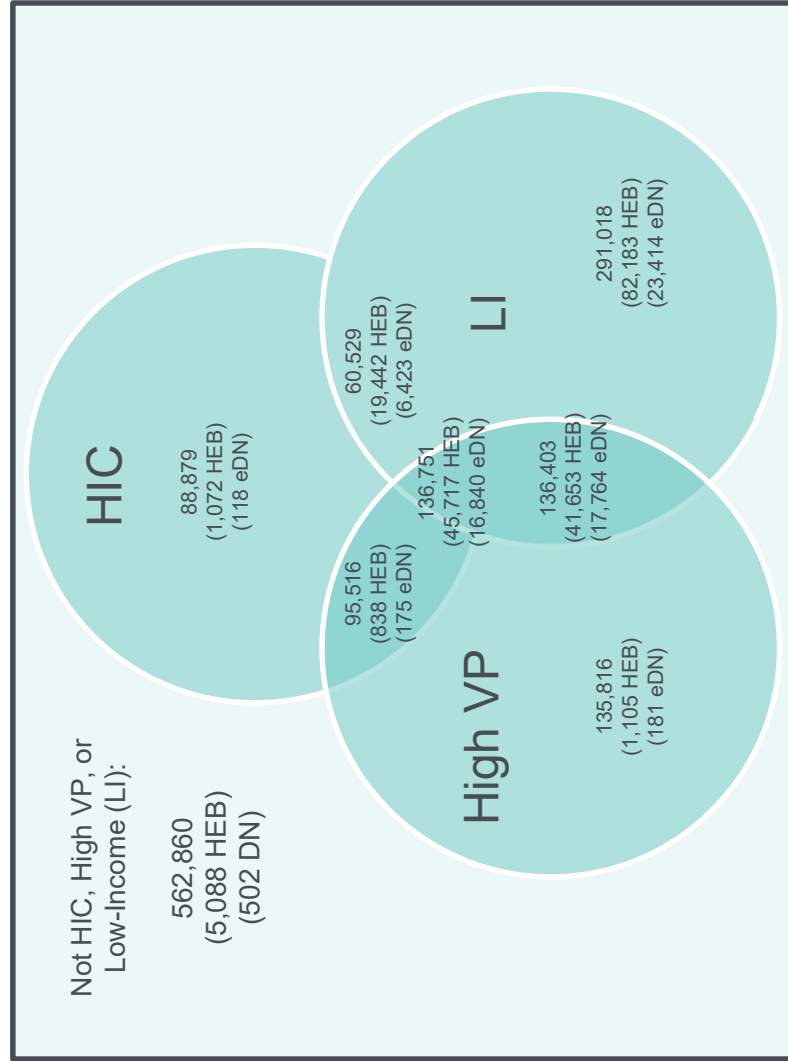
- While there is some overlap, these three groups identify somewhat distinct customer sets

- 63% of active Residential customers are either HIC, High VP, or LI

- About 137K customers are in all three groups (HIC, High-VP, and LI)

- The vast majority of electric deepest need (eDN) customers, 99.2%, are also Low-Income

Not HIC, High VP, or Low-Income (LI):

562,860
(5,088 HEB)
(502 DN)

HIC

88,879
(1,072 HEB)
(118 eDN)

95,516
(838 HEB)
(175 eDN)

60,529
(19,442 HEB)
(6,423 eDN)

136,751
(45,717 HEB)
(16,840 eDN)

136,403
(41,653 HEB)
(17,764 eDN)

LI

291,018
(82,183 HEB)
(23,414 eDN)

High VP

135,816
(1,105 HEB)
(181 eDN)

*Note: LI & HEB designations are at customer level, while HIC and VP designations are at Census Block group levels (communities/areas)

