Idaho Power Company Low-Income Needs Assessment Information Session Agenda

Thursday, September 14, 2023 2:00-3:30 pm PDT **Link to Teams Meeting**

Call-In: 503-446-4951 – Conference ID: 654 147 501#

Meeting ID: 264 332 077 768 – Passcode: 6YaCCR

Idaho Power Company 2023 Low-Income Needs Assessment Information Session and Discussion

Summary

At the last check-in with Idaho Power Company in March of this year (Workshop #3), Idaho Power invited Hassan Shaban from Empower Dataworks to share the scope of work and estimated timeline of the low-income needs assessment (LINA) that his organization was contracted to perform for Idaho Power's service area. Since then, the LINA has been completed and posted to Oregon Public Utility Commission's HB 2475 implementation Docket No. UM 2211 eDockets page (https://apps.puc.state.or.us/edockets/DocketNoLayout.asp?DocketID=23122).

The purpose of this meeting will be to share the findings of the LINA and provide stakeholders the opportunity to ask the Company and Mr. Shaban questions regarding the assessment as well as discuss next steps.

Agenda

1. Presentation of Idaho Power's Oregon Low Income Needs Assessment's Findings
2. Idaho Power Low Income Bill Assistance framework
3. Open Discussion

If you have any questions on the process or content of this proposal, please contact:

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OREGON LOW INCOME NEEDS ASSESSMENT

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IDAHO POWER - OREGON LOW INCOME NEEDS ASSESSMENT

JULY 2023

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Idaho Power

PREPARED BY

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INTRODUCTION

This brief report presents the methodology and findings from Idaho Power's 2023 Oregon low income needs assessment. The results of the assessment are contained in the web dashboard at https://idahopower.empowerdataworks.com/.

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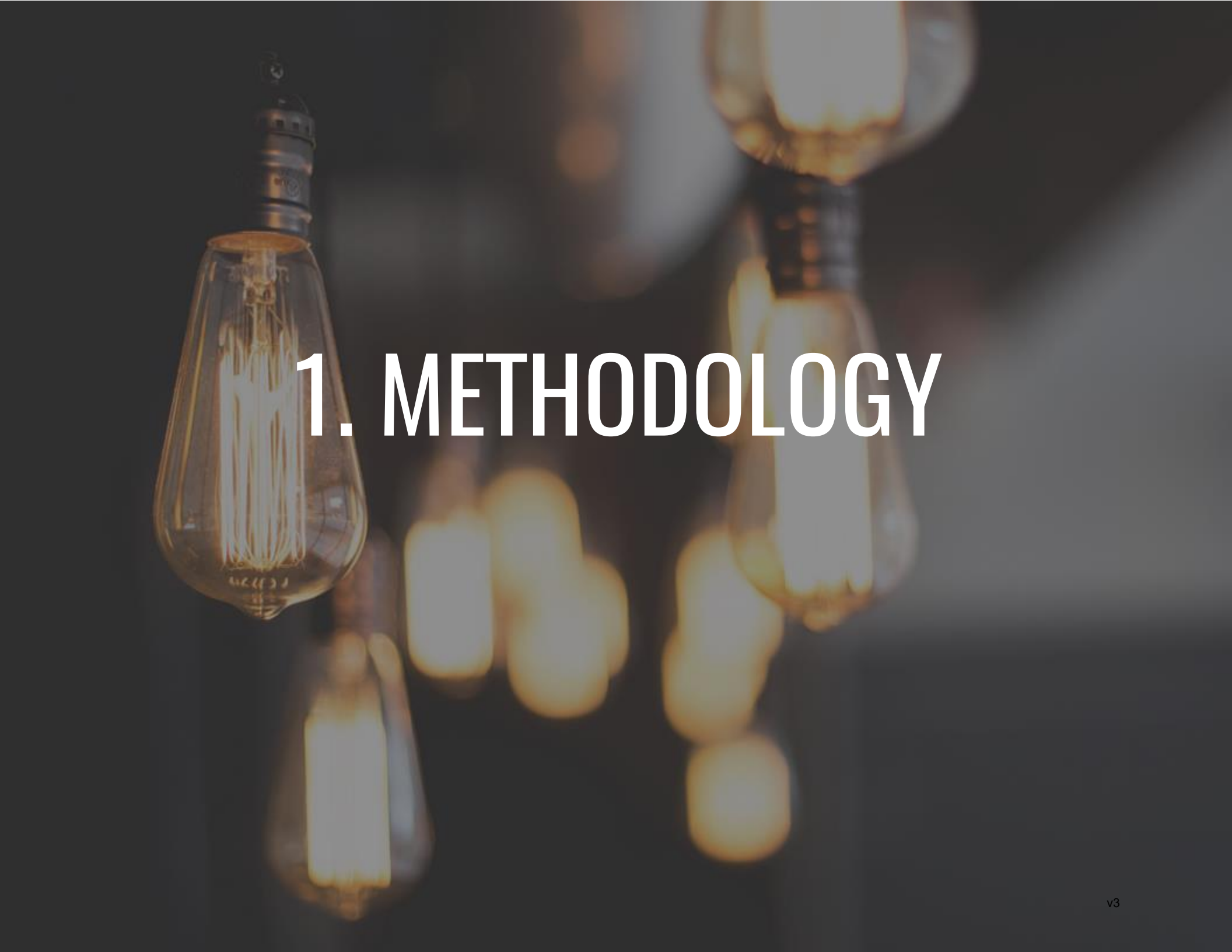


