



Portland General Electric
121 SW Salmon Street • Portland, OR 97204
portlandgeneral.com

June 28, 2024

Public Utility Commission of Oregon
Attn: Filing Center
201 High Street, S.E.
P.O. Box 1088
Salem, OR 97308-1088

RE: UE 416, PGE 2024 Rate Review, 2024 Energy Burden Assessment

As part of the Sixth Partial Stipulation to Portland General Electric Company's (PGE) 2024 rate review (UE 416), OPUC Order No. 23-386 directed PGE to conduct a low income needs assessment (LINA) by June 30, 2024. PGE hereby submits the results of the Company's energy burden assessment pursuant to that order, noting that an energy burden assessment is synonymous with a LINA.

PGE contracted with Empower Dataworks to conduct an energy burden assessment in early 2024. Empower Dataworks is a regional consulting firm specializing in energy equity analytics and has conducted similar assessments for numerous utilities throughout the Pacific Northwest.

PGE submits the results prepared by Empower Dataworks. Findings were presented to IQBD external stakeholders on June 25, 2024 and to PGE's Community Benefits & Impacts Advisory Group on June 26, 2024. Consistent with the terms of the Sixth Partial Settlement, PGE is considering next steps and will submit an updated program filing by September 27, 2024.

Please direct questions to Ashleigh Keene at ashleigh.keene@pgn.com. Please direct all formal correspondence and requests to the following email address pge.opuc.filings@pgn.com.

Sincerely,

\s\ Shay LaBray

Shay LaBray
Senior Director, Regulatory Affairs & Strategy

Enclosure

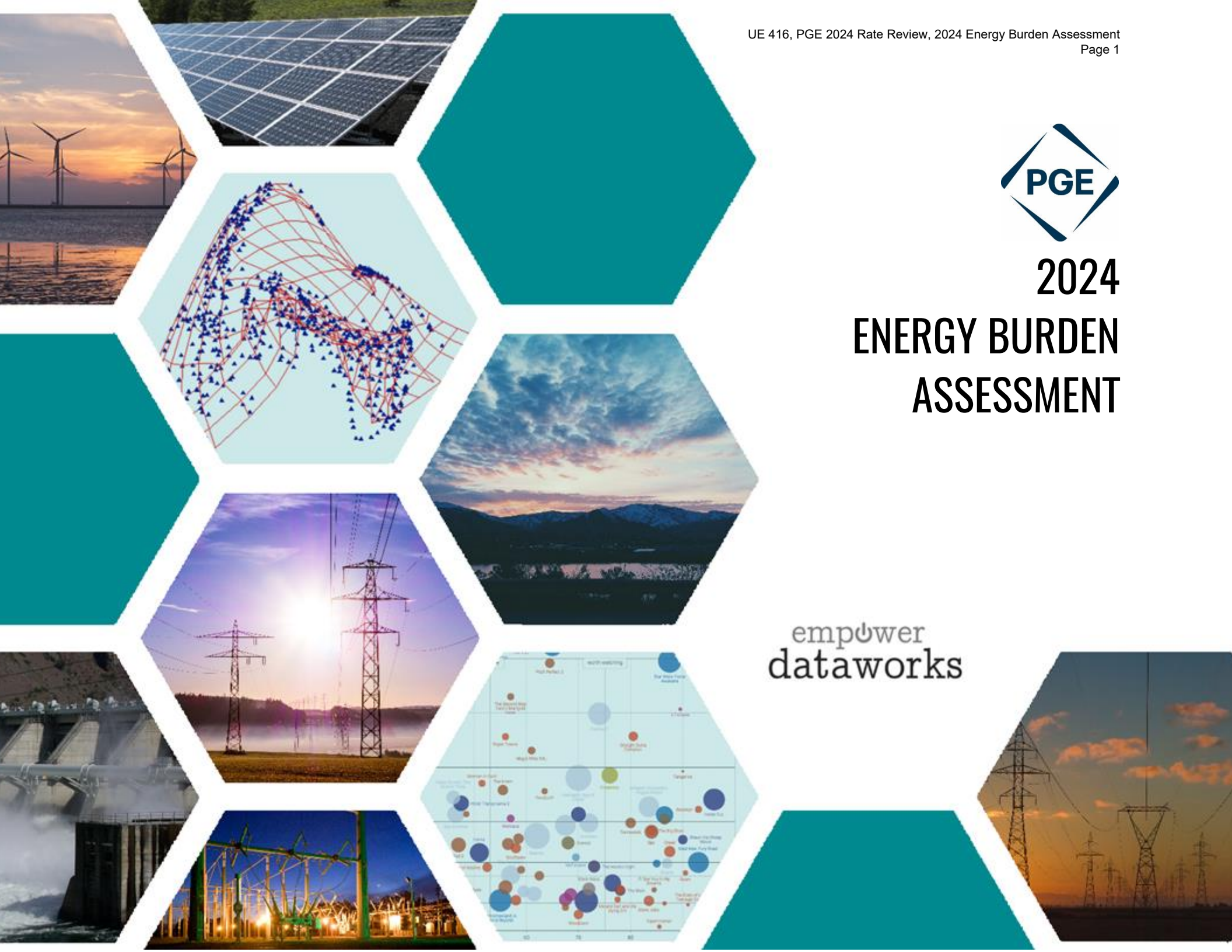
UE 416, PGE 2024 Rate Review
Results from PGE's 2024 Energy Burden Assessment

Attachment



2024 ENERGY BURDEN ASSESSMENT

empower
dataworks



2024 ENERGY BURDEN ASSESSMENT

JUNE 2024

PREPARED FOR

Rachel DeRosia and Jennifer Latu

Portland General Electric



PREPARED BY

Hassan Shaban, Ph.D.

Empower Dataworks

empower
dataworks

INTRODUCTION

This brief report presents the methodology and findings from Portland General Electric (PGE)’s 2024 Oregon energy burden assessment.

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1. METHODOLOGY

1.1 GENERAL APPROACH

This energy burden assessment relies on collecting customer-level data, modeling missing attributes, then aggregating key metrics by geographic, demographic or building variables for analysis. Prior to this project, Empower Dataworks performed energy burden assessments in over 15 utility service areas (both gas and electric) using this approach. The methodology is also updated occasionally to align with energy assistance best practices. The energy burden assessment results are typically used to guide program design, evaluate the performance of energy assistance programs and develop targeted marketing and outreach strategies.

The customer data (including estimated household income) comes from various sources as described in the rest of Section 1. Some demographic attributes were modeled or inferred using statistical techniques due to lack of primary data in the Customer Information System (CIS) or other sources. American Community Survey data was mainly used to sanity check aggregate statistics of customer-level data at the census tract level.

Three types of metrics were calculated:

- Metrics related to energy burden based on demographic and geographic characteristics
- Participation and funding in Energy Assistance Programs
- Customer energy use characteristics

The final dataset and results were provided to PGE staff.

1.2 DATA SOURCES

The data sources leveraged for the analysis are described in this section.

DATA PROVIDED BY PGE

PGE provided various customer-level datasets to Empower Dataworks to enable this analysis. Data sharing was governed by a confidentiality agreement between Empower Dataworks and PGE. Empower Dataworks was also subject to various cybersecurity requirements to safeguard customer data.

Customer Information System (CIS): This data included monthly electricity bills for 24 months between January 2022 and December 2023, account numbers and service addresses. A separate data extract included the dates and customer accounts that received late payment and disconnection notices, allowing us to calculate the on-time payment rate for different customer segments.

Direct Assistance Program Data: We received a list of participating accounts in the Income Qualified Bill Discount (IQBD), LIHEAP and OEAP between January

2022 and March 2024, along with discount amounts and dates. This allowed us to calculate the total assistance funding at the household level.

Demographic Data: PGE provided data from a third-party data compiler that aggregates data from a variety of sources. This data was mapped to the CIS dataset using customer addresses and included estimated household income, and homeownership status for most residential households. Demographic attributes for some customers were modeled due to lack of primary data in CIS or other sources. The modeling approaches are described in the next section.

DATA OBTAINED FROM OTHER SOURCES

Geocoding: We mapped the latitude/longitude of customer premises to census tracts, block groups and blocks in order to pull additional aggregate statistics.

County Assessor Data: We obtained publicly available assessor data from seven counties in PGE's service area. The assessor data included appraised values for homes, square footage, building year built, building types (residential, mobile homes, commercial and industrial), number of buildings on a land parcel, and other minor data points that were useful for performing general QA.

The addresses in this dataset were standardized to US Postal Service format, then matched with addresses in the CIS data. Some addresses existed in the CIS data but not in the assessor data (typically happens when multiple buildings occupy the same land parcel).

American Community Survey (ACS): ACS data (2017-22 5 year averages) was primarily used for QA to ensure that aggregate counts for various demographic attributes match the expected distributions from ACS.

1.3 FINAL ATTRIBUTES AND METRICS

The calculation methods for the metrics and attributes used in this report are described in this section. For all attributes, we also captured metadata related to the source of data and the confidence in the value (for example, data from primary sources has a high confidence, while modeled data has lower confidence). All of the data is robust for aggregate analysis, while high confidence data is better suited to customer-level marketing and program targeting.

Household Income: Estimated household incomes were obtained using three methods: (i) self-attested incomes for program participants, (ii) third-party purchased and calibrated demographic data, and (iii) modeled income for households with missing data. Self-attested household income was available for about 68,000 households that had participated in IQBD and declared their household income. Third-party estimated income data was provided by PGE. This data is sourced from public or commercially available data sources. Since household income from data vendors can become outdated quickly, we adjusted the unverified household

incomes by a constant percent, so that the median household income in each county matched the median household income from the [DOE LEAD tool](#) and the Federal Reserve’s [FRED tool](#). The income data included missing values for approximately 13% of households. For households with missing income data, an estimated income was calculated as the average of the incomes of the five geographically closest households.

Poverty Status: The number of people living in a household cannot be easily obtained from any public data sources. This makes it difficult to identify a household’s poverty status compared to the State Median Income, which is defined by household size. The median household size in the six main PGE counties varies from 2.3 to 2.7. In general, we used the income limits for two person households in this analysis as they produced the best estimates of state median income tiers compared to the DOE LEAD tool.

Validation: According to the DOE LEAD tool, between 24-32% of households in counties served by PGE would fall under 60% of the State Median Income. This estimate

is not specific to PGE customers. In this assessment, the county poverty rates range from 20-31% (with an approximately 10% margin of error), which is within the census range.

Building type: Meters were classified into one of five building types: single family, mobile homes and auxiliary dwelling units, multifamily apartments, commercial or master metered and unoccupied. Commercial meters were those tagged with a specific commercial use by the county assessor or that were on a commercial rate class. Additionally, we filtered out meters using in excess of 60,000 kWh per year as those are likely associated with commercial uses or are master metered. Meters that showed energy consumption less than 1,200 kWh/year were flagged as potentially unoccupied or vacation homes.

Overall, the number of residential meters was 827,000. When excluding high-use and low-use outliers (suspected seasonal, unoccupied or master-metered), the final number of occupied households for the analysis was approximately 800,000. The county assessor property use codes were parsed to identify apartments and mobile homes. Finally, PGE has internal data to identify single

family and multifamily homes – this was used to label the remaining homes.

Validation: The aggregate housing type counts (65% single family, 32% multifamily) are very similar to data from the DOE LEAD tool (67% single family, 30% multifamily).

Homeownership Status: PGE provided data from its CIS system on homeownership status (rent vs. own). The data is usually reported by customers during account setup or changes.

Load Disaggregation and Heating Type: A simple load disaggregation was applied for all households using their monthly energy bills. This involved taking the tenth percentile of monthly energy use (normalized by the number of days in a billing period) as the assumed base load. Then, the energy use that exceeded the base load in the winter months (October through May) was designated as “heating-related energy use”, while the energy use that exceeded the base load in the summer months (June through September) was designated as “cooling-related energy use”. Heating fuel type was provided by PGE but could also be inferred from heating energy usage.

