ENERGY BURDEN IN ALASKA

Understanding energy burden for Alaska communities and charting a path forward

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Lastly, we acknowledge the communities and Tribes of Alaska for whose lived reality and daily experience navigating energy burden inspired this work and to whom we dedicate this report.

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List of Acronyms Used in Report

ACEEE – American Council for an Energy-Efficient Economy
ACS – American Community Survey
AMI – Area Median Income
DHHS – U.S. Department of Health and Human Services
FPL – Federal Poverty Level
FPIC – Free, Prior, and Informed Consent
HAP – Heating Assistance Program
IPPs – Independent Power Producers
LEAD – Low-Income Energy Affordability Data (Tool)
PCE – Power Cost Equalization
PPA – Power Purchase Agreement
RCA – Regulatory Commission of Alaska
REF – Renewable Energy Fund

Executive Summary

Key Takeaways

- Alaska communities spend more of their income on energy than those in the Lower 48 states on average. Alaskans spend an average of 4.3% of their household income on energy, compared to 2.7% in the Lower 48 states, placing Alaska second-highest nationally.
- Alaska leads the nation in the percentage of census tracts with high (6-10% of income spent on energy bills) or severe (>10%) energy burdens, underscoring the intensity of the issue statewide.
- Severe energy burdens (>10%) are rare across other states, and nonexistent in Hawaii and Washington, yet 8.5% of Alaska census tracts are severely burdened.
- Urban areas like Anchorage/Mat-Su show much lower energy burdens (2.3%), whereas the Southwest (12.0%) and Northern (8.3%) regions of Alaska experience the highest median energy burdens, highlighting stark geographic disparities.
- The lowest income households bear the brunt of the problem, carrying a median annual burden of 22.9%. In nearly 90% of Alaska census tracts, the lowest income households are severely energy burdened.
- Alaska's targeted programs have proven effective at reducing energy costs, yet scaling and broadening these initiatives is crucial to alleviate the severe, persistent burdens plaguing rural and low-income communities.

Overview

Alaska is home to some of the most extreme household energy burdens in the United States. Energy burden is the percent of annual household income spent on the annual energy costs of electricity, gas, and other home heating fuels.[1] This reality is driven by Alaska's geographic isolation, small and dispersed population, and limited energy infrastructure. Families across the state, particularly in rural and low-income communities, face energy costs that far exceed the national average. This can create significant economic, physical, and mental strain. Geographic isolation and limited infrastructure force reliance on small, costly diesel microgrids and socioeconomic disparities amplify these costs, particularly for low-income, rural residents with inefficient heating methods and limited fuel options. This report provides a comprehensive analysis of Alaska's energy burdens, compares the state to national trends, explores disparities within Alaska, and examines the drivers and consequences of these inequities. The findings highlight the urgency of addressing energy affordability through targeted policy action, community-driven solutions, and investment in energy infrastructure.

Methods

This report utilizes data from the U.S. Department of Energy's Low-Income Energy Affordability Data (LEAD) Tool to understand how much Alaskans spend on energy relative to their incomes. The analysis draws on estimates of energy costs and income ratios from the U.S. Census Bureau's American Community Survey, focusing on variations across census tracts. By categorizing energy burdens into levels ranging from low to severe, this report examines disparities linked to geographic location, income, and tenure. Visual tools, including maps and tables, illustrate the distribution of energy burdens statewide, while a regional case study offers deeper insights into highly burdened areas.

Energy Burden Findings

Alaska ranks second highest in the nation for average energy burdens. On average, Alaska households spend 4.3% of their household income on energy, compared to just 2.7% in the Lower 48 states. Nationally, Alaska has the largest share of census tracts (14.7%) where households spend 6% or more of their annual income on energy bills - classified as high or severe energy burdens. This problem is particularly prominent in rural regions like Southwest and Northern Alaska, where the vast majority of census tracts experience high or severe energy burdens.

[1] Ma et al., "Low-Income Energy Affordability Data (LEAD) Tool Methodology," 3.

By contrast, urban areas such as Anchorage and the Mat-Su Valley experience much lower burdens, with a median of 2.3% across census tracts. This stark urban-rural divide highlights the unique challenges faced by remote Alaska communities, including higher transportation costs, limited access to affordable energy sources, aging infrastructure, and small ratepayer bases.