1. METHODOLOGY

1.1 GENERAL APPROACH

This low income needs assessment relies on collecting customer-level data, modeling missing attributes, then aggregating key metrics by geographic, demographic or building variables for analysis. 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 packaged in a web dashboard for Idaho Power staff.

1.2 DATA SOURCES

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

DATA PROVIDED BY IDAHO POWER

Customer Information System (CIS): This data included monthly electricity bills for 24 months in 2021-22, 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 LIHEAP and Project Share program in 2021-22, along with discount amounts and dates. This allowed us to calculate the total assistance funding at the household level.

Acxiom Demographics: Idaho power 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 a little over 75% of 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: All customer addresses were geocoded to a latitude/longitude pair to facilitate geographic analysis. In addition, we mapped the latitude/longitude pairs to census tracts, block groups and blocks in order to pull additional aggregate statistics.

County Assessor Data: We obtained publicly available assessor data from Baker, Harney and Malheur counties. 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 (2021 5 year estimates) 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: Income data could be matched to 75% of households in Idaho Power's Oregon service territory. To estimate the incomes for the remaining 25%, we used an interpolation procedure.

For households with missing income data, an estimated income was calculated as the average of the incomes of the three geographically closest households. Households that received LIHEAP were assigned an income under 150% of the Federal Poverty Limit, as their income had been verified as falling under this limit. The income of households that had estimated incomes under the median income for the region, but who lived in expensive homes were adjusted upwards. Realistically, a home with very high housing costs is unlikely to be low-income.

Validation: The median income in the region closely matches the median household income estimates from the American Community Survey.

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 Federal Poverty Limit or the Area Median Income, both of which are defined by household size. The median household size in the three Idaho Power counties varies from 2.3 to 2.8. In general, we used the income limits for three person households in this analysis as they produced the most accurate estimates of poverty compared to census data.

Validation: According to the US Census Bureau, between 16-20% of households in counties served by Idaho Power would fall under 100% of the Federal Poverty Limit. In this assessment, the poverty rate is 16-22%, depending on the household size used to determine the income

thresholds (3-person vs 4-person), 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 1200 kWh/year were flagged as potentially unoccupied.

Overall, the number of household meters excluding commercial, seasonal and unoccupied meters was approximately 12,800. Addresses with multiple units or tagged as multifamily properties by the county assessor were flagged as apartments. Mobile homes were either labelled as such by the county assessor or were sited in a mobile home park. Non-multifamily homes with addresses but without an identified land parcel are usually accessory dwelling units, trailers or mobile homes – these were all included in the "mobile home/secondary" category.

Validation: The aggregate housing type counts (62% single family/duplex, 7% multifamily and 31% mobile/ADU homes) are relatively similar to data from Idaho Power's residential end use survey (65% single family and 26% mobile/manufactured homes). Some single family homes might be misclassified as ADUs in this assessment due to a failed address match.

Homeownership Status: Homeownership status (rent vs. own) was determined using two methods. The demographic dataset included homeownership for approximately 75% of customers. For the other 25%, households in multifamily apartments were tagged as "Likely Renters", and households without any account changes during the two year analysis period were tagged as "Likely Homeowners". Households with an account change and an accompanying sales record were also tagged as "Likely Homeowners". This approach can potentially undercount long-term renters and tag them as homeowners. However, the accuracy of the approach seems sufficient for the purposes of large-scale aggregate analysis as in this study.

Validation: The owner-occupied housing rate from the American Community Survey is 59% in Malheur county (which represents 87% of Idaho power's service area). The homeownership rate from this analysis is 60%, and the two estimates fall within each other's margin of error.

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 April) was designated as "heating-related energy use", while the energy use that exceeded the base load in the summer months (May through September) was designated as "cooling-related energy use".

Homes with a heating-related energy use that exceeded 15% were flagged as potentially utilizing electric heat (primary or secondary), while homes with under 15% heating-related energy use were flagged as non-electrically heated homes.

Validation: The approach has been previously tested by Empower Dataworks vs. a variable-base degree day regression and it yields similar results but at a much smaller computational cost.

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 3%[1]
  - 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.

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

Excess Burden: Excess burden is the portion of a household's energy burden in excess of the 6%/3% threshold.

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

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.

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

[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".

Customer Bill Reductions (**Avoided Burden**)**:** The total bill impact (in dollars) from energy assistance programs. This is the same as the assistance funding for direct assistance programs and is based on measure savings for energy efficiency programs as described in Section 1.2.