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YK0

[@Moley, Leo Philip]
Yakupova, Kelima, 2024-01-03T20:48:09.125

MP1

Update to 1.5M population
Moley, Leo Philip, 2024-01-10T03:06:20.555

PA1 0

[@Moley, Leo Philip] Thanks Leo! Is the 1.1M total at the top from the older iteration that just uses the EB study?
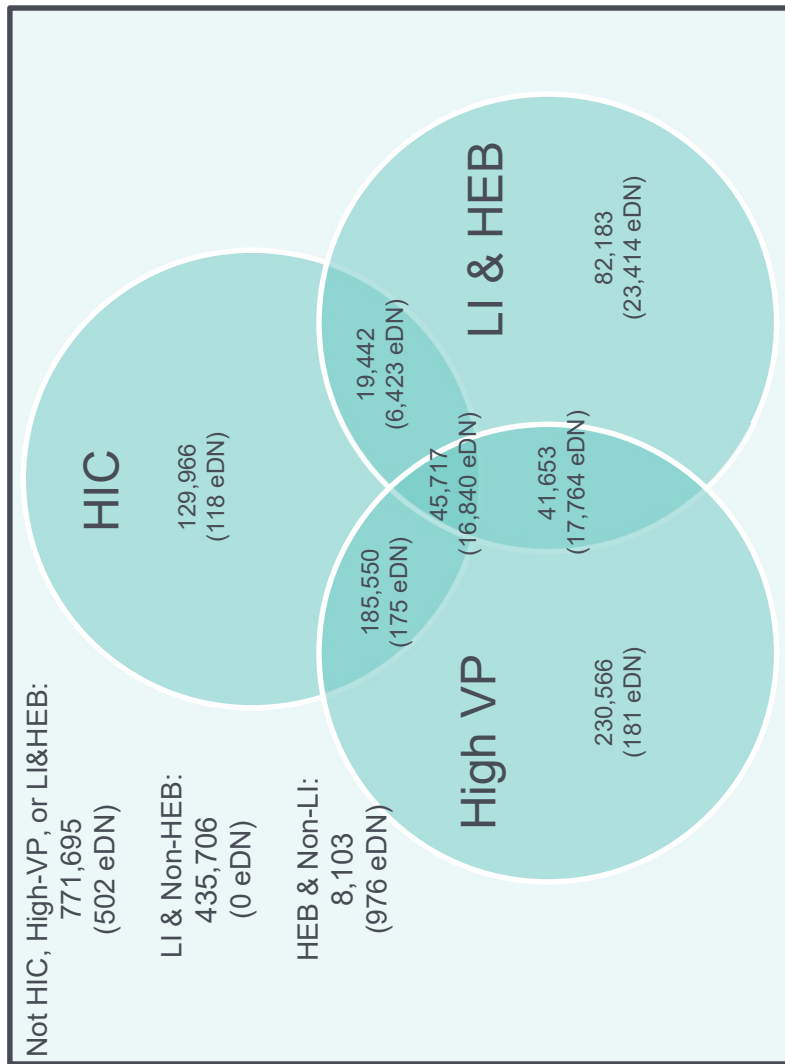Phillips, Austin, 2024-01-10T05:47:56.277

MP1 1

[@Phillips, Austin] The original version with LI & HEB combined was 1.5M total, then I broke out the segments while switching to the EB study data. Now that we've gone back I just need to recalculate the new segments using the 1.5M pop
Moley, Leo Philip, 2024-01-10T07:25:41.684

MP1

Identifying the overlap between Named Communities and low-Income & energy-burdened customers

1,507,772 Customers Total

Not HIC, High-VP, or LI&HEB:
771,695
(502 eDN)

LI & Non-HEB:
435,706
(0 eDN)

HEB & Non-LI:
8,103
(976 eDN)

HIC
129,966
(118 eDN)

19,442
(6,423 eDN)

LI & HEB
82,183
(23,414 eDN)

185,550
(175 eDN)

45,717
(16,840 eDN)

41,653
(17,764 eDN)

High VP
230,566
(181 eDN)

- While there is some overlap, these three groups identify somewhat distinct customer sets

- 49% of active Residential customers are either HIC, High-VP, or LI & HEB

- About 46K customers are in all three groups (HIC, High VP, and LI-HEB)

- The vast majority of electric deepest need (eDN) customers, 98.5%, are Low-Income and Energy-Burdened
  - Total eDN = 65,417 customers
  - eDN+LI&HEB = 64,441 (98.5%)