The challenges are even more pronounced for Alaska's lowest income households, which spend a median of 22.9% of their annual income on energy, with some households dedicating nearly three-quarters of their annual earnings to managing energy costs. Renters are impacted more drastically than homeowners, with maximum energy burdens in the state reaching 51.5%, compared to 22.6% for homeowners.

Strategies to Reduce Energy Burden

Alaska has already demonstrated the effectiveness of targeted programs in reducing energy costs, but scaling and expanding these efforts is essential to address the severe and persistent burden faced by rural and low-income communities. Weatherization and energy efficiency programs have provided immediate cost relief, with previous investments reducing heating costs by an average of 30% across 50,000 households. These programs need broader funding and accessibility, particularly for renters and Tribal communities. The Power Cost Equalization (PCE) program remains a crucial tool for alleviating high energy costs, but its current limitations exclude key community institutions such as schools and Tribal government facilities. Community-driven renewable energy projects, such as wind and solar microgrids operated by Tribes and local cooperatives, offer a sustainable path forward, reducing reliance on volatile fossil fuel markets while fostering economic self-sufficiency. Independent Power Producers (IPPs) and Tribal utilities present an opportunity for long-term energy sovereignty, allowing communities to take control of their energy infrastructure and reinvest cost savings into local development.

Charting a Path Forward

Addressing Alaska's energy burden crisis requires a multi-pronged approach that prioritizes affordability, long-term sustainability, and community ownership. Expanding PCE to include essential community services and increasing funding for weatherization programs should be immediate policy priorities, ensuring that more households and public institutions benefit from cost reductions. At the same time, investments in community-led renewable energy projects must be scaled up, with dedicated funding and streamlined permitting processes to support Tribal utilities and rural cooperatives. Regulatory reforms are also needed to strengthen protections for energy-burdened households, improve utility rate structures, and create clearer pathways for community-owned power generation. Equally critical is fostering meaningful Tribal and rural collaboration in energy policy development, ensuring that decision-making processes respect Indigenous sovereignty and local expertise.

To make these solutions effective, state and federal agencies must work alongside Tribal governments, advocacy organizations, and utilities to develop equitable financing mechanisms, workforce training programs, and infrastructure investments. By taking decisive action today, Alaska can transform its energy system into one that not only reduces financial strain on households but also strengthens resilience, economic opportunity, and energy sovereignty for generations to come.

Recommended Actions

Alaska faces severe and disproportionate energy burdens, especially in low-income, rural, and Indigenous communities. This requires urgent, community-driven solutions that advance affordability, resilience, and energy sovereignty through strategic investments, policy reforms, and intentional collaboration.

- **Expand the PCE Program** to include essential community services (i.e. community and municipal buildings).
- **Increase funding for weatherization programs** to reduce household energy costs in both urban and rural areas.
- **Fully fund the Alaska Renewable Energy Fund (REF) and develop robust administrative support for the new Green Bank**, accelerating low-interest loans for efficiency and renewable energy projects.
- **Scale up investments in community-led renewable projects**, ensuring dedicated funding and streamlined permitting for Tribal utilities and rural cooperatives.
- **Enact regulatory reforms** to:
  - Strengthen protections for energy-burdened households.
  - Improve utility rate structures.
  - Create clearer pathways for community-owned power generation.
- **Foster meaningful Tribal and rural collaboration** in energy policy, respecting Indigenous sovereignty and incorporating local expertise.
- **Coordinate across state and federal agencies, Tribal governments, advocacy organizations, and utilities** to strengthen and further develop:
  - Equitable financing mechanisms.
  - Workforce training programs.
  - Strategic infrastructure investments.

Introduction

Access to affordable and reliable energy is essential for public health, economic stability, and cultural preservation in Alaska. Yet Alaskans face some of the highest energy costs in the nation and a restricted energy supply.[2] These challenges affect not just individual households but entire communities, especially rural and Native Alaskan populations, by creating barriers to healthcare, education, and limiting participation in subsistence activities.[3] Addressing energy burdens is therefore crucial for both the well-being of Alaska households and the long-term resilience of the state.