Energy Burden and Energy Efficiency Potential

thresholds: These thresholds were set as follows:

- Electrically heated:
 - High-burden threshold: Greater than 6%
 - High efficiency potential threshold: Greater than 14 kWh/sq.ft.
- Non-electrically heated:
 - High-burden threshold: Greater than 4% in marine climate counties and greater than 3% in cold climate counties – using climate zones defined by DOE¹. All of PGE’s counties have a marine climate.
 - High efficiency potential threshold: Greater than 7 kWh/sq.ft.

Energy Burden: Energy burden for a household is calculated simply by dividing annual electricity expenses by gross household income.

$$\text{Energy Burden } [\%] = \frac{\text{Annual Electricity Expenses } [\$]}{\text{Annual Household Income } [\$]}$$

Excess Burden: Excess burden is the portion of a household’s energy burden in excess of the high burden threshold.

$$\begin{aligned} \text{Excess Burden } [\$] &= \max(0, \text{Energy Burden } [\%] \\ &\quad - \text{High Burden Threshold} [\%]) \\ &\quad \times \text{Annual Household Income } [\$] \end{aligned}$$

On-Time Payment Rate: This is the proportion of all energy bills that did not require a late payment or disconnect notice to be sent out.

¹ The current accepted high energy burden threshold (6%) is a rule of thumb developed by Fisher, Sheehan and Colton based on total household energy expenses (gas + electricity + delivered fuels). There is currently no guidance on flagging high burden for non-electrically heated homes. The state of New Jersey uses a split high burden threshold by fuel: for customers with natural

gas and electric service from different utilities, no more than 3% of income should be devoted to each. We use this as a guideline for non-electrically heated homes in this assessment, recognizing that there could be different interpretations or methods for designating customers as “high-burden”.

Energy Assistance Funding: The dollar amount of funding flowing through energy assistance programs (including discount, donation and weatherization programs) through discounts or rebates.

Customer Bill Reductions (Avoided Burden): The total bill impact (in dollars) from energy assistance programs.

Avoided Need: The total bill impact (in dollars) from energy assistance programs, specifically for program participants flagged as “high-burden”. Bill impact is equal to the amount of assistance grants or discounts for direct assistance programs and is equal to measure savings (kWh/year) multiplied by the residential kWh rate (\$/kWh) for energy efficiency programs.

Census Tract Statistics: Since each customer has been mapped to a census tract and block group, we are also able to match customers to census tract average statistics (e.g. highly impacted communities, presence of children,

non-English speakers, education level, environmental pollution etc.).

Energy Assistance Need: This is the sum of excess burden across all customers.

2024 Projections: Since PGE customers experienced a large (~18%) rate increase in January 2024, some figures in this assessment related to need and energy burden are projections for 2024 including the impact of the rate increase. The 2024 energy bills were projected by using the 2023 energy usage for customers and applying the 2024 rate structure. 2024 household incomes were estimated by adding a 7% multiplier to the estimated 2023 household incomes (LIHEAP and OEAP applied a 7% income adjustment to their 2024 income guidelines compared to 2023). This will be noted where relevant.

1.4 SOURCES OF UNCERTAINTY

- **Household income** is a dynamic piece of data as residents move in and out of homes and income data can become outdated within a year or two.

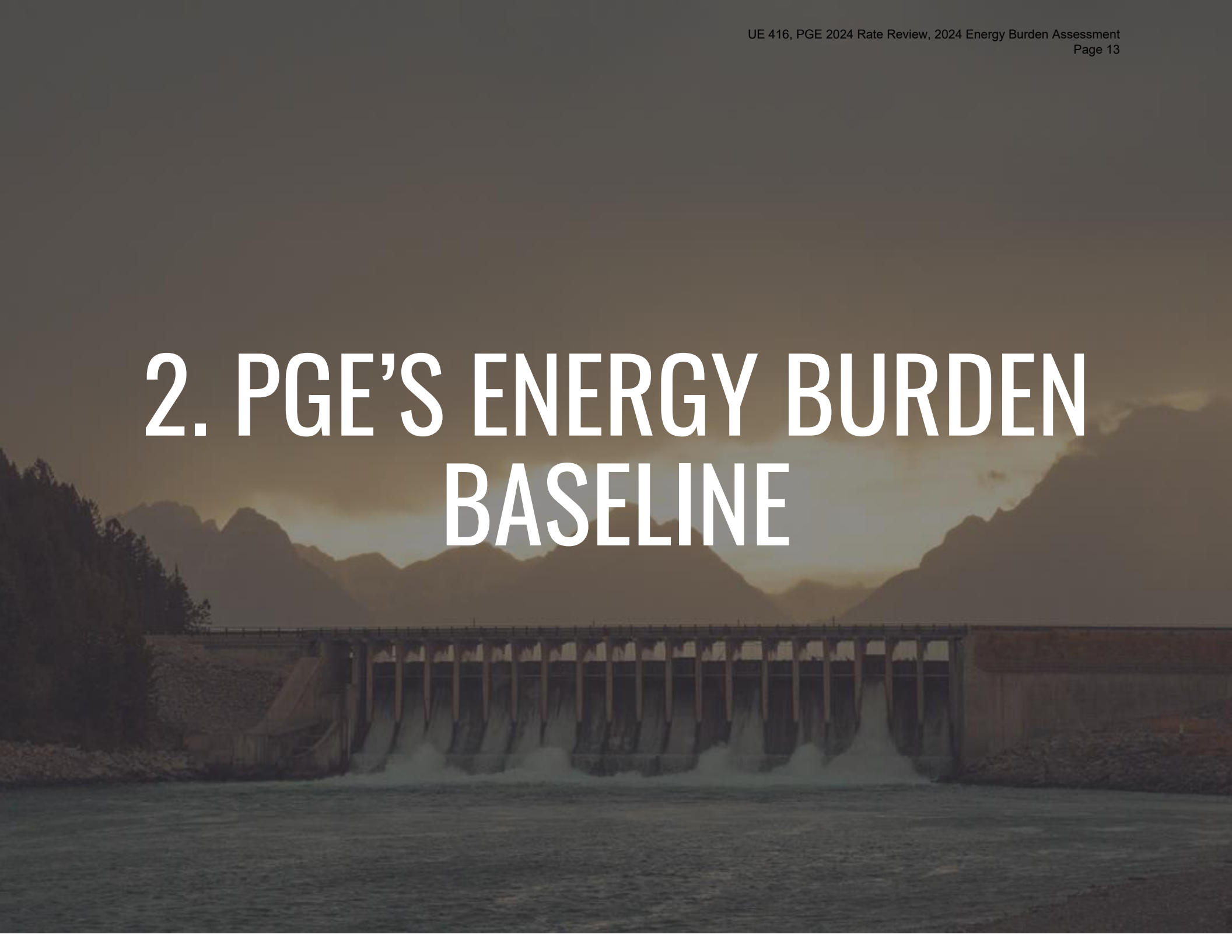
- **Poverty status.** Since household size cannot be reliably captured through any available data source, household poverty status is subject to uncertainty. The State Median Income uses household size as a scaling factor. In this analysis, we have used income thresholds for 2-person households for consistency and clarity, but they may under-estimate or over-estimate the actual income eligibility depending on the actual sizes of low-income households in this service area.

- **Individual vs. aggregate data usage.** The underlying dataset has customer-level flags for data quality – data from primary sources is considered high quality while modeled data is considered medium or low quality, depending on the availability of supporting sources of information (example, home values and location). Higher quality data can be used for individual program targeting, lower quality data can be used for program design and aggregate reporting.

- **Building types.** There is some uncertainty in the classification of building types as described in Section 1.3. This could result in misclassifying non-residential meters as occupied households or single family/mobile homes as multifamily.

- **Achievable reductions in energy assistance need.** This analysis presents a *technical* energy assistance need based on energy burden. However, in our experience with energy assistance programs in general, many customers may not participate in programs, regardless of program design or available benefits due to a variety of barriers like access to information, application process difficulties, stigma and lack of trust. Understanding the *economically achievable* reduction in energy assistance need through utility programs would require a qualitative research of non-participants in a utility's service area.

2. PGE'S ENERGY BURDEN BASELINE

The background image shows a large concrete dam with multiple spillways. Water is cascading over the spillways, creating white foam. The dam is situated in a valley with mountains in the background. The sky is a mix of orange and grey, suggesting a sunset or sunrise. The overall scene is somewhat dimly lit, with the text overlaid in white.

2.1 PGE RESIDENTIAL SECTOR PROFILE

PGE’s service territory in Oregon was composed of approximately **800,000 occupied households** in 2023 (exceeding a minimal level of 1,200 kWh/year of energy use and not exceeding 60,000 kWh/year).

Ethnicity: According to the U.S. Census Bureau, approximately 68% of residents in PGE’s service area are non-Hispanic white. Hispanic residents comprise 16% of the population, mainly concentrated in Marion county.

Household Income: The median household income for residents in PGE’s service area was approximately \$94,000 in 2023, above the state median. Approximately **24%** of residents would fall under 60% of the State Median Income (see table on following page for SMI values). An additional 16% of households earn between 60-100% of the state median income. These “borderline” customers would be ineligible for almost all energy assistance programs, but may still bear a relatively high level of energy burden. Designs for programs that are ratepayer-funded should take into account the degree of additional burden that would be imposed on these customers.

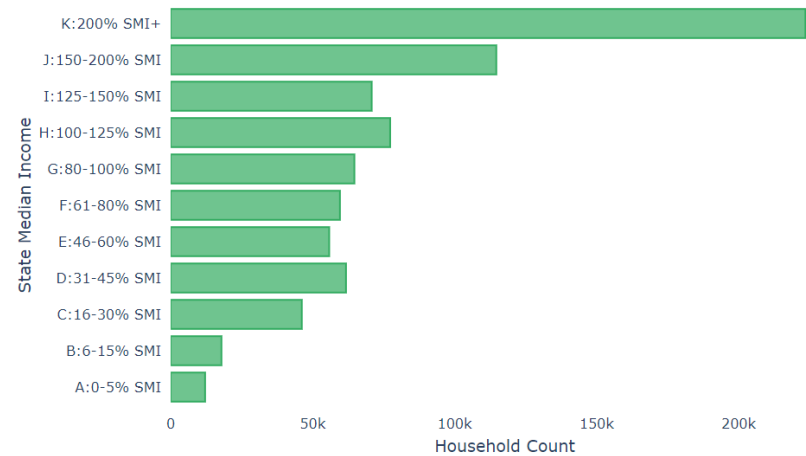


Figure 1. Distribution of households by household income as a percent of state median income for PGE residential customers

Household Size	60% of Annual State Median Income (SMI)	
	2023	2024
1	\$31,266	\$33,427
2	\$40,886	\$43,712
3	\$50,506	\$53,997
4	\$60,126	\$64,282
5	\$69,747	\$74,567
6	\$79,367	\$84,852
Each additional member	\$1,803	\$1,929

Energy Bills: PGE’s residential volumetric electricity rates are somewhat high for the region, but the basic charge is relatively low. Annual energy bills average **approximately \$1,900/year (2024 projection) with an average annual consumption of 9,800 kWh**, with approximately 46% of customers using electricity as a primary or secondary heating fuel. Figure 2 shows the distribution of annual electricity bills.

Home Vintage: Of the homes with a known age, approximately 46% were built after 1980, 40% were built between 1940 and 1980, with the remainder built prior to 1940. Older homes have more opportunities for weatherization, while newer homes could benefit more from lighting, controls and efficient appliances.