*Note: LI & HEB designations are at customer level, while HIC and VP designations are at Census Block group levels (communities/areas)

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YK0   [@Moley, Leo Philip] could you check the accuracy of the text in red and update the data in brackets in red?
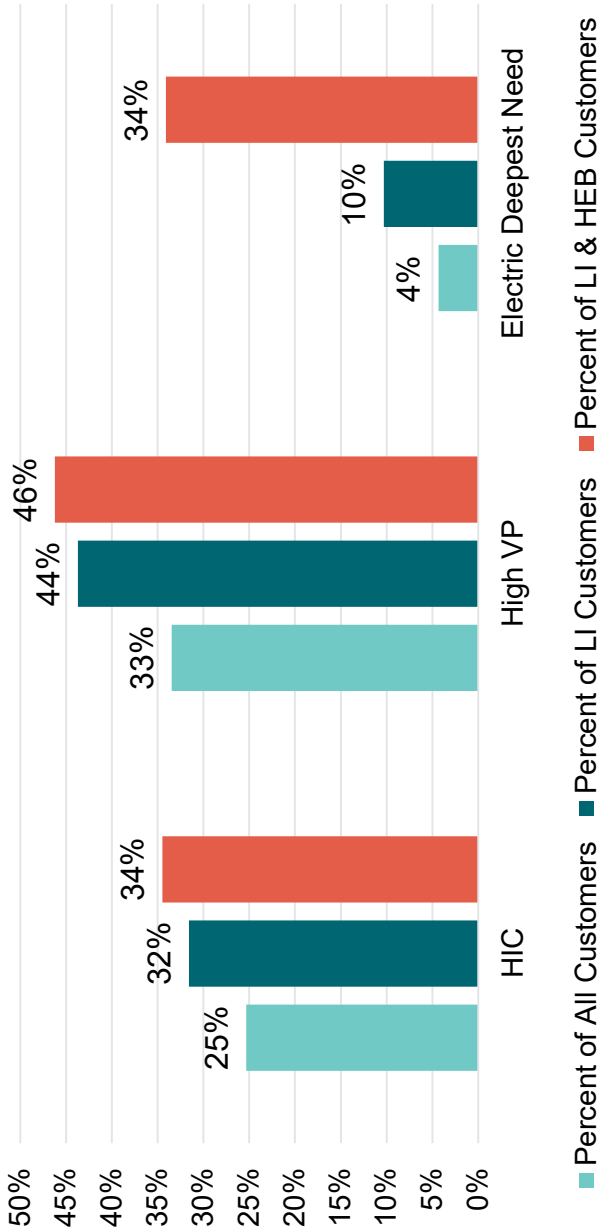Yakupova, Kelima, 2024-01-02T23:50:59.892

MP1   Update to 1.5M population
Moley, Leo Philip, 2024-01-10T03:06:47.181

Low-income & energy-burdened customers are more likely to be in Named Communities

Customers in Named Community as a percent of total, low-income, and LI-HEB populations

- LI & HEB customers are more likely to be in HIC or in High VP, and significantly more likely to be electric deepest need, than PSE's all current customers overall

40 |

MP0

Customers in populations of interest are more likely to be low-income and energy-burdened