The American Council for an Energy-Efficient Economy (ACEEE) defines energy burden as the percentage of household income spent on energy costs.[4] This metric provides insight into which populations are disproportionately affected by high energy costs and helps identify communities that would benefit most from targeted energy justice policies. According to their 2020 report, "How High Are Household Energy Burdens?," the ACEEE finds the national median energy burden is 3.1%, while low-income households experience a significantly higher median burden of 8.1%.[5] Households paying more than 6% of their annual income on household energy costs are defined as having a high energy burden (or as "highly burdened"). Those paying more than 10% of their income are defined as having a severe energy burden (or as "severely burdened").[6] The distinction between these categories underscores the extreme financial strain some households face, with severely burdened households representing the most impacted subset.

[2] Alaska Energy Security Task Force, "Alaska Energy Security Task Force Report."
[3] Drehobl, Ross, and Ayala, "How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burden across the United States"; Schmidt et al., "Stoking the Flame"; Mckinley Research Group, "Alaska's Renewable Energy Economy: Progress and Possibility."
[4] Drehobl, Ross, and Ayala, 1.
[5] Drehobl, Ross, and Ayala, 9.
[6] Drehobl, Ross, and Ayala, 3.

Report Purpose

This report provides an in-depth analysis of energy burdens across Alaska, highlighting the extent of energy burden disparities and examining the underlying factors contributing to these inequities. It provides a foundation for data-driven decision-making and equitable energy solutions that address the needs of the most impacted communities. This report aims to inform policy and investment strategies that will promote energy justice and long-term resilience by assessing regional and demographic variations within energy burdens. Policymakers, Tribes, advocacy organizations, and others interested in addressing energy burden in Alaska can ensure that all Alaskans have access to affordable and reliable energy by prioritizing these strategies and thereby strengthening both household and community resilience.

To guide these efforts, this report seeks to answer the following key questions:

- What percentage of annual income do Alaskan households spend on energy?
- How do energy burdens in Alaska compare to national averages?
- How do energy burdens vary between low-income and non-low-income households?
- What regional disparities exist across Alaska?
- How do energy burdens differ between renters and homeowners?

Background

Understanding Energy Burden Drivers and Dynamics in Alaska

Energy burdens in Alaska are shaped by a complex interaction of geographic, economic, and infrastructural factors that extend beyond simple financial strain. The state's vast, rugged landscape and widely dispersed population make it difficult to ensure affordable and equitable energy access. Unlike other states, Alaska's electric system is entirely disconnected from regional or national grids, relying instead on a patchwork of independent microgrids that power some of the most remote and extreme environments in the country. While the Railbelt grid serves most of Alaska's population and supplies about 79% of the state's electricity needs, many rural and Alaska Native communities remain off the road system, forced to depend on inefficient diesel-based systems where fuel must be delivered by plane or barge.[7]

Alaska's energy infrastructure has historically evolved out of necessity, shaped by its extreme geography and limited road networks. Most rural communities are not connected to the Railbelt energy grid and instead operate small, stand-alone microgrids, many of which were established over the past 70 years as settlements adapted to modern electricity needs. Without the ability to draw from a larger, interconnected system, these microgrids rely on imported fuels, incurring high transportation costs not only for fuel but also for infrastructure materials and skilled labor.[8] These added expenses significantly raise energy prices, leading Alaska communities to pay nearly double the U.S. average price per kilowatt hour for electricity.[9] This in turn increases the cost of living for residents and imposes a disproportionate economic burden on remote communities.

Taken together, these geographic, historical, and infrastructural issues shape the overall energy landscape in Alaska. Many residents have limited access to cost-effective fuels and efficient utility services, often resulting in significant household energy expenses and strains on local resources. This backdrop underscores the critical need for innovative solutions, ranging from renewable energy integration to targeted policy reforms, that can address the underlying causes of high energy costs in remote and urban Alaskan communities alike.

[7] Mckinley Research Group, "Alaska's Renewable Energy Economy: Progress and Possibility," 4.
[8] Mckinley Research Group, 4; Schmidt et al., "Stoking the Flame."
[9] Mckinley Research Group, "Alaska's Renewable Energy Economy: Progress and Possibility," 4.