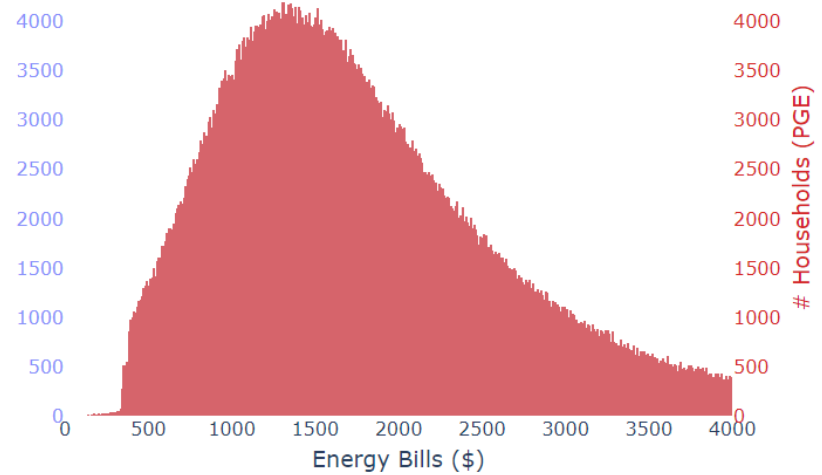


Figure 2. 2024 Household electricity bill distribution for PGE residential customers

2.2 ENERGY BURDEN

PGE customers have an **average and median electricity energy burden of 4% and 1.8%**, respectively. Figure 3 compares PGE’s median total energy burden (including an estimate of gas burden for non-electrically heated households) to values published in other jurisdictions. The median burden is comparable to metropolitan regions in the Pacific Northwest.

The average household will pay \$1,900/year in electricity bills in 2024. Of 800,000 identified households, **140,000 were deemed to have a high energy burden**, of which an estimated 118,000 would fall under 60% State Median income - meaning that annual electricity bills exceeded 6% of their income for electrically-heated homes and exceeded 4% of their income for non-electrically heated homes. Low-income high-burden customers paid an average of \$2,300 in annual electricity bills; the higher bill average reflects their higher likelihood to live in less efficient or older homes. The **total energy assistance need for PGE customers in Oregon is approximately \$155M across all incomes and \$133M in households that earn under 60% SMI**—this is the total reduction

that would bring all customer electricity bills below the high burden threshold (6% of income for electric heat and 4% for non-electric heat).

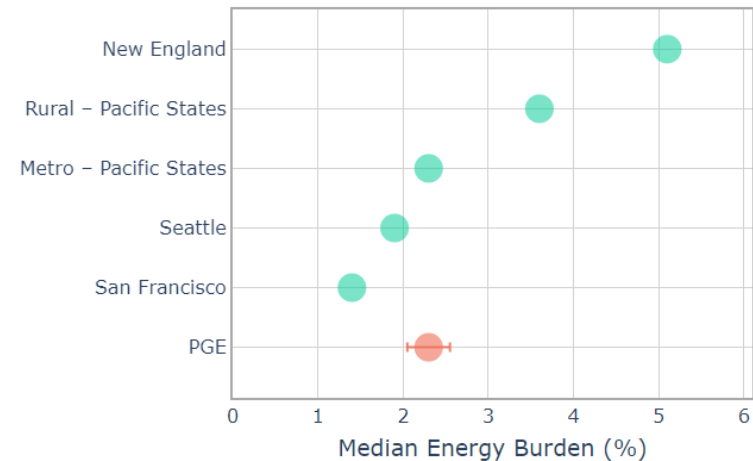


Figure 3. Energy burden benchmarking vs. other regions. Data for other regions is the median across each region, not specific to any utility.

PGE’s energy charge in its 2024 residential retail rate is approximately 16.5 cents/kWh, which is higher than other utilities in the region but in line with the national average of 16 cents/kWh. High energy use combined with high per kWh charges, appear to be the most significant drivers of high energy burden in the area.

Although averages and medians give a general indication of energy burden across a service territory, the reality is that **energy burden is a customer-level metric** and its distribution is a better indicator of the burden that customers experience. The distribution of energy burden among PGE customers is shown in Figure 4.

The goal of an effective energy assistance portfolio should be to prioritize the customers who most need the assistance, i.e. the customers exceeding the 6%/4% thresholds.

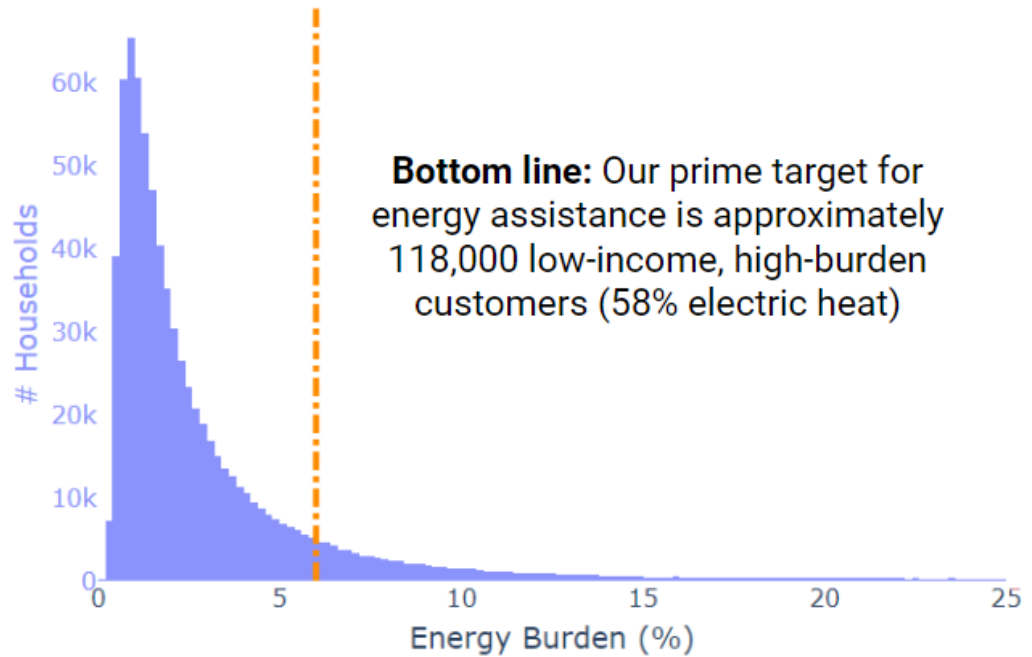
Approximately 60% of the energy assistance need is borne by single family households, with 32% in multifamily homes. 55-60% of the energy assistance need for PGE customers is among renters, highlighting the challenge of reaching these customers through energy efficiency or weatherization. Other customer segments can be investigated in more detail in the data dashboard.

Number of Occupied Households
~800,000

Low Income Households Under 60% SMI:
~190k ± 10%

High Burden Households*
~140,000 (all)
~118,000 (LI)

Median Electricity Burden of high-burden households
~8.3%



*Energy bills and burden are calculated without factoring in any forms of energy assistance

Figure 4. Distribution of energy burden among PGE customers.
Figure shows all homes but dashed line indicating 6% high energy burden threshold applies to electric heat households.

2.3 ENERGY EFFICIENCY VS DIRECT ASSISTANCE

Figure 5 shows the distribution of energy burden and energy efficiency potential (defined through Energy Use Intensity thresholds) across all low-income residential customers. In a perfect world, the energy assistance portfolio would match these customer segments. For example:

- Energy efficiency and weatherization programs should primarily serve **high burden, high potential** households
- Direct assistance programs should primarily serve **high burden, low potential** households
- Crisis/emergency programs should primarily serve **low burden, low potential** households
- Traditional energy efficiency programs with financing should serve **low burden, high potential** households

Aligning targeted customers with program strengths results are the most cost-effective pathway to energy burden reduction.

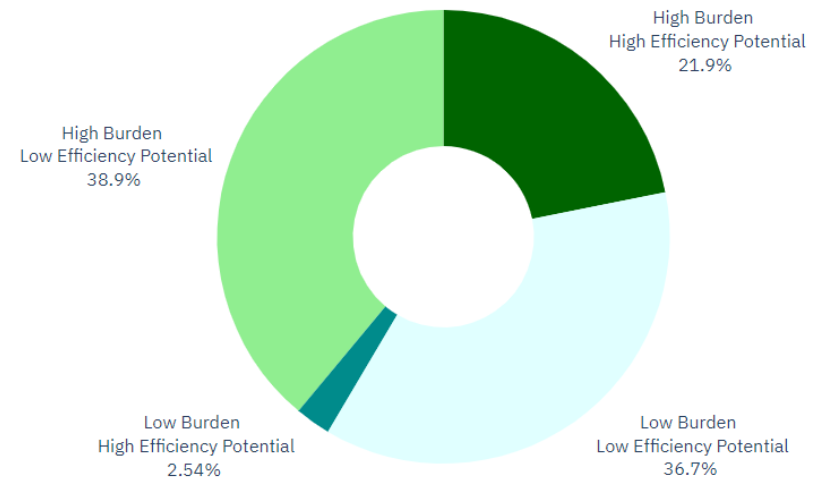


Figure 5. PGE low-income customer segments by energy burden and energy efficiency potential.

Approximately 37% of PGE’s low-income customers are low-burden and low-efficiency potential. These customers’ energy bills may not be a huge expense relative to housing, medical and education expenses, and they should not be prioritized in the more intensive programs, such as weatherization.

Almost 36% of high burden customers also have a high efficiency potential indicating that the energy assistance program mix should equally prioritize sustained energy burden reductions through energy efficiency and weatherization. Within this group of low-income, high-burden and high efficiency potential households, approximately 54% live in single family homes and 67% are renters. While energy efficiency is a more sustained form of energy burden reduction, we should recognize that scaling up low-income weatherization faces a host of barriers. Energy efficiency and direct assistance are not mutually exclusive and these customers are also in need of more immediate assistance options (through rates, grants or discounts).

3. KEY CUSTOMER SEGMENTS

A11

A12

HOUSE

3.1 OVERVIEW

This section presents statistics and profiles related to some key customer segments in PGE’s Oregon service area. These customer segments were selected for a combination of reasons:

1. Flagged in this assessment as having high overall burden or high prevalence of energy burden
2. Identified as having low access to existing programs
3. Identified as vulnerable through the Department of Energy’s environmental justice screen

This analysis is primarily geographic, focusing on specific neighborhoods. The maps in the following sections display the level of energy assistance need in these areas as well as locations of social services for potential outreach (green dots).

These customer segments represent only a portion of the high energy burden among PGE’s customers, but they are intended to serve as an example of the targeting analysis that PGE can perform for their programs or outreach initiatives in the future.

3.2 POWELLHURST-GILBERT

Census tracts: **41051008400, 41051008500, 41051009000**

Total Assistance Need: **\$2.9M (1.8% of total need)**

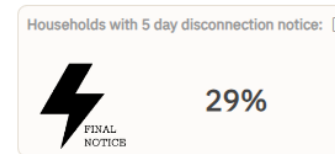
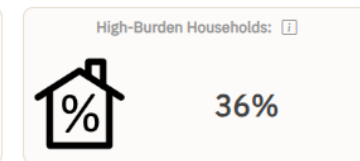
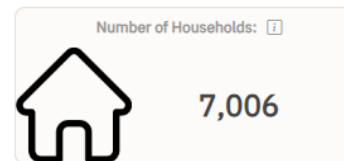
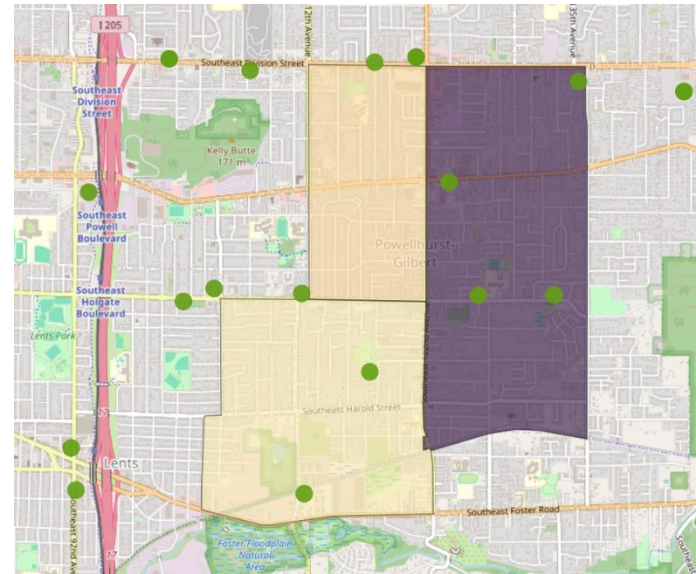
Total Assistance Funding: **\$1.5M (2.3% of total funding)**

People of Color: 44%

Linguistic Isolation: 11%

PROFILE: The Powellhurst-Gilbert area of Eastern Multnomah county is a very diverse community with over 44% people of color and over 11% of the population living in linguistic isolation (Asian, Spanish and East European). Members of this community tend to be renters (~60%) living in older homes (45 years old on average) but with a generally high housing burden. On the other hand, it appears to be well served by existing assistance programs.