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.

1.4 SOURCES OF UNCERTAINTY

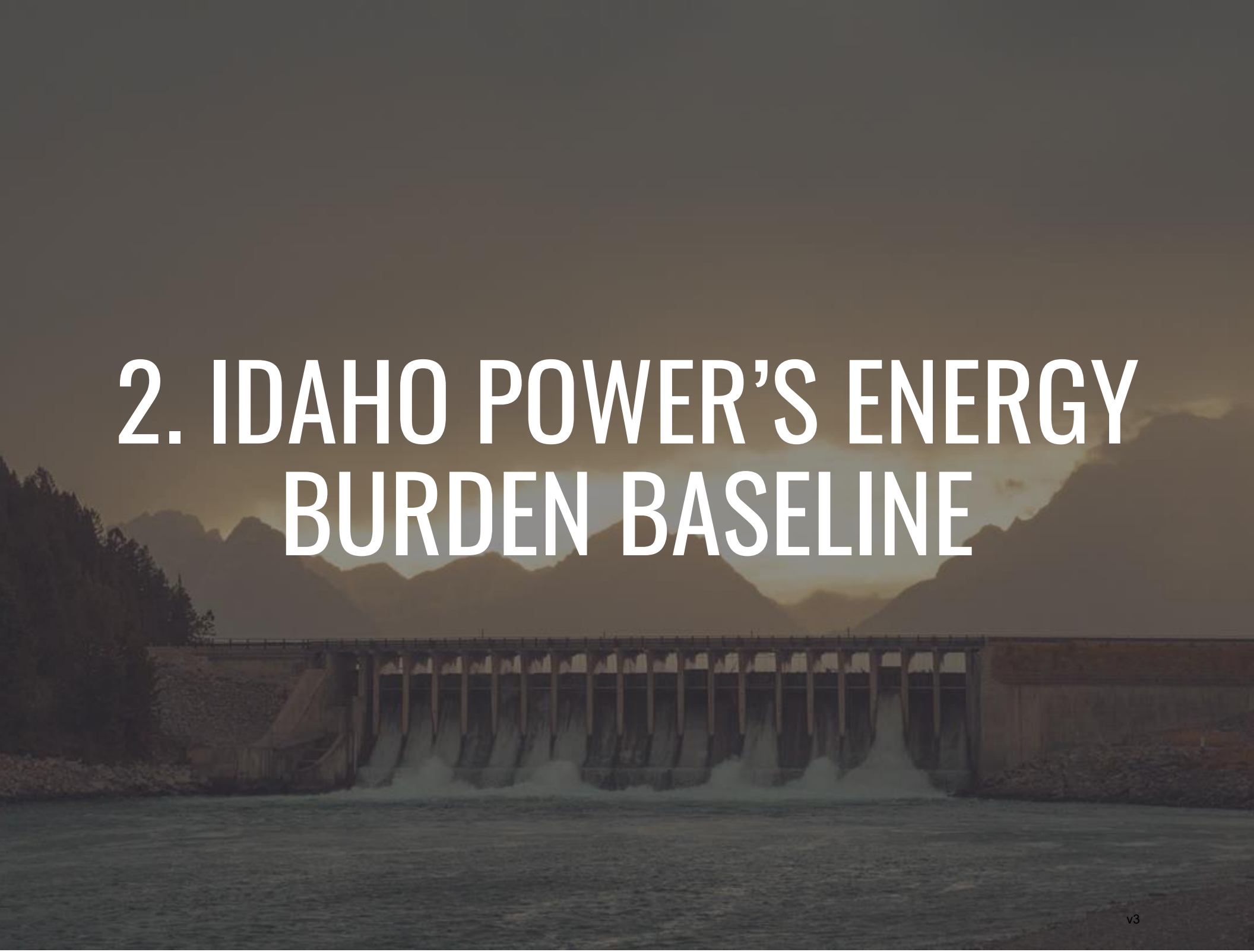
- **Household income** is a dynamic piece of data as residents move in and out of homes and income data can become outdated within a year or two.

- **Poverty status.** Since household size cannot be reliably captured through any available data source, household poverty status is subject to uncertainty. The Federal Poverty Limit and State Median Income both use household size as a scaling factor. In this analysis, we have used income thresholds for 3-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 results in misclassifying non-residential meters as occupied households or single family homes as auxiliary dwellings.

- **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. IDAHO POWER'S ENERGY BURDEN BASELINE

2.1 IDAHO POWER OREGON RESIDENTIAL SECTOR PROFILE

Idaho Power's service territory in Oregon was composed of approximately **12,800 occupied households** (with a detectable energy use and not designated as shops, garages or commercial properties).

Ethnicity: According to the U.S. Census Bureau, approximately 63% of residents in Idaho Power's Oregon service area are non-Hispanic white. Hispanic residents comprise 32% of the population, mainly concentrated in Malheur county.