Adverse Effects of High Energy Burdens

This report reveals that low-income and rural Alaskan households spend, on average, a higher percentage of their income on energy than their higher income and urban counterparts. Alaskans as a whole bear a greater average energy burden when compared to the residents of Hawaii, Washington, and the Lower 48 states. High energy burden is linked to numerous adverse effects, including impacts to residents' physical and mental health and well-being, disruptions to community and cultural practices, and stagnated local economies and prolonged poverty.[10] Affordable and reliable energy is essential for maintaining a high quality of life. Energy is needed to heat homes, store food and medicine, charge devices, and provide lighting. For many households, high energy burdens force difficult trade-offs, such as between paying for energy and covering other essential needs like food, housing, or transportation.[11]

Health and Well-Being

High energy burdens reach well beyond monthly budgets, seriously affecting people's health, safety, and mental well-being. Many households with high energy bills live in older, inefficient homes, which can lead to issues like asthma, discomfort from extreme heat or cold, and exposure to harmful gases.[12] Renters in Alaska experience a higher vulnerability to these issues, especially since they have limited agency in decision making for creating more energy efficient homes. Many energy burdened households are forced to use unsafe alternative methods, including ovens and space heaters, to stay warm or to choose between paying for energy and buying food or medicine.[13] This induced stress can lead to anxiety, depression, or other adverse mental health effects from the constant fear of losing essential services.[14]

Cultural and Community Impacts

High energy burdens not only affect individual households but also disrupt cultural practices and community well-being. In rural Alaska communities, traditional subsistence activities such as fishing, trapping, and gathering wood are essential for both cultural preservation and economic resilience.[15] However, the high cost of energy limits residents' ability to participate in these activities, leading to reduced access to traditional food sources and thereby decreased food security and a disruption to cultural ties.[16] High energy costs may also strain community resources, such as schools and other essential institutions for community well-being, potentially diverting funds away from education, student programs, and community development.

[10] Drehobl, Ross, and Ayala, "How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burden across the United States," 4.
[11-14] Drehobl, Ross, and Ayala, 5.
[15] Schmidt et al., "Stoking the Flame."
[16] Schmidt et al.

Economic Ramifications

Households with high energy burdens are more likely to remain in poverty over time, even when accounting for factors like income, health, and education. **Energy-burdened households face up to a 200% greater likelihood of prolonged poverty compared to non energy-burdened households.**[17] High energy burdens can lead to a cycle of debt due to late energy bill payments and can limit opportunities for residents to invest in things like education or job training, reinforcing financial instability.

Looking Forward

As the nation's only arctic state, Alaska communities are on the front lines of climate change. Alaska is warming at more than twice the rate as the rest of the nation, resulting in increased precipitation, erosion, and melting permafrost and river/sea ice.[18] In remote communities, these changes pose significant threats to fuel transportation. Most inland communities rely on barge deliveries during the summer, when rivers are free of ice, but shifts in river channels, low water levels, and expected storms can disrupt or delay shipments.[19] As the climate warms and permafrost thaws, even alternative routes over ice roads are becoming less dependable.[20] The damage caused by these compounded issues is expected to cost hundreds of millions of dollars each year, and local infrastructure is threatened by these conditions.[21] As such, there is a heightened urgency of tackling high household energy burdens now. These challenges (and those described previously) highlight the importance of achieving energy sovereignty, where communities have control over their energy systems and pricing. Climate change related effects make the transition to renewable, affordable energy more critical than ever. Renewable energy solutions, particularly those led by Tribes or local organizations, offer a pathway to reducing costs while fostering economic self-determination and preserving cultural traditions. Investing in community-owned, renewable energy infrastructure can help alleviate the immediate and long-term effects of high energy burdens, creating a more sustainable and equitable future for all Alaska communities.

Community leaders and advocates have, and will continue to work hard to increase investment and control in renewable energy development. However, widespread adoption is a necessity, with cross-sectoral strategies that integrate energy, health, and housing as essential to protecting Alaska communities in a warming world.

[17] Drehobl, Ross, and Ayala, "How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burden across the United States," 6.

[18] Mckinley Research Group, "Alaska's Renewable Energy Economy: Progress and Possibility," 1; Melvin et al., "Climate Change Damages to Alaska Public Infrastructure and the Economics of Proactive Adaptation."

[19, 20] Anderson, Jordan, and Baring-Gould, "Distributed Renewables for Arctic Energy: A Case Study."