RECOMMENDATIONS: This area is relatively densely populated and can be effectively reached through social media as well as by connecting to large property managers. Outreach to local businesses can also help reach customers and bridge the linguistic divide. On-site energy bill clinics or door-to-door canvassing could also provide a positive customer touchpoint for encouraging customers to apply to assistance programs.



3.3 ESTACADA AND ITS OUTSKIRTS

Census block groups: **410050242001, 410050242002**

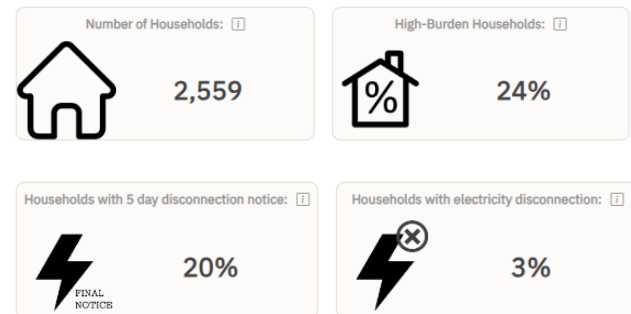
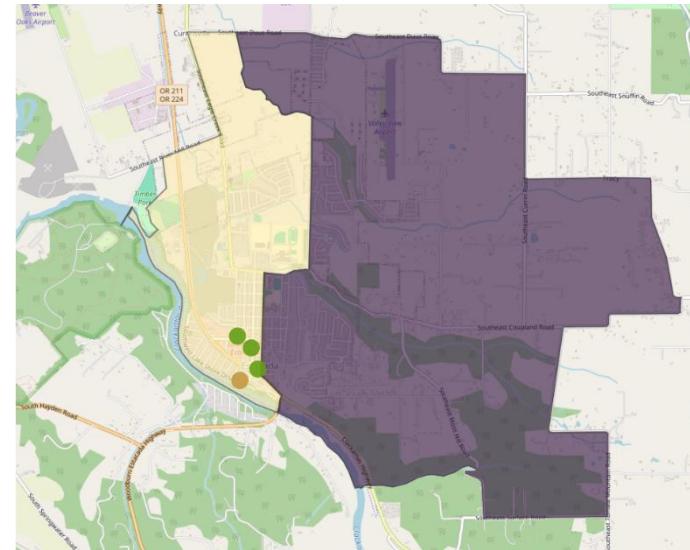
Total Assistance Need: **\$870k (0.6% of total need)**

Total Assistance Funding: **\$300k (0.4% of total funding)**

High Efficiency Potential households: **28%**

PROFILE: The area around Estacada has a moderate level of energy burden, with 24% of households experiencing high energy burden. The region was flagged for having a lower than expected participation rate and high energy efficiency potential. Most of these residents are single family homeowners.

RECOMMENDATIONS: The area should be prioritized for weatherization or lighter touch energy efficiency (e.g. energy savings kits, thermostats and air sealing), as many customers have a high energy savings potential and own their homes. Outreach through traditional community based organizations may be challenging because of location, but connecting with schools and local churches might be more productive.



3.4 GERVAIS AREA

Census block groups: **410470025021, 410470025022, 410470025023, 410470103031, 410470103032**

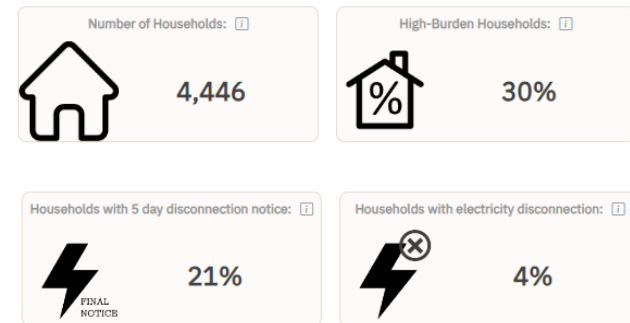
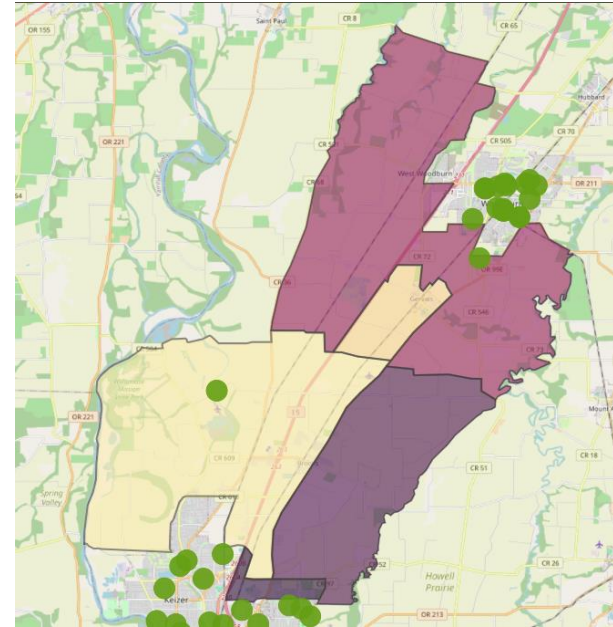
Total Assistance Need: **\$1.9M (1.2% of total need)**

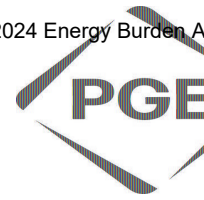
Total Assistance Funding: **\$500k (0.7% of total funding)**

People of Color: **48%**

PROFILE: The area around Gervais in Marion county is mostly rural and agricultural. There is a high proportion of Hispanic households and 15% of customers live in mobile homes, with the remainder living mostly in owned or rented single family homes. Although housing burden is relatively low, households use 13,200 kWh/year on average (35% more than the average for PGE), with annual electricity bills slightly over \$2,500/year. Households in this area appear to be underserved by existing programs.

RECOMMENDATIONS: The area itself does not have many social services (most are either in Salem to the south or Woodburn to the north). Given the nature of the area, it may require more boots-on-the-ground culturally/linguistically appropriate outreach to reach households in need, perhaps through county fairs, rural resource fairs or local events.

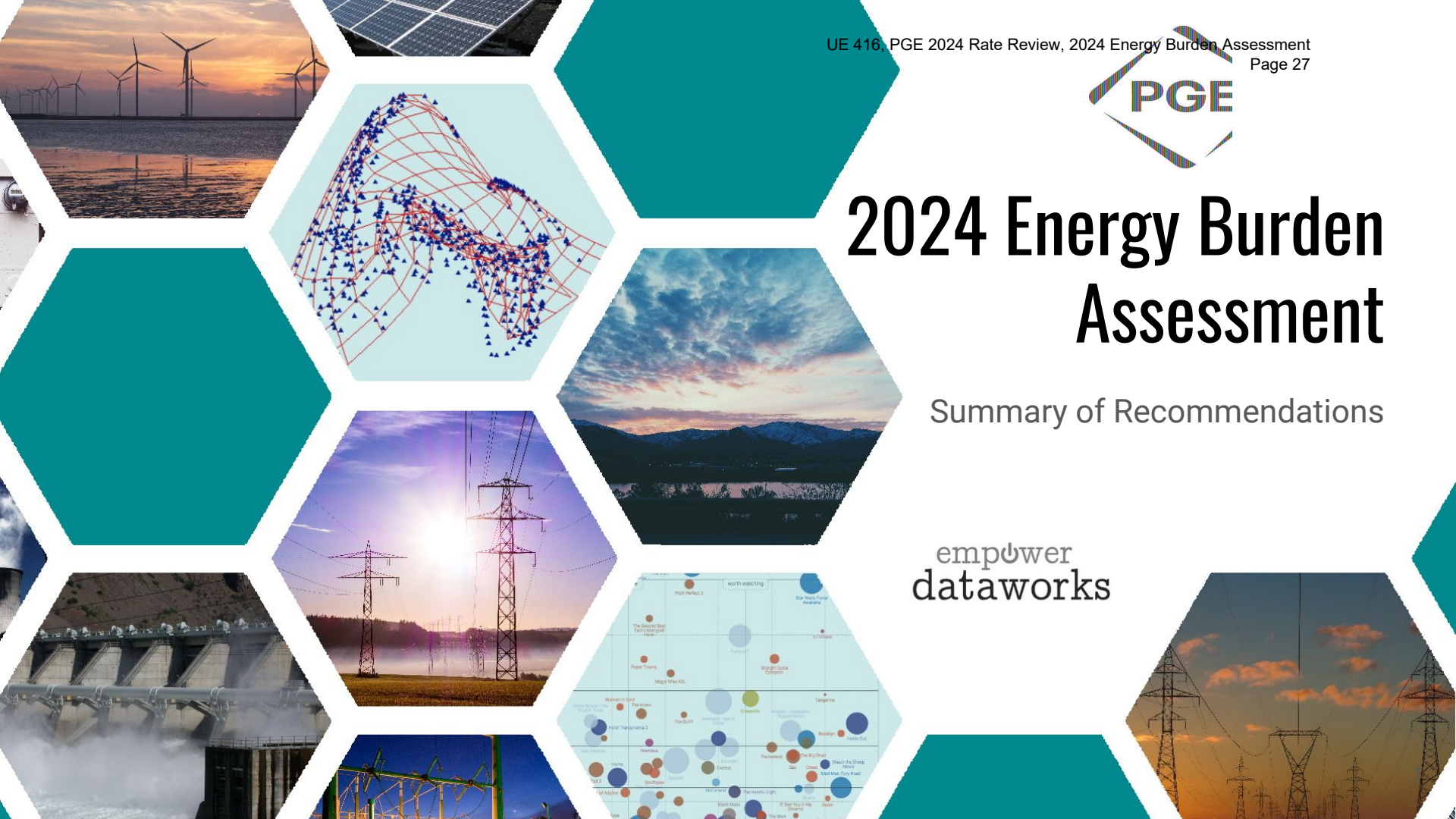




2024 Energy Burden Assessment

Summary of Recommendations

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Main Takeaways - Energy Burden Assessment

- **The IQBD program is operating effectively and is following energy assistance program best practices. There are no major recommended changes to the foundation of the program.**
- In 2024, total energy assistance funding is expected to exceed 51% of the energy assistance need for PGE's customers and IQBD is growing quickly to fill that gap.
- Most recommendations in this assessment are auxiliary components that can be added to PGE's energy affordability portfolio:
 - **Enrollment:** How to keep up the momentum of program enrollment as the IQBD program matures
 - **Arrearages:** How to best serve customers at risk of disconnection
 - **Energy Efficiency:** How can we leverage energy efficiency for sustained energy burden reduction
 - **Energy assistance hole:** How to best serve customers who have unaffordable bills but are ineligible for assistance programs
 - **Other:** How do we design more equitable rates, smooth the impact of rate increases, modulate the ups and downs of our programs and target assistance at customers who need it the most

Summary of Recommendations

	Recommendation	Cost/Complexity	Impact/Priority	Timeline
IQBD	Track energy assistance funding percent as an IQBD evaluation metric	Low	Low	2025
	Focus immediate IQBD outreach efforts on 0-15% SMI households	Medium	Medium	Q3 2024
	Communicate about IQBD program to customers at risk of disconnection	Low	Medium	Q3 2024
	Assess impact of enhanced discounts for lower income tiers	High	High	Q3 2024
	Reduce need for reapplication of fixed income IQBD participants	Low	Low	Q4 2024
	Implement a targeted post-enrolment verification protocol	Low	Medium	2025
Program Portfolio	Assess impact of retroactive application of bill discount for customers in arrears (arrearage forgiveness)	Low	Medium	Q4 2024
	Initiate a Program Navigator fund for partner nonprofits to help customers access programs	Medium	High	2025
	Adjust timing of marketing about the IQBD and other energy assistance programs	Low	Low	Q3 2024
	Implement an energy use diagnostic protocol for high users in energy assistance programs	Low	Medium	2025-26
	Consider an energy audit program for high users in energy assistance programs	Medium	High	2025
	Allocate energy efficiency funding to low-income, high-burden customers	High	High	2026+
Other	Consult with advisory groups on potential solutions to help households under state median income but above energy assistance income thresholds	Medium	Low	2025
	Adjust timing of rate increases	Low	Medium	2025
	Consider revisiting fixed charge component of residential rate schedule	Medium	Medium	Next GRC

Insights: High-level Affordability Gap

Low-Income, High Burden
Households

~118,000



Income-eligible only



2024 Projection not including additional
program participation:
LIHEAP + OEAP + third party funding: \$25M
IQBD: \$43M

→ At program maturity (year 5+), best practice is to target at least 60-70% of the need available as program funding - with additional projected participation, IQBD should hit this target in 2025. Once this target is reached, participation usually slows down and focus shifts to program optimization and targeted outreach.