Household Income: The median household income for residents in Idaho Power's service area is approximately $48,000, well below the state average of $66,000. Approximately **19%** of households would fall under 100% of the federal poverty limit, and **62%** of residents would fall under 60% of the State Median Income. An additional 15% of households earn between 60-80% of the state median income. These "borderline" customers would be ineligible for almost all energy assistance programs, but 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.

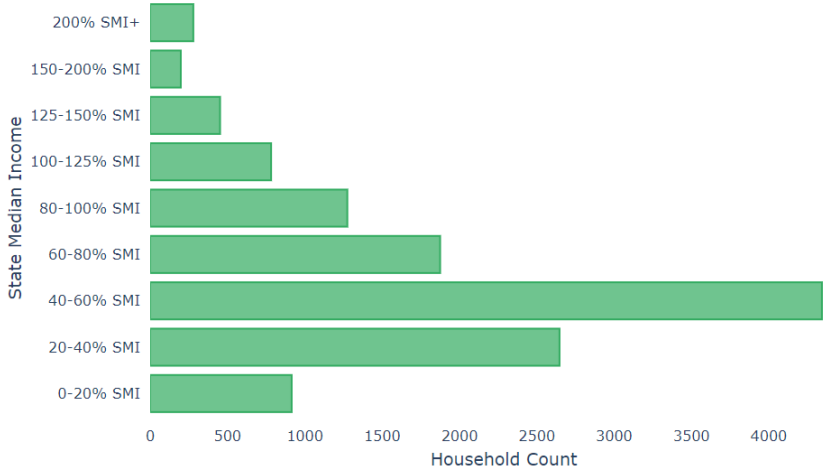


Figure 1. Household income as a percent of state median income for Idaho Power's Oregon residential customers

Energy Bills: Idaho Power residential electricity rates are about average for the region. Annual energy bills average **approximately $1,550/year with an average annual consumption of 15,400 kWh**, with approximately 66% of customers using electricity as a primary or secondary heating fuel. Figure 2 shows the distribution of annual electricity bills; with about half of households paying more than $1,380/year on their bills.

Home Vintage: Of the homes with a known age, approximately 23% were built after 1980, 53% were built between 1940 and 1980[2], 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.

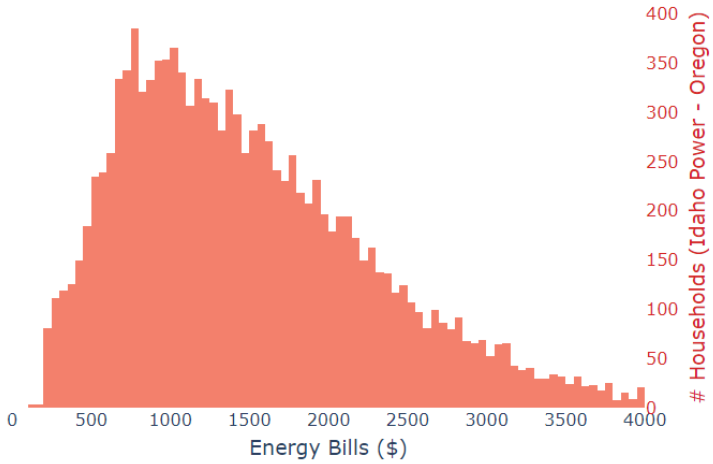


Figure 2. Household electricity bill distribution for Idaho Power's Oregon residential customers

[2] County Assessor Data for Malheur, Baker and Harney counties.

2.2 ENERGY BURDEN

Idaho Power customers have an **average and median electricity energy burden of 4.2% and 3%**, respectively. Figure 3 compares Idaho Power's median energy burden to values published in other jurisdictions. The median burden is comparable to rural regions in the Pacific Northwest.

The average household paid $1,550/year in electricity bills in 2021-22. Of 12,800 identified households, **3,500 were deemed to have a high energy burden**, meaning that annual electricity bills exceeded 6% of their income for electrically-heated homes and exceeded 3% of their income for non-electrically heated homes. These high-burden customers paid an average of $2,100 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 Idaho Power customers in Oregon is approximately $2.7M**—the total reduction that would bring all customer electricity bills below the high burden threshold (6% of income for electric heat and 3% for non-electric heat).