[21] Mckinley Research Group, "Alaska's Renewable Energy Economy: Progress and Possibility."

Methods

Data Sources

This report uses data from the U.S. Department of Energy's Low-Income Energy Affordability Data (LEAD) Tool to understand how much Alaskans spend on energy relative to their income. The LEAD Tool is an interactive platform that helps users make data-driven energy decisions by providing insights into low- and moderate-income household energy characteristics across customizable U.S. geographic areas.[22] It compiles and models data from the U.S. Census Bureau's 2018 5-year American Community Survey (ACS), an ongoing nationwide survey that provides demographic, social, economic, and housing data at various geographic levels, providing comprehensive insights into household energy expenditures and income ratios.[23] The LEAD Tool thereby enables estimations of energy burdens across Alaska's census tracts, providing a critical foundation for understanding regional disparities in energy affordability. It also offers data on income levels and housing tenure, enabling comparisons of energy burdens across these key characteristics. Lastly, Alaska regions are defined by the Alaska Department of Labor and Workforce Development and are utilized for comparisons of energy burdens across the state's geography.

Key Definitions

To aid in interpreting the data, this report uses the following definitions:

Energy Burden:

Energy burden is defined as the percentage of annual household income spent on annual energy costs (i.e. electricity, gas and other fuels).[24] For clarity and consistency, energy burdens are categorized according to Department of Health and Human Services (DHHS) definitions:[25]

- **Low Energy Burden:** Below 3% of household income spent on energy.
- **Medium Energy Burden:** 3%-6% of household income spent on energy.
- **High Energy Burden:** 6%-10% of household income spent on energy.
- **Severe Energy Burden:** Above 10% of household income on energy.

[22] Ma et al., "Low-Income Energy Affordability Data (LEAD) Tool Methodology."
[23] US Census Bureau, "American Community Survey Information Guide."
[24] Ma et al., "Low-Income Energy Affordability Data (LEAD) Tool Methodology," 3.
[25] Applied Public Policy Research Institute for Study and Evaluation, "LIHEAP Energy Burden Evaluation Study: Final Report."

This report excludes other utility costs related to water, transportation, telecommunications, and internet. While these expenses can place additional financial strain on households, energy burden calculations are calculated by dividing the average annual energy costs of main heating fuels by the annual median household incomes as shown below:

$$\textit{Average Energy Burden (\%)} = \frac{\textit{Average Annual Energy Costs (\$)}}{\textit{Annual Median Household Income (\$)}}$$

Main Heating Fuel

Main heating fuel is defined by the ACS as the type of fuel used most to heat the house, apartment, or mobile home.[26] There are three types of main heating fuels that make up average annual energy costs and they are grouped as follows:

- Electricity
- Gas
  - Utility Gas
  - Bottled, Tank, or LP Gas
- Other Fuels
  - Fuel Oil, Kerosene, etc..
  - Coal or Coke
  - Wood
  - Solar Energy
  - Other Fuel

Household energy burden statistics for "All Fuels" include the energy costs of all main heating fuels a household might use, like electricity, gas, or any other type of fuel.

Income Level

Area Median Income (AMI) represents the midpoint income for families in a specific area. We examine energy burdens across AMI categories to show differences across income levels and households who qualify for housing affordability programs. AMI is defined by the U.S. Department of Housing and Urban Development, with an AMI category of 0-30% representing the lowest-income households who earn 0-30% of the area median income.[27] AMI categories examined are as follows:

- **AMI Categories:** 0-30%, 30-60%, 60-80%, 80-100%, 100-150%, 150+%

Federal Poverty Level (FPL) is determined by the U.S. Department of Health and Human Services and calculated using household income and number of persons in household.[28] Households are categorized as being in a state of poverty if their household income is below 200% of the federal poverty level.

[26] US Census Bureau, "Home Heating Fuel."
[27] U.S. Department of Housing and Urban Development, "FY2022 Income Limits."
[28] U.S. Department of Health and Human Services, "2022 HHS Poverty Guidelines."

Tenure
Renters: Households that are leased from another person or entity.
Owners: Households that are owned by the person/people living there.