Proportion of Low-Income and Energy-Burdened (LI & HEB) Customers in Named Communities
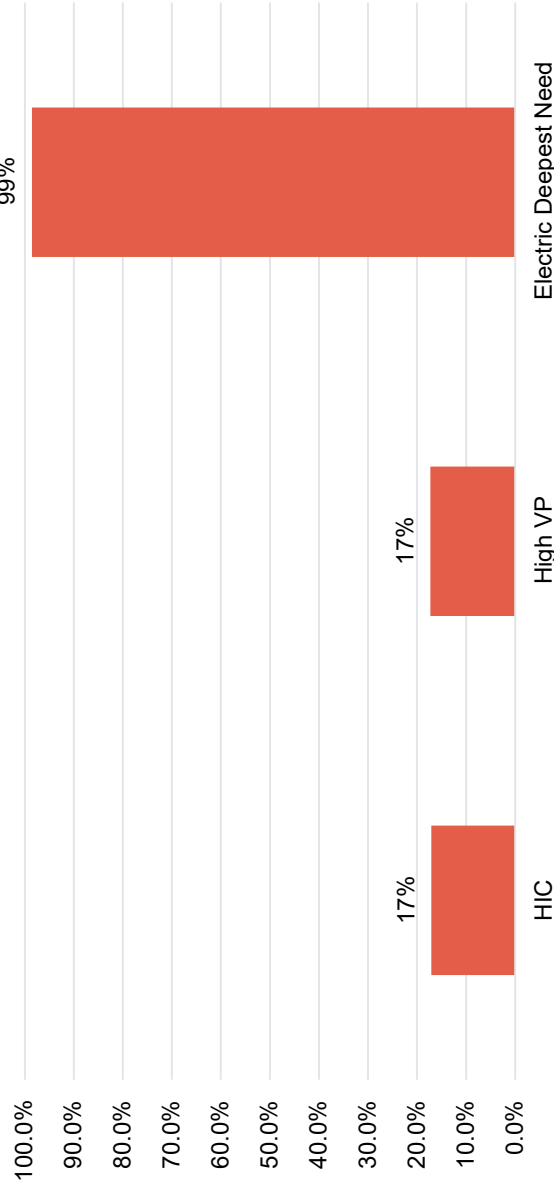
- For HIC and High VP subgroups, 17.1% and 17.3% are LI-HEB, respectively

- For electric deepest need customers, 98.5% are LI-HEB

41 | *LI-HEB = Low Income (AMI > 80%) and High Energy Burdened (EB > 6%)

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MP0 [@Yakupova, Kelima] Here's an updated version of the HEB comparison graph looking at LI-HEB. I replaced it as Figure 5 in the testimony doc
Moley, Leo Philip, 2024-01-12T19:31:35.684
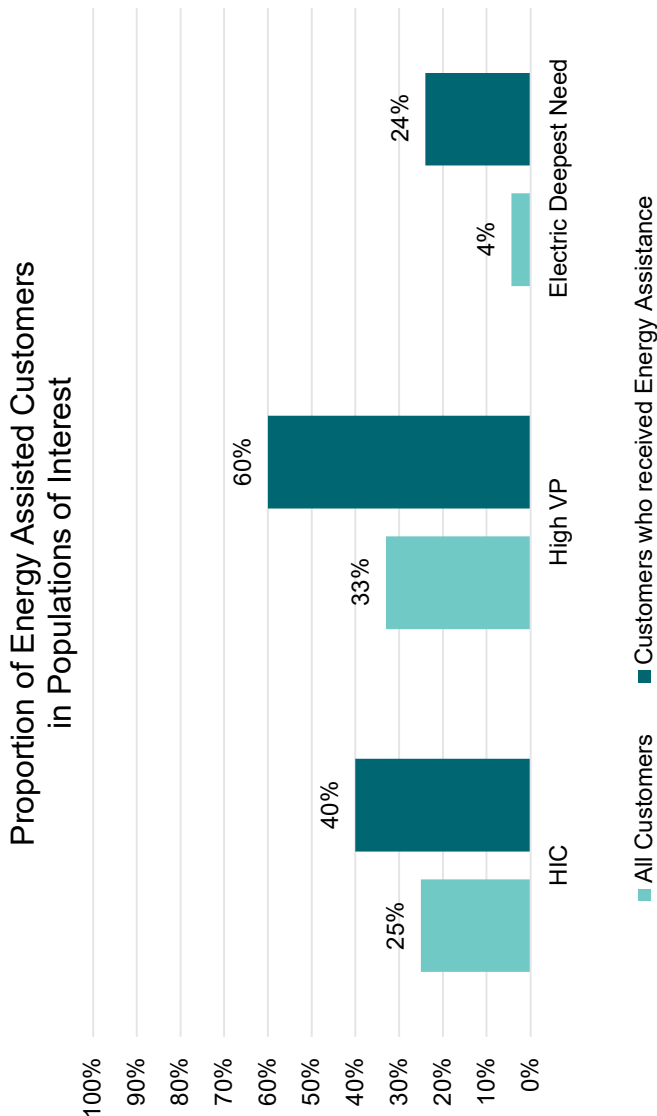
YK0 0 [@Moley, Leo Philip] thank you!!
Yakupova, Kelima, 2024-01-12T19:43:04.481