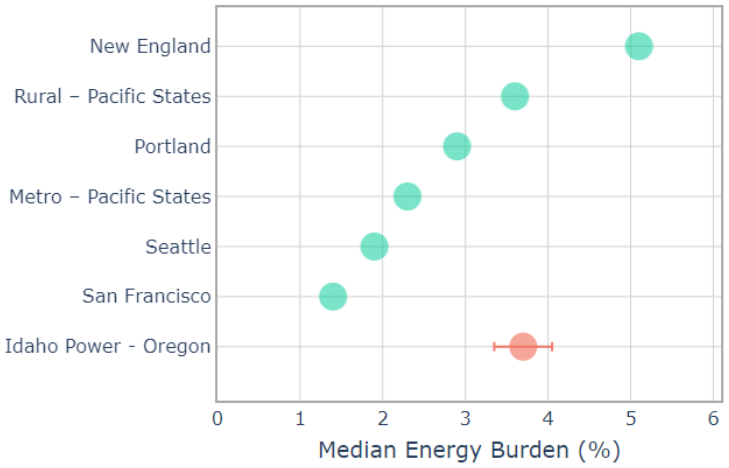


Figure 3. Energy burden benchmarking vs. other regions

Idaho Power's energy charge in its residential retail rate is between 8 and 10 cents/kWh, which is in line with other utilities in the region and below the national average of 16 cents/kWh. Therefore, low incomes and high energy use, rather than rates, 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 Idaho Power 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 to the right of the 6%/3% thresholds.

Approximately 58% of the energy assistance need is borne by single family households, with 38% in mobile homes and the remainder in multifamily homes. The highest concentration of need is in mobile homes, requiring more than $820/burdened household in assistance on average, compared to $780/burdened household for single family and $470/burdened household multifamily households.

Approximately 37% of the energy assistance need for Idaho Power customers is among renters, indicating that conservation programs targeted at high-burden customers will need to grapple with the split incentive problem between landlords and tenants, but energy burden among homeowners is the more significant category in general. Other customer segments can be investigated in more detail in the data dashboard.

Number of Households

~12,800

Low Income Households

60% SMI*: **~8k**

150% FPL: **~4k**

Energy Burden (Electricity)
Median: **~3%**
Average: **~4.2%**

High Burden Households

~3,500

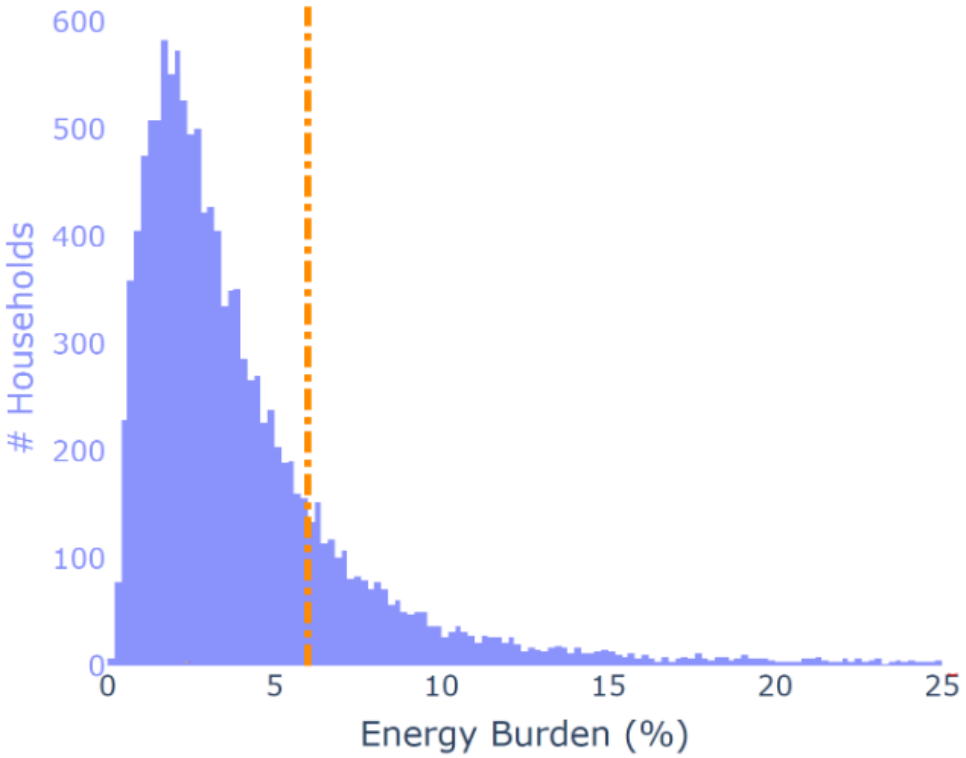


Figure 4. Distribution of energy burden among Idaho Power - Oregon customers.
Figure shows all homes but dashed line indicating 6% high energy burden threshold applies to electric heat households.

2.3 CONSERVATION VS DIRECT ASSISTANCE

Figure 4 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:

- Conservation 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 conservation 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.

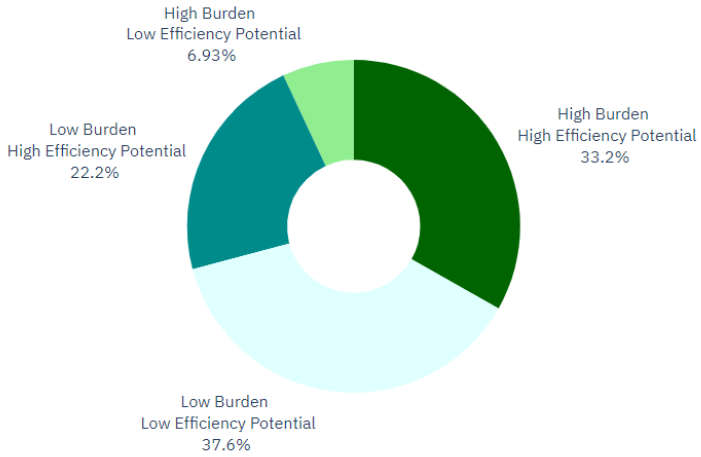


Figure 5. Idaho Power Oregonlow-income customer segments by energy burden and energy efficiency potential.