Recommendation: Track total energy assistance funding as a percent of energy assistance need as an annual metric

Discount Tier Analysis

Recommendation: Assess the feasibility and benefit vs. cost of enhanced discounts for lower income tiers

Example: Increase discounts to 90% & 70% or combine into one tier at 75% discount

Estimated budget impact at current enrollment (Q1 24):
90%: ~\$5.1M (+12%)
70%: ~\$4.6M (11%)

Example: Enhance discount for this group who is under the federal poverty level to 50% discount

Estimated budget impact at current enrollment (Q1 24): ~\$11M (+26%)

Income tier	Discount Level	Average need of high-burden households as a percent of bill
0-5% SMI	60%	90%
6-15% SMI	40%	67%
16-30% SMI	25%	45%
31-45% SMI	20%	23%
46-60% SMI	15%	16%

Current discount rates are suitable

Arrearage Relief

Challenge:

Some customers do not address arrearages until an actual disconnection happens.

Recommendations:

Awareness of programs: Ensure that all late payment and disconnect notifications include information about IQBD, payment plans and payment extensions. Enhance communication about IQBD to customers at risk of disconnection.

Arrearage relief for program participants: Assess the feasibility and benefit vs. cost of a capped budget arrearage relief program. For simplicity, the program could be made available to IQBD participants with arrears and apply the customer's bill discount percent retroactively for arrears up to a limit (e.g. X% discount on first \$1,000 of arrears).

Pilot estimate: \$1M arrearage relief fund can likely serve 3,000-4,000 IQBD arrears customers.

Diversity of Service Territory

Challenge:

PGE's service territory has a myriad of cultures and ethnicities, a variety of economic backgrounds, urban and rural households and more. PGE cannot feasibly become an expert in outreach to every community within its service area.

Recommendation:

Program Navigator Fund: Incentivize local community-based organizations (CBOs) to refer and support customers in applying for the program. These CBOs would serve as the "Program Navigators" would be CBOs that register with PGE and would be compensated per successful customer application. Program Navigators would be trained to refer customers to other programs (e.g. LIHEAP, Energy Trust, etc.) in addition to IQBD and assist with the application process.

Pilot estimates: \$200k fund, \$75 per successful application. Program/pilot may be coordinated jointly with NW Natural.

Energy Efficiency Potential

Challenge:

High energy users overutilize program funds while the root cause of their high energy burden remains unaddressed. There are 47,000 low-income customers who would potentially be good candidates for energy efficiency measures, but existing low-income EE programs serve relatively few households.

Recommendations:

First step towards integrating energy efficiency with IQBD is to identify and understand the high use participants.

Energy use diagnostic: Develop a protocol for outbound customer service advisors to contact high-use households, perform a diagnostic of their hourly energy use, and collect data related to the drivers of high energy use. Estimated staff time: 15-20 minutes per successful outbound call.

Energy audit program: Establish a energy audit pilot program (through RFP) that focuses on the top 2,000 or so users in IQBD (\$1.5M approx. budget). Program should include walkthrough energy audit, ETO and EE credit referrals, direct install (LEDs, aerators). List of high priority homes should be provided to program implementer. This program can be designed to be cost-effective through realized savings in IQBD discounts.

Coordination with energy efficiency providers: Work with ETO and CAP agencies to target EE funds at low-income, high burden households.

Addressing high-burden, program-ineligible households

Challenge:

There are households that are not eligible for existing programs but need assistance.

This includes households that:

- Are under the state median income, have a high energy burden, but are ineligible for assistance
- Constrain their energy use due to lack of affordability and lack of program access
- Are **A**sset **L**imited, **I**ncome **C**onstrained, **E**mloyed
- Earn above the program income thresholds but under the Self Sufficiency Standard Income

Recommendations:

Difficult to solve through PGE because most customers in this category would benefit most from energy efficiency. Consult with stakeholders on best approach:

- Option 1: Energy assistance path: Allocate a budget for customers in an additional income tier (60-100% SMI) - perhaps a fixed one-time grant - equivalent to one average winter bill (\$150-200)
- Option 2: Work with Oregon Energy Fund on expanding eligibility for their program and increase annual donation
- Option 3: Work on expanding access to the Oregon on-bill financing program for energy efficiency - perhaps through waived or reduced interest and fees for income-eligible households

Managing the Demand Cycle

Challenge:

Varying demand can strain program staff, overload customer service advisors and delay application processing.

Recommendations:

Reduce need for reapplication: Allow fixed income customers (34% of total) to reapply every 4-5 years instead of every two.

Communication timing: Biggest marketing pushes should be in September/October **before** high bill season. Include communication about projected winter bills including rate increases and energy efficiency tips to encourage customers to apply early.

Rate increase timing: Consider delaying annual rate increases to April of each year instead of January 1st to avoid bill shock from cold weather + rate increases.

Post-enrolment verification

Challenge:

IQBD was designed with self-declared income and the intent was to establish a post-enrolment verification process for 3% of participants in a random draw.

Recommendations:

Targeted verifications: Instead of random process, consult with IQBD advisory group to determine criteria for initiating a verification (e.g. high property value, own multiple properties, high estimated income).

Potentially use remunerated program navigators (see above) to assist customers with responding to the verification request.

Audit Protocol for Self-Verification and Auto-Enrollment

The audit process and scoring algorithms are developed and operated within the utility - customer audit lists are shared with agencies.

Data requirements:

- Home values
- Housing type
- Multiple accounts/seasonal homes
- Renter/homeowner
- Disconnect/past due notices
- Home location and average neighborhood energy burden
- Estimated customer income range (optional)

Once per quarter, calculate probability score of participants being eligible based on data (0-100)

Flag least probable 3-4% (lowest scores) for manual verification

Flag additional 2% random sample for manual verification

Connect flagged participants with agencies for document request

If more than 10% of audited participants fail audit, adjust audit algorithms

In case of non-response within X days or failed audit, customer is removed from program and directed to other programs

Continuous monitoring of audit metrics (esp. equity of audits and failure rates) and iterative improvement of scoring algorithms

Rate design

Cost of service for multifamily is not very different from single family. Single family can include old 900 sq. ft homes and brand new 7,000 sq.ft mansions.

The fixed charge also does not reflect PGE's true fixed costs (average of \$30 for the residential class). This encourages conservation and solar but low-income customers cannot afford these improvements.

Monthly Rate

The default plan is priced as the total of the following charges per Service Point (SP)*:

Basic Charge

Single-Family Home
Multi-Family Home

\$13.00
\$10.00

Transmission and Related Services Charge

0.678 ¢ per kWh

Distribution Charge

6.844 ¢ per kWh

Energy Charge

8.814 ¢ per kWh

Example of service size based fixed charge from Snohomish County PUD (North Seattle/Everett, WA):

Rate design

Recommendation:

Rate structure can be more aligned with cost of service **and** with customers' ability to pay. Consider splitting the fixed charge by service size (under 100 amps, 101-200 amps and 201+ amps), which fully reflects the cost of service and is much more aligned with income and ability to pay. The variable distribution charge might also be correlated to service size. Evaluate raising the fixed charge with a corresponding decrease in the kWh charge.

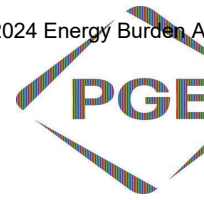
Other utility rate structures suggest a 3-4X spread between the smallest and largest service sizes (as opposed to 27% for single family vs multifamily).

Two additional changes can augment the small service size: (i) auto-enroll IQBD participants as small service (ii) introduce a gradient for future rate increases so that this tier experiences smaller increases

- **Small Service:**
 - Multifamily units
 - Services with panel sizes of 100 amps or less, or;
 - Supplemental “Add-on” services with panel sizes of 200 amps or less that are located on the same or contiguous parcels as a Schedule 7 dwelling unit billed to the same customer. Such services provide electricity to facilities that are used in conjunction with residential service but are not intended for human habitation such as garages, barns, or well pumps.
- **Medium Service:** Services with panel sizes of up to 200 amps and services connected prior to April 1, 2022 that do not qualify as Small Services.
- **Large Service:** Services with panel sizes greater than 200 amps and less than 401 amps.
- **Extra Large Service:** Services with panel sizes greater than 400 amps.

Base Charge per day:

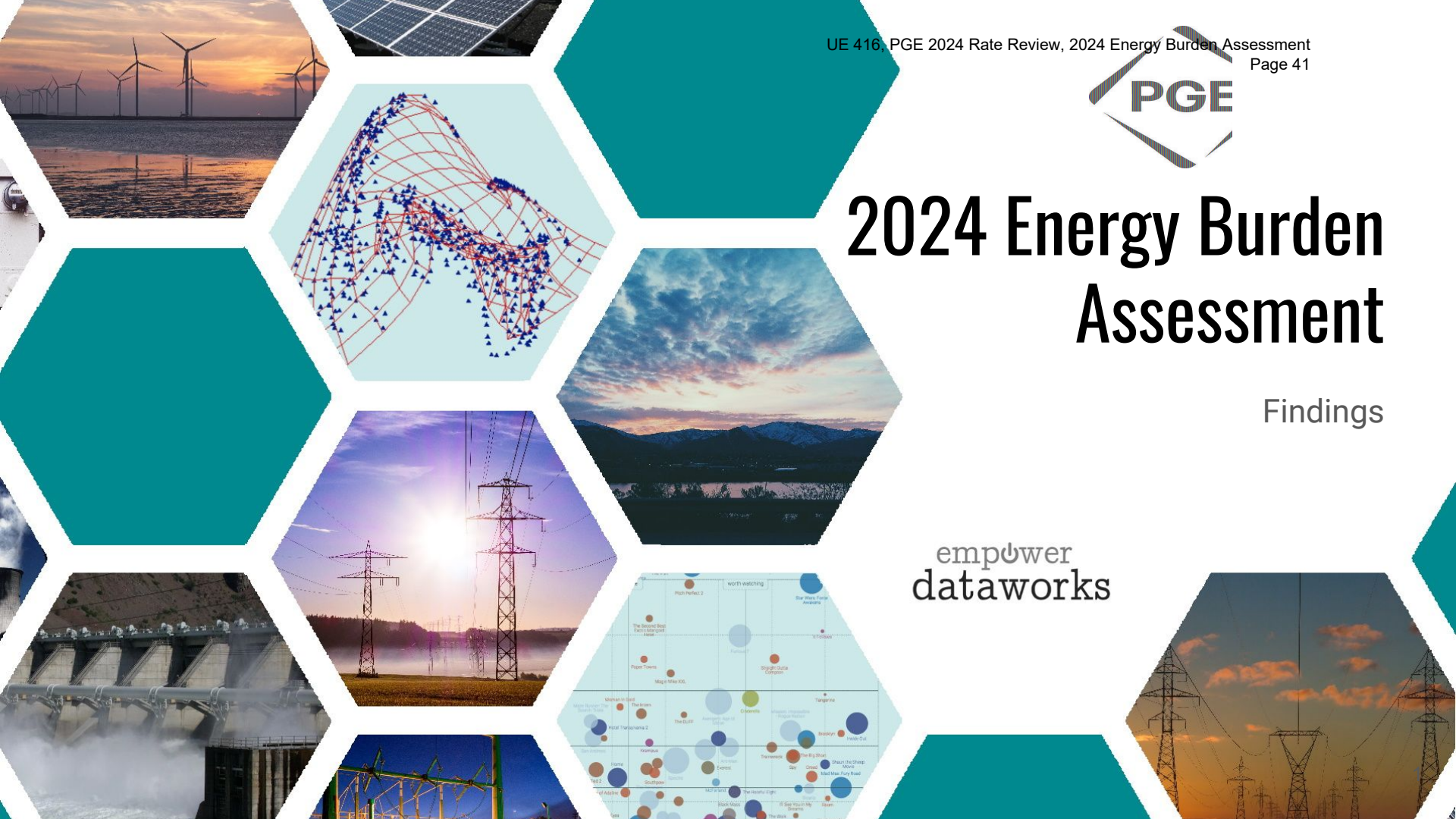
Effective Date	November 1, 2023	April 1, 2024	
Small \$/Day	\$0.22	\$0.36	\$10.80 / month
Medium \$/Day	\$0.35	\$0.59	\$17.70 / month
Large \$/Day	\$0.48	\$0.84	\$25.20 / month
Extra Lg. \$/Day	\$0.77	\$1.37	\$41.10 / month