Data Analysis

For this report, we collected data from the LEAD Tool, which provides estimates of energy burden by census tract for all types of main fuel used. In addition, we analyzed the data by region, income level, and tenure to compare energy burden levels across different areas and communities in Alaska.

In Alaska, the distribution of energy burden data appears skewed, with a small, yet significant number of census tracts experiencing exceptionally high burdens. Thus, the median energy burden of census tracts was primarily used to summarize the data as it reduces the influence of extreme values.

The data were analyzed to identify:

- **Energy Burden Distribution:** We calculate the proportion of households experiencing low, medium, high, and severe energy burdens across Alaska. This allowed for a complete picture of how energy costs affect households statewide and when compared to Hawaii, Washington and the Lower 48 states as a whole. While we compare Alaska's data to the broader 'Lower 48,' we highlight Hawaii and Washington separately. Hawaii, like Alaska, is not connected to the national grid, and Washington is geographically the nearest U.S. state. These parallels provide a more meaningful benchmark for Alaska's unique energy challenges.
- **Regional Trends:** We examine regional trends to assess how geographic location influences household energy affordability.
- **Income Relationship:** We explore relationships between income levels and energy burdens with special focus on households living in poverty.
- **Tenure Relationship:** We investigate the relationship between owning and renting a home and energy burden.

We give particular attention to census tracts where high (6%-10%) and severe (>10%) energy burdens are prevalent, highlighting areas most affected by energy costs. This part of the analysis aimed to identify potential hotspots where energy affordability challenges are most acute.

We present findings from this analysis through narrative descriptions and visualizations, providing a clear overview of the energy burden landscape in Alaska. Key insights from high-burden regions are illustrated in figures and charts, helping to convey where and how energy costs disproportionately affect different communities. Additionally, a regional case study into Aniak, Alaska is provided to offer deeper insights into specific areas with elevated energy burden levels.

This methodological approach enables a comprehensive view of Alaska's energy burden landscape. The report is intended to support policymakers, Tribes, advocacy organizations, and others interested in addressing energy burdens in Alaska in targeting interventions where they are needed most, helping to enhance energy affordability and addressing economic pressures on households across Alaska.

Limitations

This paper faces limitations that may affect the depth and scope of its findings. One key limitation is the lack of publicly available and accessible data on energy burdens in Alaska, which constrains the analysis and prevents a complete understanding of the issue at hand. Additionally, there is insufficient data on how energy burdens impact different racial and ethnic groups within the state due to the unavailability of filtering energy burden data by race within the LEAD Tool. This gap makes it difficult to examine the intersection of energy affordability with systemic inequities and ensure that policies are equitable across all populations. Moreover, the LEAD Tool's underlying modeling decisions, such as how it weights data across census tracts, influence the data used in this report and may lead to over- or underestimates of actual energy burdens, especially when considering the varied and large Alaskan census tracts. Relying on aggregated data from the LEAD Tool means that localized nuances or individual household experiences may be obscured, including in census tracts where data is incomplete or missing.