Approximately 38% of Idaho Power'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.

33% 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. At the same time, we should recognize that scaling up low-income weatherization faces a host of barriers and these customers are in need of more immediate assistance options (through rates, grants or discounts).

3. KEY CUSTOMER SEGMENTS

3.1 OVERVIEW

This section presents statistics and profiles related to 3 key customer segments in Idaho Power'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.

These customer segments represent a big portion, but not the entirety of the high energy burden among Idaho Power's customers, so they should be targeted for any new programs or initiatives in the future using lists of customers who live in the block groups identified below.

3.2 ONTARIO - EAST

Census block groups: **410459704003, 410459704005**

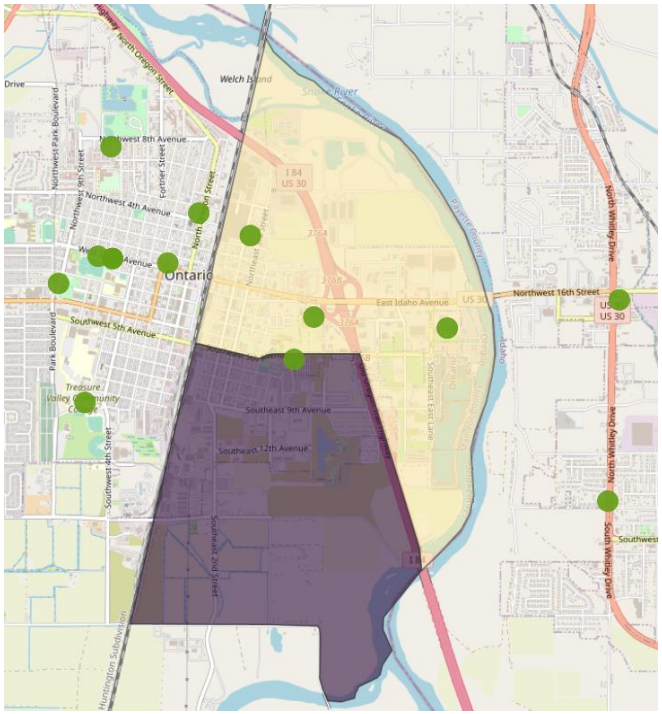
Total Assistance Need: **$235k (9% of total need)**

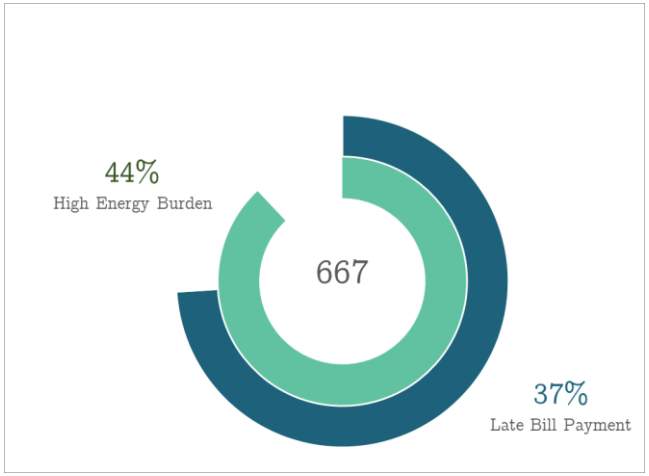
Total Assistance Funding: **$121k (13% of total funding)**

DOE Disadvantage Score: **5**

PROFILE: Customers in Eastern Ontario are a highly disadvantaged community with over 65% people of color (mostly Hispanic) and over 10% of the population living in linguistic isolation. Members of this community tend to be renters (58%) living in older homes (69 years old on average). 76% of these customers rely on electricity as a heating fuel with correspondingly higher bills, late payments and service disconnections. The area is partly commercial/industrial and has historically had a high crime rate. On the other hand, it appears to be well served by Community in Action, whose main office is located in the neighborhood.