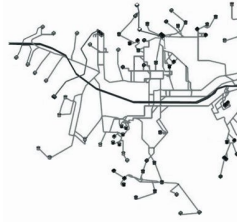
2024 Energy Burden Assessment

Findings

empower
dataworks



What is an Energy Burden Assessment?



Data analysis (not a survey) that uses utility and third-party customer data.



Primary purpose is to estimate the energy assistance need based on customer-level geographic, demographic and building data.



Comparing the need to actual program performance gives us an **actionable** path to improving our energy assistance programs

Energy Burden

Definitions

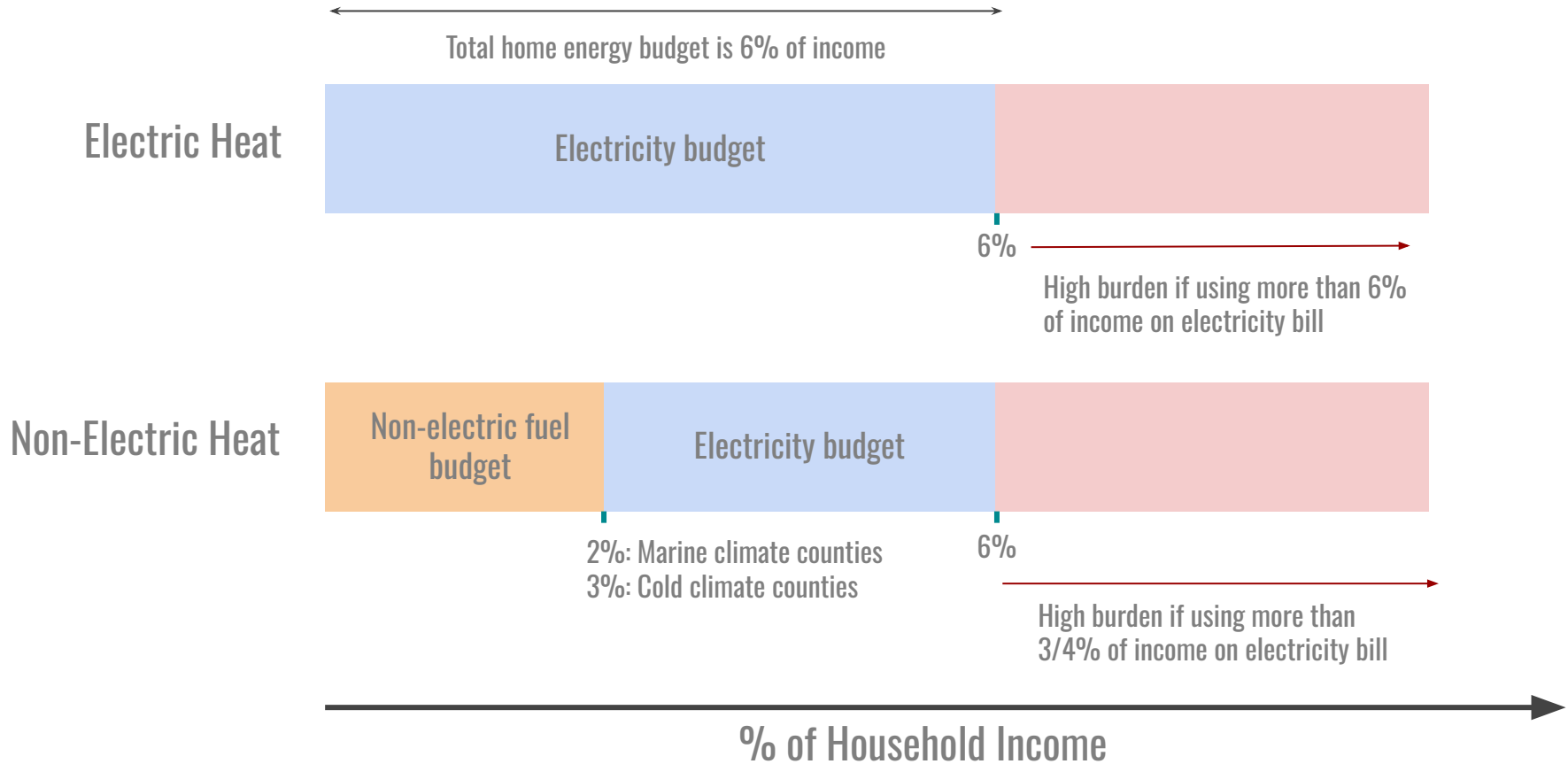
Low-income:

Households earning under 60% of the state median income (SMI)

Household Unit Size	Annual Gross Income
1	\$33,427
2	\$43,712
3	\$53,997
4	\$64,282
5	\$74,567
6	\$84,852

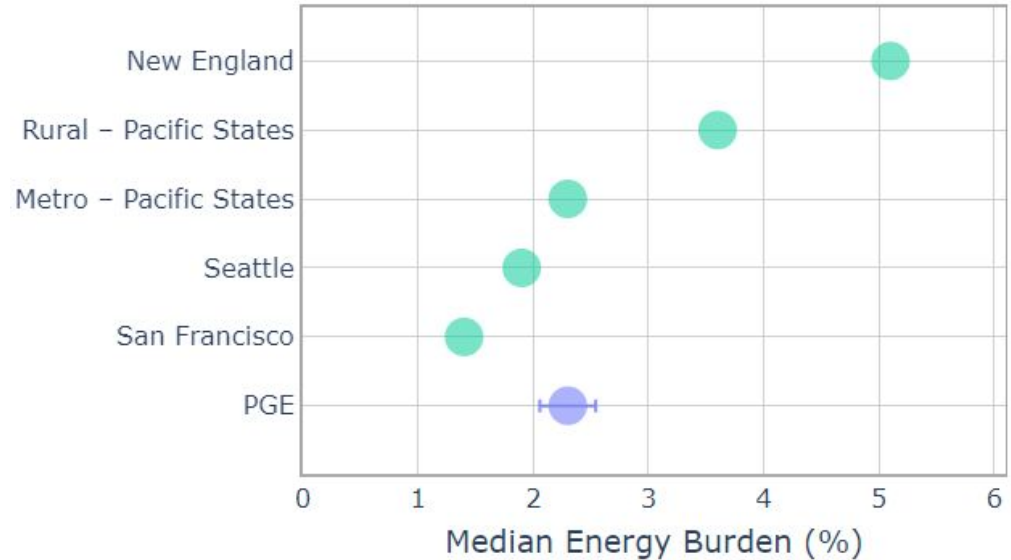
**Most data is reported for the 2023 calendar year. Bills and energy burden are projected for 2024 using 2024 rates and 2023 energy usage. 2024 household incomes are estimated to be 7% over 2023 incomes on average (equal to state median income increase)*

High burden thresholds for multiple fuels



Insights: Energy Burden

- Median energy burden is comparable to other metropolitan areas in the Pacific Northwest.
- Rates are relatively high for the region but households in most of the service area have higher incomes than the state median



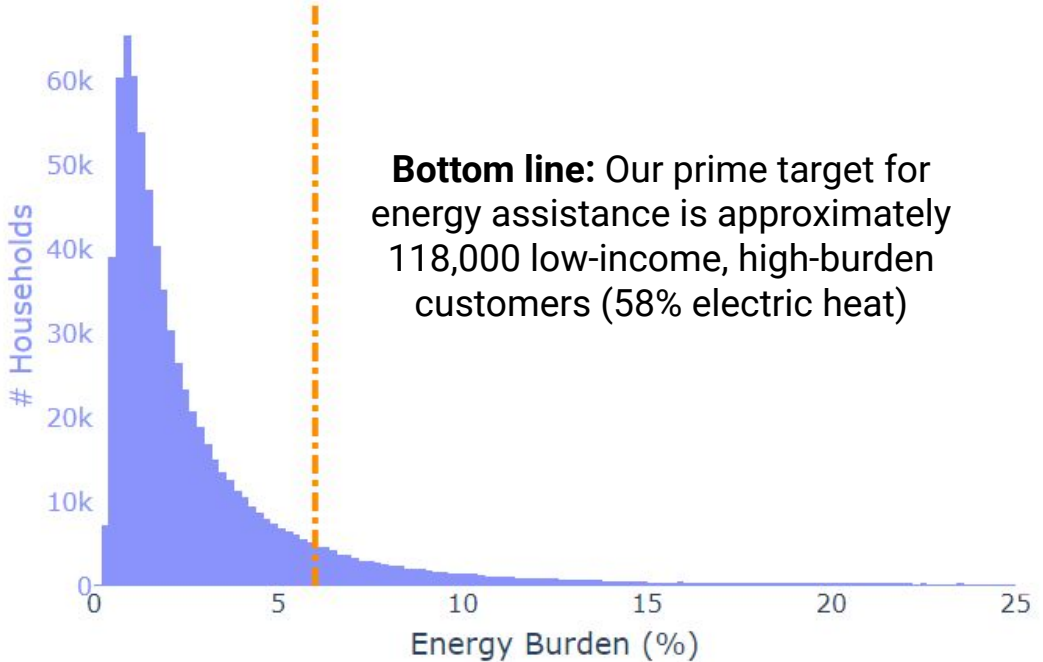
Insights: Energy Burden

Number of Occupied Households
~800,000

Low Income Households Under 60% SMI:
~190k ± 10%

High Burden Households*
~140,000 (all)
~118,000 (LI)

Median Electricity Burden of high-burden households
~8.3%



*Energy bills and burden are calculated without factoring in any forms of energy assistance

Insights: High-level Assistance Gap

Low-Income, High Burden
Households

~118,000



Income-eligible only



2024 Projection not including additional
program participation:
LIHEAP + OEAP + third party funding: \$25M
IQBD: \$43M

- At program maturity (year 5+), best practice is to target at least 60-70% of the need available as program funding - with additional projected participation, IQBD should hit this target in 2025. Once this target is reached, participation usually slows down and focus shifts to program optimization and targeted outreach.