YK0 1 [@Moley, Leo Philip] could you please share an editable version of the graph with the updated data?
Yakupova, Kelima, 2024-01-12T21:27:28.640

Overview of energy assistance recipients by populations of interest demonstrates strong representation of MP0med Communities

- From 2020-2023, 100,325 unique residential customers received energy assistance.

- Of these customers:
  - 40% are in Highly Impacted Communities (versus 25% overall customer base)
  - 60% are in High Vulnerability Population (versus 33% overall customer base)
  - 24% are electric Deepest Need (versus 4% overall customer base)
  - 52% are Energy-Burdened (versus 16% found in 2022 EBA)

Proportion of Energy Assisted Customers in Populations of Interest

All Customers   Customers who received Energy Assistance

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Slide 42

MP0

[@Yakupova, Kelima] Here's the chart for the NC data in the testimony - let me know if this looks ok to you you and I can drop it in the doc.
You can find the live chart/data in the excel workbook I shared previously
Moley, Leo Philip, 2024-01-18T00:42:12.329

YK0 0

[@Moley, Leo Philip] looks great! please add to Birud's testimony
Yakupova, Kelima, 2024-01-19T19:52:21.319

Appendix

Additional methodology slides

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Defining Energy Burden

- A household's energy burden is the **percentage of income spent on home energy bills.**

- Commerce set the threshold for determining **energy assistance need at 6% energy burden.**

- Customers with energy burden of **above 6%** are defined as energy-burdened.
  - Commerce set the threshold for determining **energy assistance need at six percent energy burden.** This definition comes from a widely accepted principle that total shelter costs should not exceed 30 percent of income and that utility costs should not exceed 20 percent of those shelter costs, leading to the conclusion that an **affordable energy burden should be at or below six percent** of household income (20% x 30% = 6%).

Energy Burden Equation:

$$\frac{Annual\ (Electricity\ Bill + Gas\ Bill + Other\ Heating\ Fuels\ Bill)}{Annual\ Income}$$

44 | PSE Energy Burden Analysis Methodology (2019-2022 EBA)

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PSE Energy Burden formula permutations:

- PSE's Combined Electric and Gas customers:

$$\frac{\textit{PSE Electricity Bill} + \textit{PSE Gas Bill} + \textit{Other Heating Fuels Bill}}{\textit{Income}}$$

$$Yearly$$

- PSE's Electric Only customers:

$$\frac{\textit{PSE Electricity Bill} + \textit{Other Gas Bill} + \textit{Other Heating Fuels Bill}}{\textit{Income}}$$

$$Yearly$$

- PSE's Gas Only customers:

$$\frac{\textit{Other Electricity Bill} + \textit{PSE Gas Bill} + \textit{Other Heating Fuels Bill}}{\textit{Income}}$$

$$Yearly$$

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Working Definitions in the Energy Burden Studies:

Energy Burden (EB)   HEB: EB > 6% and SEB: EB > 10%

- Energy Burden (EB): Annual home energy expenses as a % of annual HH income [CETA]
- **High energy burden (HEB):** HHs with energy burden above 6% [CETA / Commerce]
- **Severe energy burden (SEB):** HHs with energy burden above 10% [APPRISE / DOE]

Household (HH)   Residential PSE customer, identified by business partner ID

- Business partners (BP) with single and up to 10 customer accounts (CA)
- Customers with available income and other data

Low-income (LI)   HHs with annual income ≤80% AMI, HH adjusted

- CETA: Area Median Income (AMI) ≤80% or ≤200% Federal Poverty Level (FPL), whichever is highest, adjusted for HH size

Energy Assistance Need (EAN)   The dollar amount in assistance necessary to reduce energy burden to equals 6% for one year. [CETA / Commerce]