RECOMMENDATIONS: This area is relatively densely populated and can be effectively reached through social media as well as by connecting to large property managers. 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 MALHEUR – OUTLYING AREAS

Census block groups: **410459707001, 410459705006**

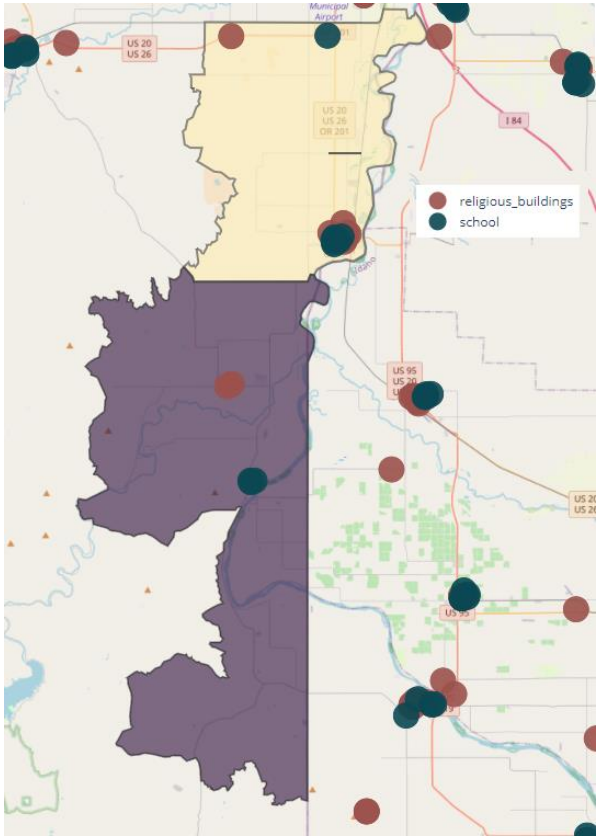
Total Assistance Need: **$253k (9% of total need)**

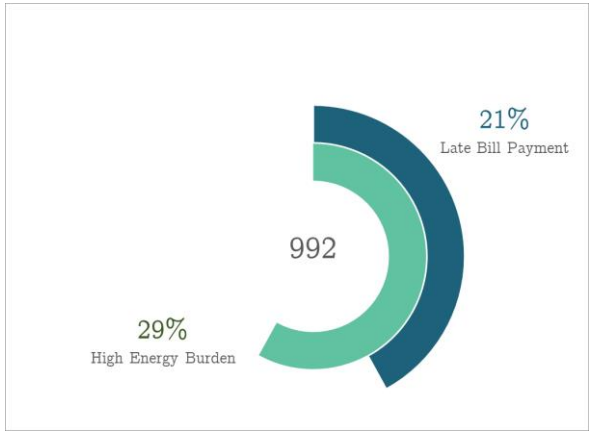
Total Assistance Funding: **$23k (2% of total funding)**

DOE Disadvantage Score: **0**

PROFILE: The area to the east and south of Nyssa has a moderate level of energy burden, with 29% customers experiencing high energy burden. The region was flagged for its low access to existing assistance program with a program participation rate among eligible customers of less than 6%. The closest energy assistance center is more than 20 miles away as the crow flies and customers in these areas are potentially not as aware of programs for which they may be eligible. Most of these residents are homeowners living in single family or mobile homes.

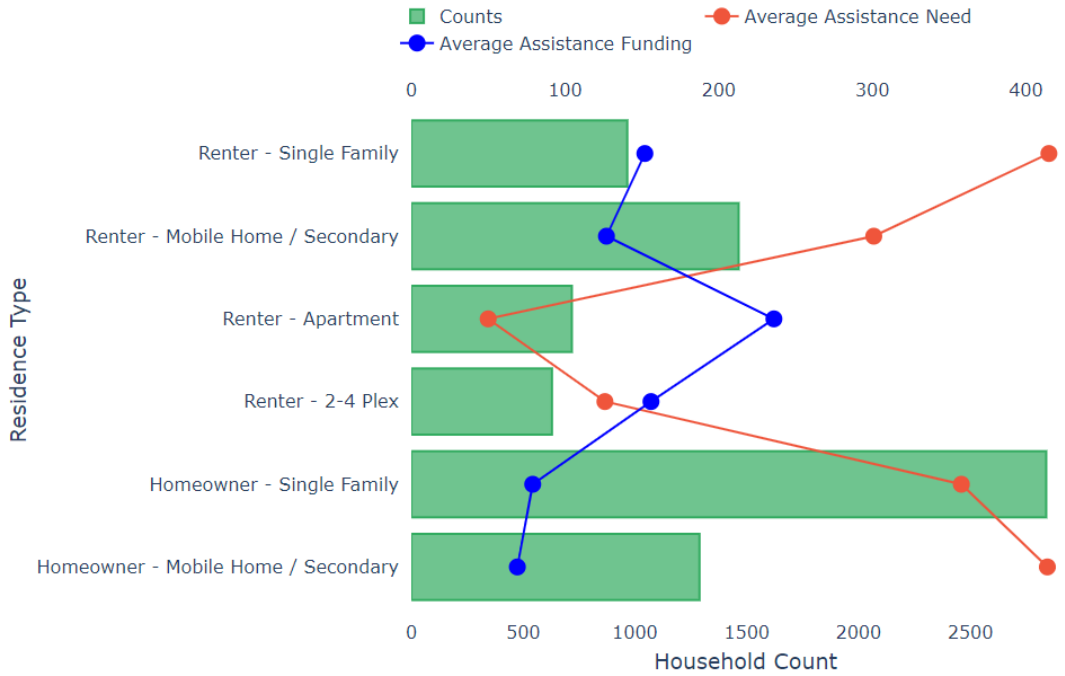
RECOMMENDATIONS: The area should be prioritized for weatherization or lighter touch energy efficiency (e.g. energy savings kits, thermostats and air sealing), as 64% of customers have a high energy savings potential. Outreach through traditional community based organizations may be challenging because of location, but connecting with the schools in Adrian and local churches might be more productive.