Recommendation: Track total energy assistance funding as a percent of energy assistance need as an annual metric

Insights: **Additional Investments in Customer Bill Reductions**

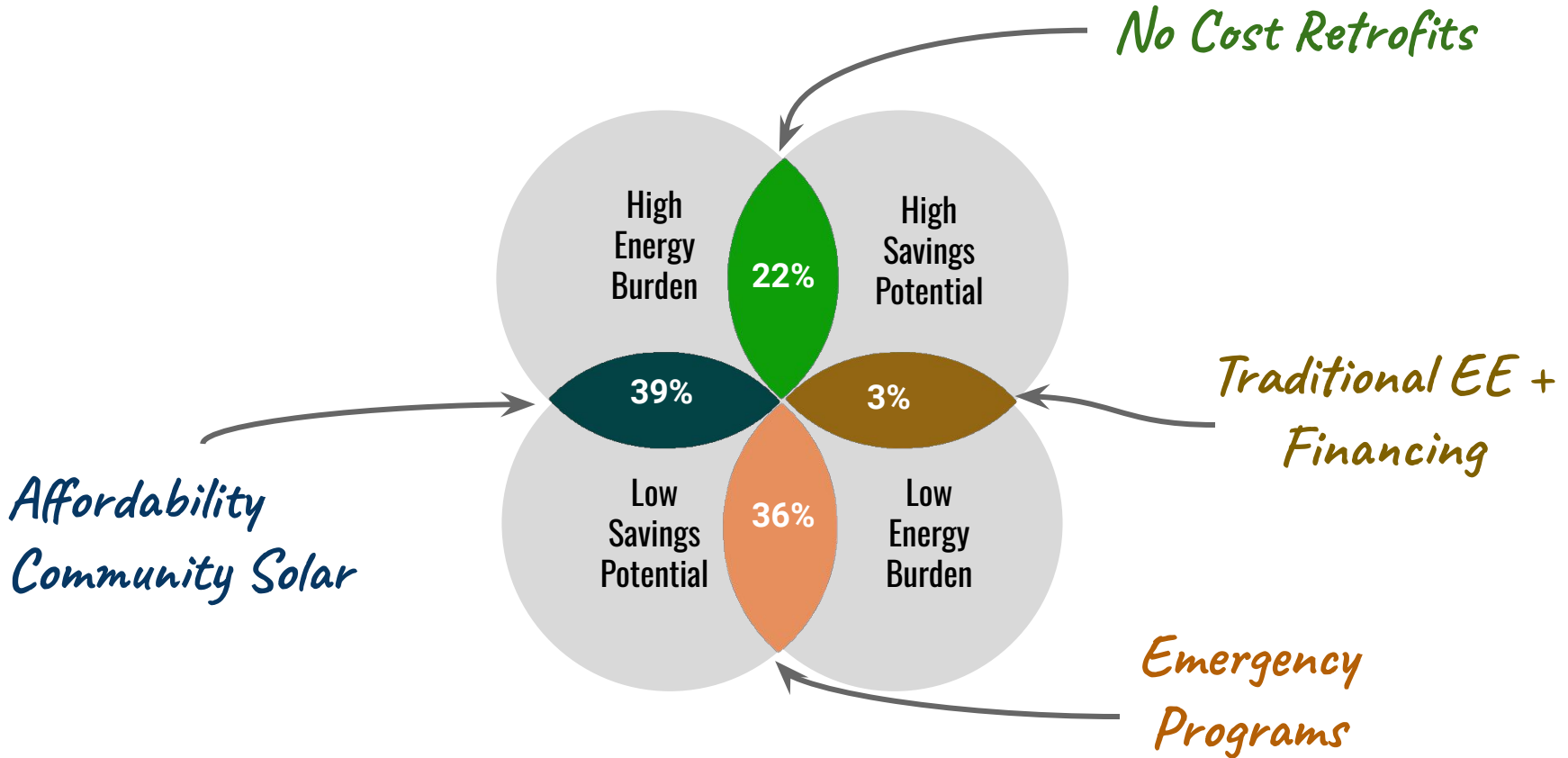
- In 2023, PGE invested approximately \$6M in low-income energy efficiency pilots and programs in collaboration with ETO
 - 2023 participation: ~50 for rooftop LI solar; 448 for Community Partner Funding; 274 for Savings Within Reach

- An additional \$14M is collected through the public purpose charge and used for low-income weatherization through OHCS (few hundred homes per year)

- Currently, these programs reach less than 1% of the eligible population - PGE is setting up the infrastructure that will allow these initiatives to scale in the future, including combining PGE programs with federal and state funding (est. \$160M/year from 2025-2029).

- Low-income weatherization is not always cost-effective and there is a limit to how much household energy use can be reduced, but because IQBD was designed as a bill discount, spending on energy efficiency directly reduces IQBD discounts for program participants

Program Potential



IQBD

Discount Tier Analysis

Recommendation: Assess the feasibility and benefit vs. cost of enhanced discounts for lower income tiers

Example: Increase discounts to 90% & 70% or combine into one tier at 75% discount

Estimated budget impact at current enrollment (Q1 24):
90%: ~\$5.1M (+12%)
70%: ~\$4.6M (11%)

Example: Enhance discount for this group who is under the federal poverty level to 50% discount

Estimated budget impact at current enrollment (Q1 24): ~\$11M (+26%)

Income tier	Discount Level	Average need of high-burden households as a percent of bill
0-5% SMI	60%	90%
6-15% SMI	40%	67%
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Current discount rates are suitable

Diversity of Service Territory

Challenge:

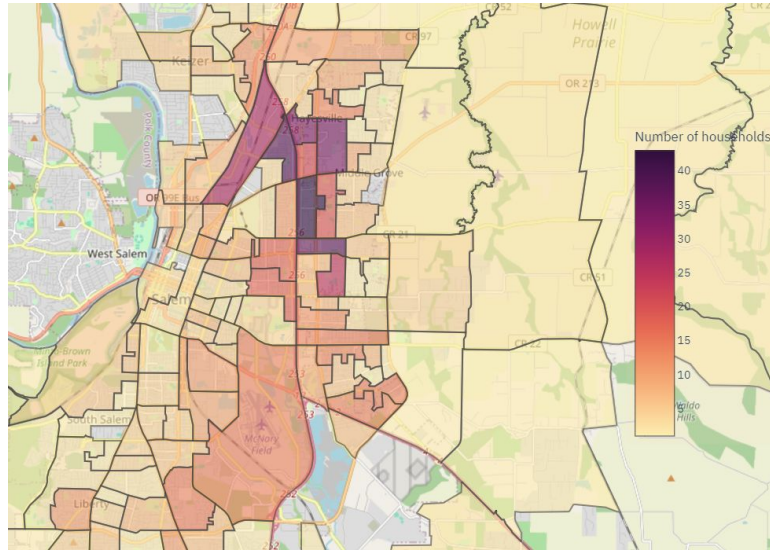
PGE's service territory has a myriad of cultures and ethnicities, a variety of economic backgrounds, urban and rural households and more. PGE cannot feasibly become an expert in outreach to every community within its service area.

Recommendation:

Program Navigator Fund: Incentivize local community-based organizations (CBOs) to refer and support customers in applying for the program. These CBOs would serve as the "Program Navigators" would be CBOs that register with PGE and would be compensated per successful customer application. Program Navigators would be trained to refer customers to other programs (e.g. LIHEAP, Energy Trust, etc.) in addition to IQBD and assist with the application process.

Pilot estimates: \$200k fund, \$75 per successful application. Program/pilot may be coordinated jointly with NW Natural.

Arrearages and IQBD



Approximately 4,000 disconnected households in 2023 were likely eligible for energy assistance but didn't participate

80% of disconnected households have arrears less than \$500

Arrearage Relief

Challenge:

Some customers do not address arrearages until an actual disconnection happens.

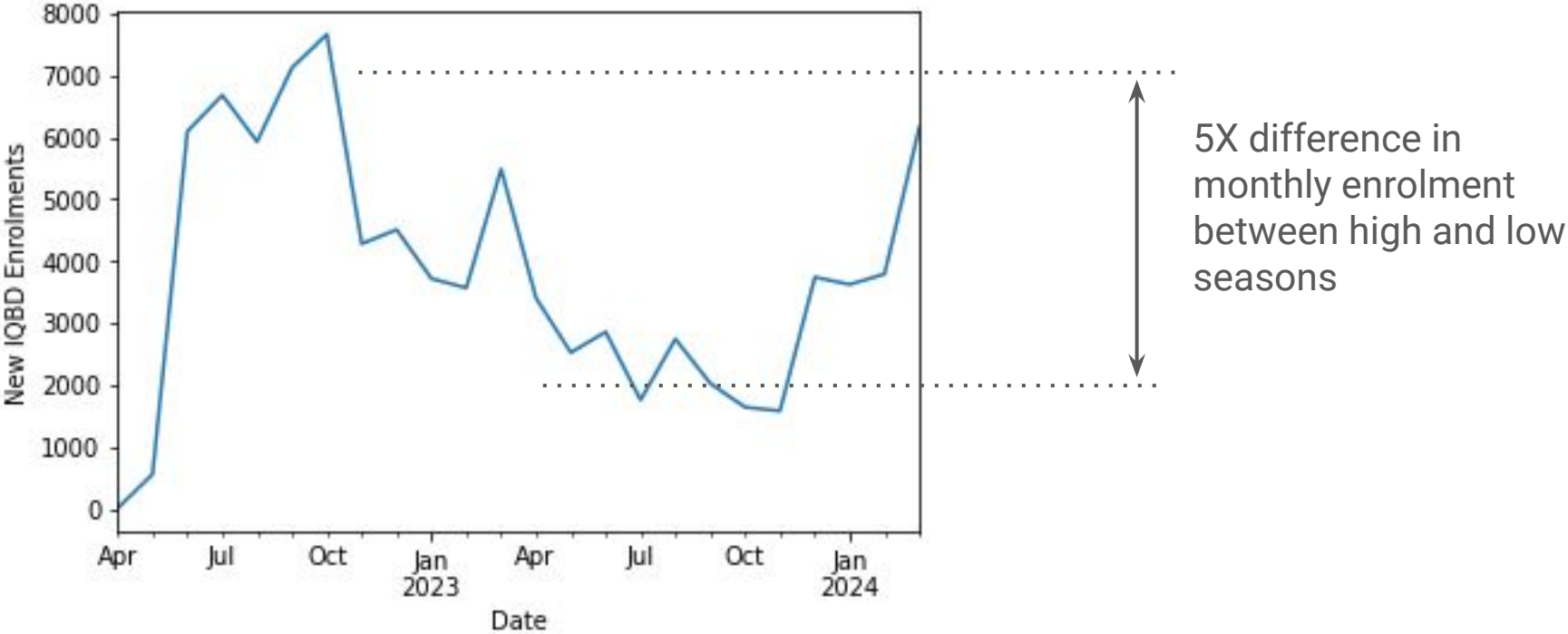
Recommendations:

Awareness of programs: Ensure that all late payment and disconnect notifications include information about IQBD, payment plans and payment extensions. Enhance communication about IQBD to customers at risk of disconnection.

Arrearage relief for program participants: Assess the feasibility and benefit vs. cost of a capped budget arrearage relief program. For simplicity, the program could be made available to IQBD participants with arrears and apply the customer's bill discount percent retroactively for arrears up to a limit (e.g. X% discount on first \$1,000 of arrears).

Pilot estimate: \$1M arrearage relief fund can likely serve 3,000-4,000 IQBD arrears customers.

Program Demand Cycle



Managing the Demand Cycle

Challenge:

Varying demand can strain program staff, overload customer service advisors and delay application processing.