46 | PSE Energy Burden Analysis Methodology (2022 EBA)

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Data sources

- **Income data**
  - 2022 Third Party data vendor and Ground Truth Estimates from PSE Survey Data
  - 2018 DOE/NREL LEAD Tool Data

- **Billed amounts**
  - 2022 PSE billing data
  - 2018 DOE/NREL LEAD Tool data

- **Geographic Information**
  - 2010 U.S. Census Jurisdictions: Census block groups aggregated to tracts
  - 2023 PSE Premise locations aggregated to block groups

- **Named Community Information**
  - 2022 Washington State Department of Health Environmental Health Disparities Map data;
  - 2023 PSE Vulnerable Populations analysis per PSE 2021 CEIP Order 08;
  - 2023 PSE Deepest Need analysis per PSE 2021 CEIP Order 08.

47 | PSE Energy Burden Analysis Methodology (2022 EBA)

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The new definition of low-income: the higher of 80% Area Median Income or 200% Federal Poverty Level

2022-2023 PSE HELP Monthly Income Guidelines

Household Size	King County	Snohomish County	Kitsap County	Pierce County	Thurston County	Island County	Whatcom County	Kittitas County	Skagit County	Lewis County
1 Person	5,563	5,563	4,804	4,738	4,708	4,163	4,233	3,967	4,021	3,683
2 Persons	6,354	6,354	5,488	5,417	5,383	4,758	4,838	4,533	4,596	4,208
3	7,150	7,150	6,175	6,092	6,054	5,354	5,442	5,100	5,171	4,733
4	7,942	7,942	6,858	6,767	6,725	5,946	6,046	5,667	5,742	5,258
5	8,579	8,579	7,408	7,308	7,267	6,425	6,533	6,121	6,204	5,679
6	9,213	9,213	7,958	7,850	7,804	6,900	7,017	6,575	6,663	6,198
7	9,850	9,850	8,508	8,392	8,342	7,375	7,500	7,029	7,121	6,985
8	10,483	10,483	9,054	8,933	8,879	7,850	7,983	7,772	7,772	7,772
9	11,121	11,121	9,604	9,475	9,417	8,558	8,558	8,558	8,558	8,558
10	11,754	11,754	10,154	10,017	9,954	9,345	9,345	9,345	9,345	9,345
11	12,392	12,392	10,700	10,558	10,492	10,132	10,132	10,132	10,132	10,132
12	13,025	13,025	11,250	11,100	11,029	10,918	10,918	10,918	10,918	10,918
13	13,663	13,663	11,800	11,705	11,705	11,705	11,705	11,705	11,705	11,705
14	14,296	14,296	12,492	12,492	12,492	12,492	12,492	12,492	12,492	12,492
15	14,933	14,933	13,278	13,278	13,278	13,278	13,278	13,278	13,278	13,278
16	15,567	15,567	14,065	14,065	14,065	14,065	14,065	14,065	14,065	14,065
17	16,204	16,204	14,852	14,852	14,852	14,852	14,852	14,852	14,852	14,852
18	16,838	16,838	15,638	15,638	15,638	15,638	15,638	15,638	15,638	15,638
19	17,475	17,475	16,425	16,425	16,425	16,425	16,425	16,425	16,425	16,425
20	18,108	18,108	17,212	17,212	17,212	17,212	17,212	17,212	17,212	17,212
21	18,746	18,746	17,998	17,998	17,998	17,998	17,998	17,998	17,998	17,998
22	19,379	19,379	18,785	18,785	18,785	18,785	18,785	18,785	18,785	18,785
23	20,017	20,017	19,572	19,572	19,572	19,572	19,572	19,572	19,572	19,572
24	20,650	20,650	20,358	20,358	20,358	20,358	20,358	20,358	20,358	20,358
25	21,288	21,288	21,145	21,145	21,145	21,145	21,145	21,145	21,145	21,145

For households with less than 5 members, 80% AMI is greater than 200% FPL, across all counties in PSE's service territory.

80% AMI is the higher threshold
200% FPL is the higher threshold

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