3.4 MOBILE HOME OWNERS

PROFILE: The figure to the right shows the energy assistance need and average energy assistance funding for all low-income customers in Idaho Power's Oregon service area, categorized by housing type and homeownership. In general, it appears that apartment dwellers are relatively well-served by existing programs as the gap between average need and average funding is very small (or negative in some cases). On the other hand, the least well-served segment appears to be homeowners living in mobile homes.



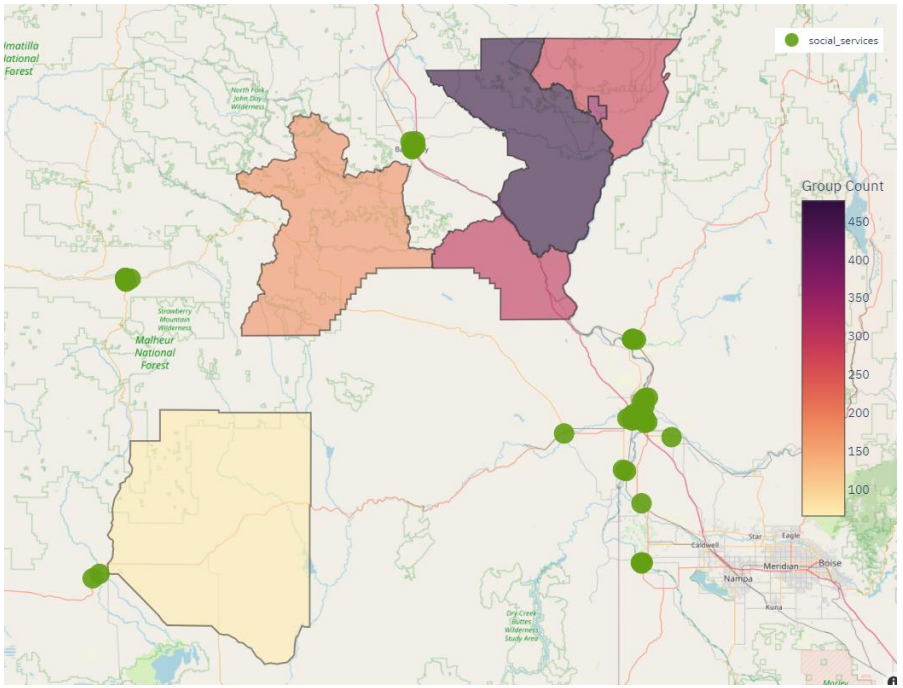
RECOMMENDATIONS: In addition to building partnerships with trailer park managers, local schools, churches and community organizations, it is recommended to develop targeted energy assistance marketing campaigns (direct mail and email) for these customers through the dataset developed in this assessment. These customers are more rural and local presence is an important factor - satellite offices of agencies or local community-based organizations can be very effective at reaching these customers. Consideration of an online application process or making program information easier-to-find online can also be helpful in facilitating customer applications.

3.5 BAKER/HARNEY – OUTLYING AREAS

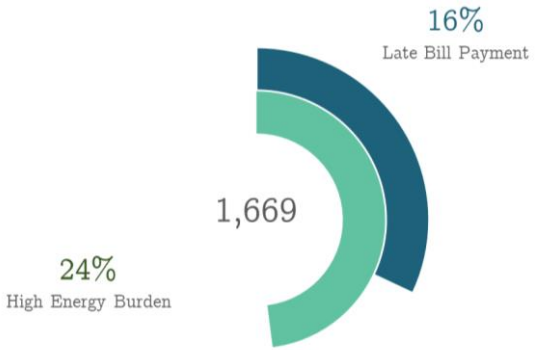
Census block groups: **41001950600, 41001950300, 41001950100**

Total Assistance Need: **$341k (13% of total need)**
Total Assistance Funding: **$50k (5% of total funding)**
DOE Disadvantage Score: **0.2**

PROFILE: Some pockets in Baker and Harney counties also suffer from a high level of energy burden, especially in the Eastern part of Baker County. Moreover, these areas are rural and physically distant from services. A large percentage of these customers live in mobile homes, secondary units or ADUs.



RECOMMENDATIONS: Outreach through traditional community based organizations may be challenging because of location, but connecting with the schools in Keating and Huntington or distributing flyers in local business in Richland and Crane would help reach customers in these more remote areas.



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