Recommendations:

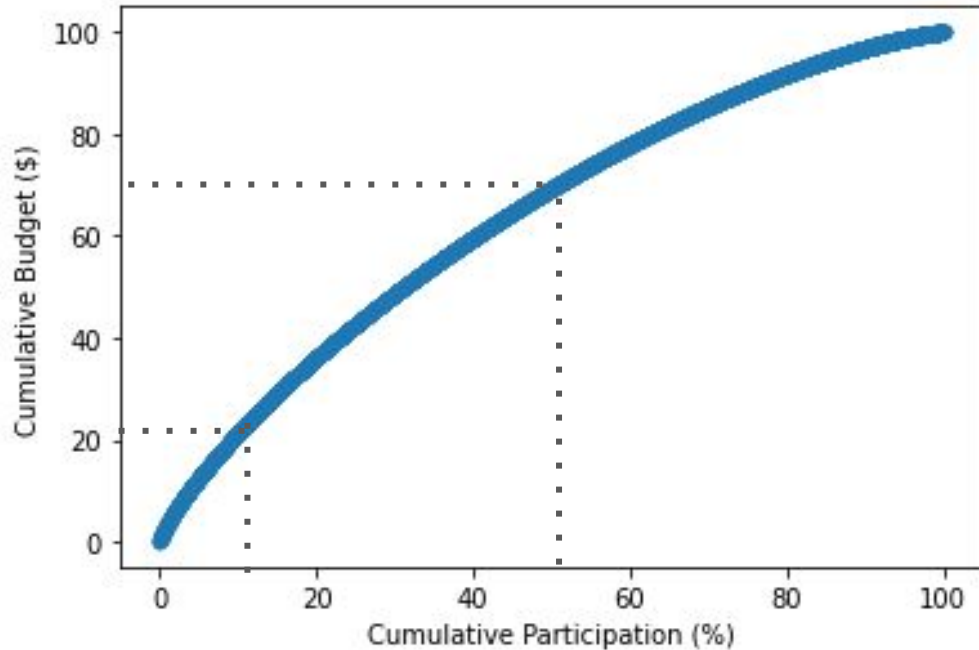
Reduce need for reapplication: Allow fixed income customers (34% of total) to reapply every 4-5 years instead of every two.

Communication timing: Biggest marketing pushes should be in September/October **before** high bill season. Include communication about projected winter bills including rate increases and energy efficiency tips to encourage customers to apply early.

Rate increase timing: Consider delaying annual rate increases to April of each year instead of January 1st to avoid bill shock from cold weather + rate increases.

Energy Efficiency

Program utilization



Within each income/discount tier:

Top 10% of participants by energy use utilize 21-22% of budget. Their average energy use is more than 2x the overall average energy use.

Top 50% of participants by energy use utilize 69-70% of budget. Their average energy use is 40% more than the overall average energy use.

Top 5 users will receive \$6,000-\$12,000 in discounts in 2024

Energy Efficiency Potential

Challenge:

High energy users overutilize program funds while the root cause of their high energy burden remains unaddressed. There are 47,000 low-income customers who would potentially be good candidates for energy efficiency measures, but existing low-income EE programs serve relatively few households.

Recommendations:

First step towards integrating energy efficiency with IQBD is to identify and understand the high use participants.

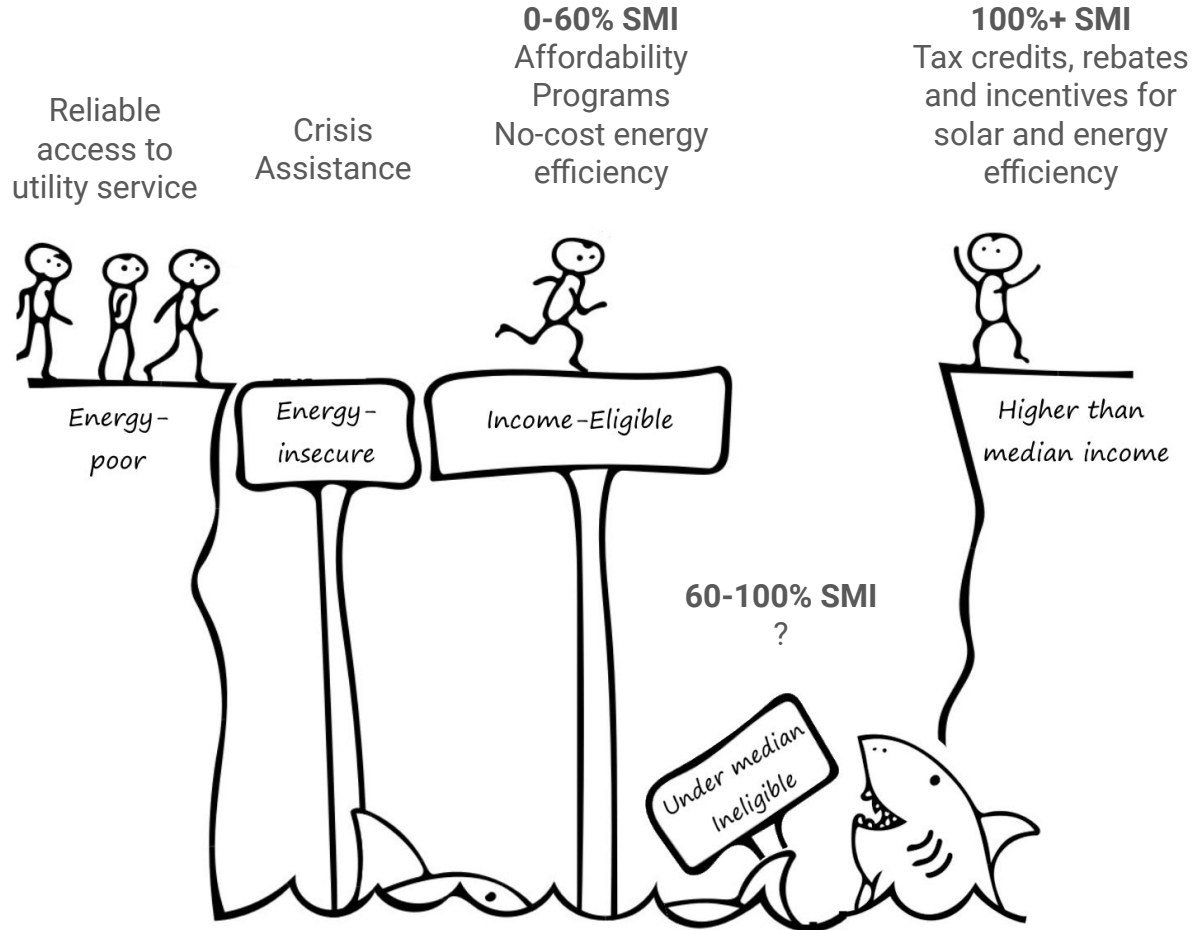
Energy use diagnostic: Develop a protocol for outbound customer service advisors to contact high-use households, perform a diagnostic of their hourly energy use, and collect data related to the drivers of high energy use. Estimated staff time: 15-20 minutes per successful outbound call.

Energy audit program: Establish a energy audit pilot program (through RFP) that focuses on the top 2,000 or so users in IQBD (\$1.5M approx. budget). Program should include walkthrough energy audit, ETO and EE credit referrals, direct install (LEDs, aerators). List of high priority homes should be provided to program implementer. This program can be designed to be cost-effective through realized savings in IQBD discounts.

Coordination with energy efficiency providers: Work with ETO and CAP agencies to target EE funds at low-income, high burden households.

The Energy Assistance Hole

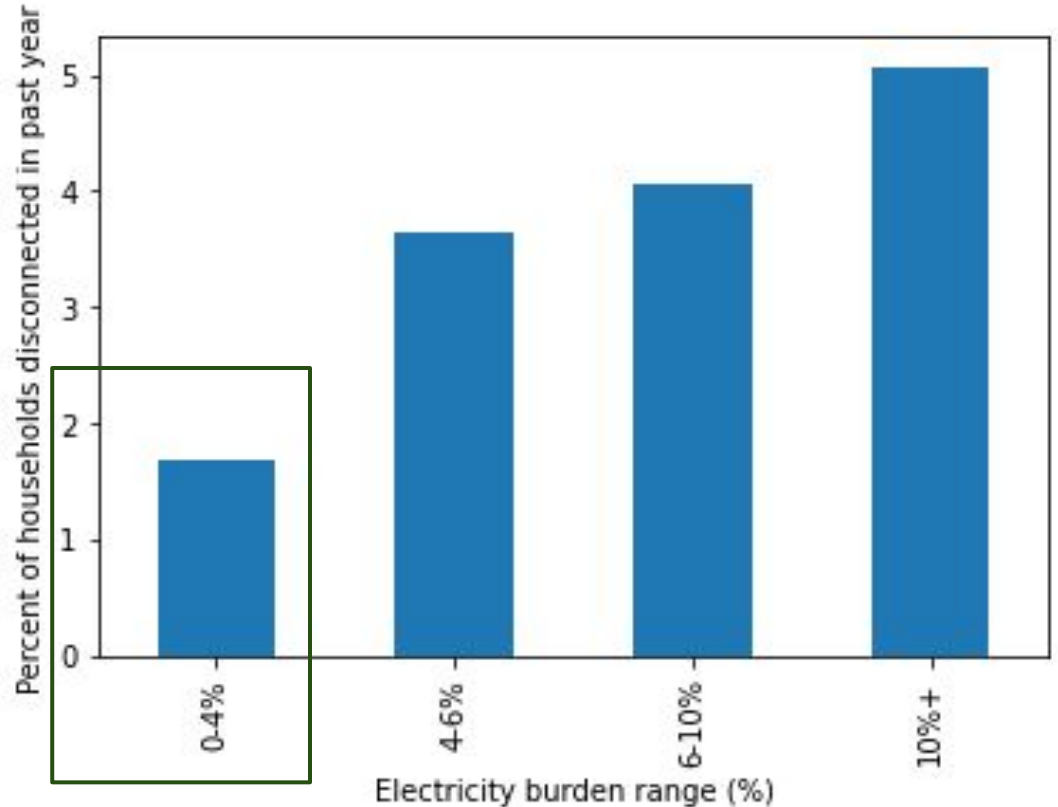
The Energy Assistance Hole



The Energy Assistance Hole

~22k non-low-income households with a high energy burden

~9k non-low-income households at risk of disconnection despite having a low energy burden



Addressing high-burden, program-ineligible households

Challenge:

There are households that are not eligible for existing programs but need assistance.

This includes households that:

- Are under the state median income, have a high energy burden, but are ineligible for assistance (~22,000 households)
- Constrain their energy use due to lack of affordability and lack of program access
- Are **A**sset **L**imited, **I**ncome **C**onstrained, **E**mloyed
- Earn above the program income thresholds but under the Self Sufficiency Standard Income

Recommendations:

Difficult to solve through PGE because most customers in this category would benefit most from energy efficiency.

- Option 1: Energy assistance path: Allocate a budget for customers in an additional income tier (60-100% SMI) - perhaps a fixed one-time grant - equivalent to one average winter bill (\$150-200)
- Option 2: Work with Oregon Energy Fund on expanding eligibility for their program and increase annual donation
- Option 3: Work on expanding access to the Oregon on-bill financing program for energy efficiency - perhaps through waived or reduced interest and fees for income-eligible households

Main Takeaways - Energy Burden Assessment

- The IQBD program is operating effectively and is following energy assistance program best practices. There are no major recommended changes to the foundation of the program.
- In 2024, total energy assistance funding is expected to exceed 51% of the energy assistance need for PGE's customers and IQBD is growing quickly to fill that gap.
- Most recommendations in this assessment are auxiliary components that can be added to PGE's energy assistance portfolio to better improve bill affordability:
 - **Enrollment:** How to keep up the momentum of program enrollment as the IQBD program matures
 - **Arrearages:** How to best serve customers at risk of disconnection
 - **Energy Efficiency:** How can we leverage energy efficiency for sustained energy burden reduction
 - **Energy assistance hole:** How to best serve customers who have unaffordable bills but are ineligible for assistance programs
 - **Other:** How do we design more equitable rates, smooth the impact of rate increases, modulate the ups and downs of our programs and target assistance at customers who need it the most