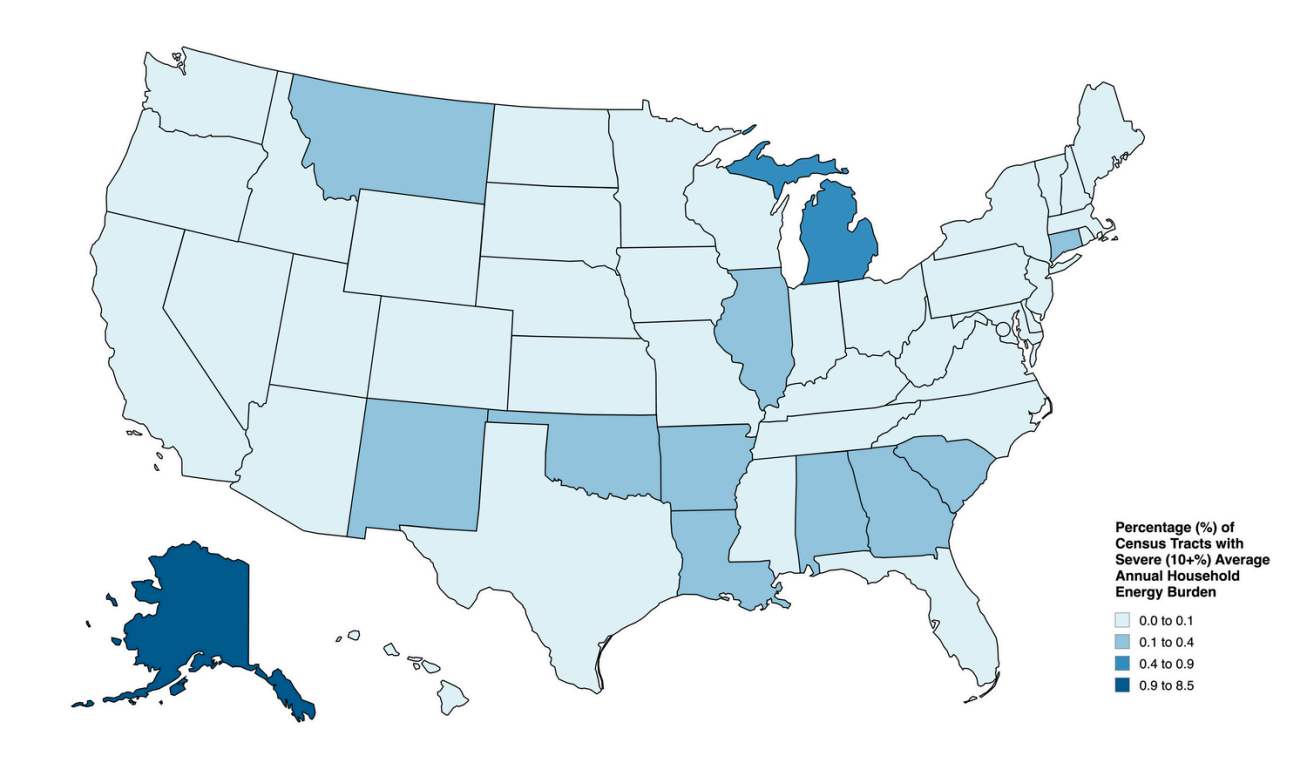
Together, these limitations highlight the need for more granular and inclusive data collection within Alaska to inform future research and policy recommendations. Methodologies that fully support modeling Alaskan communities, alongside more detailed datasets, would produce a deeper and more accurate understanding of energy burden trends. Expanding the scope of data to include intersectional and fuel-specific impacts will be crucial for future efforts to address the state's energy burden challenges more effectively and equitably.

Energy Burden Findings

National to Alaska Comparison

Alaska experiences a uniquely intense household energy burden, ranking second in the nation for average household energy burden. **Amongst all states, Alaska holds the highest percentage of census tracts (14.7%) with high or severe energy burdens.** Severe energy burdens are rare across other states, and nonexistent in Hawaii and Washington. **Yet, 8.5% of Alaska's census tracts fall into this category, a percentage that is about 10x higher than the next highest state**, highlighting its distinctive energy affordability challenges.

This choropleth graph shows the distribution of the percentage of census tracts within the severe average annual energy burden category for all main heating fuel types (electricity, gas, and other) across Alaska, Hawaii, and the Lower 48 states.



Note: The total number of census tracts is 83,889; however, 787 (0.9% of total #) census tracts have no data from LEAD Tool and one census tract was removed as an outlier (204.04% in a NY census tract); Percentages are calculated from the full N values of each state.

This table below provides a full picture of energy burdens, outlining the distribution of average annual household energy burdens across Alaska, Hawaii, Washington and the Lower 48 states.

Comparison States	# of Census Tracts	Average Annual Household Energy Burden for All Heating Fuel Types (Electricity, Gas, and Other Fuels)							
		Low (0-3.8%)	Medium (3.8-6%)	High (6-10%)	Severe (10+%)	Minimum (%)	Mean (%)	Median (%)	Maximum (%)
		% of total	% of total	% of total	% of total				
Alaska	177*	55.4	28.8	6.2	8.5	1.4	4.3	3.3	**15.8**
Hawaii	436**	91.3	5.7	0.2	0.0	0.8	2.4	2.2	**6.5**
Washington	1,772	99.3	0.6	0.0	0.0	0.3	1.7	1.6	**5.7**
Lower 48 States (Aggr.)	83,889***	81.3	15.5	2.1	0.1	0.0	2.7	2.5	**48.7****

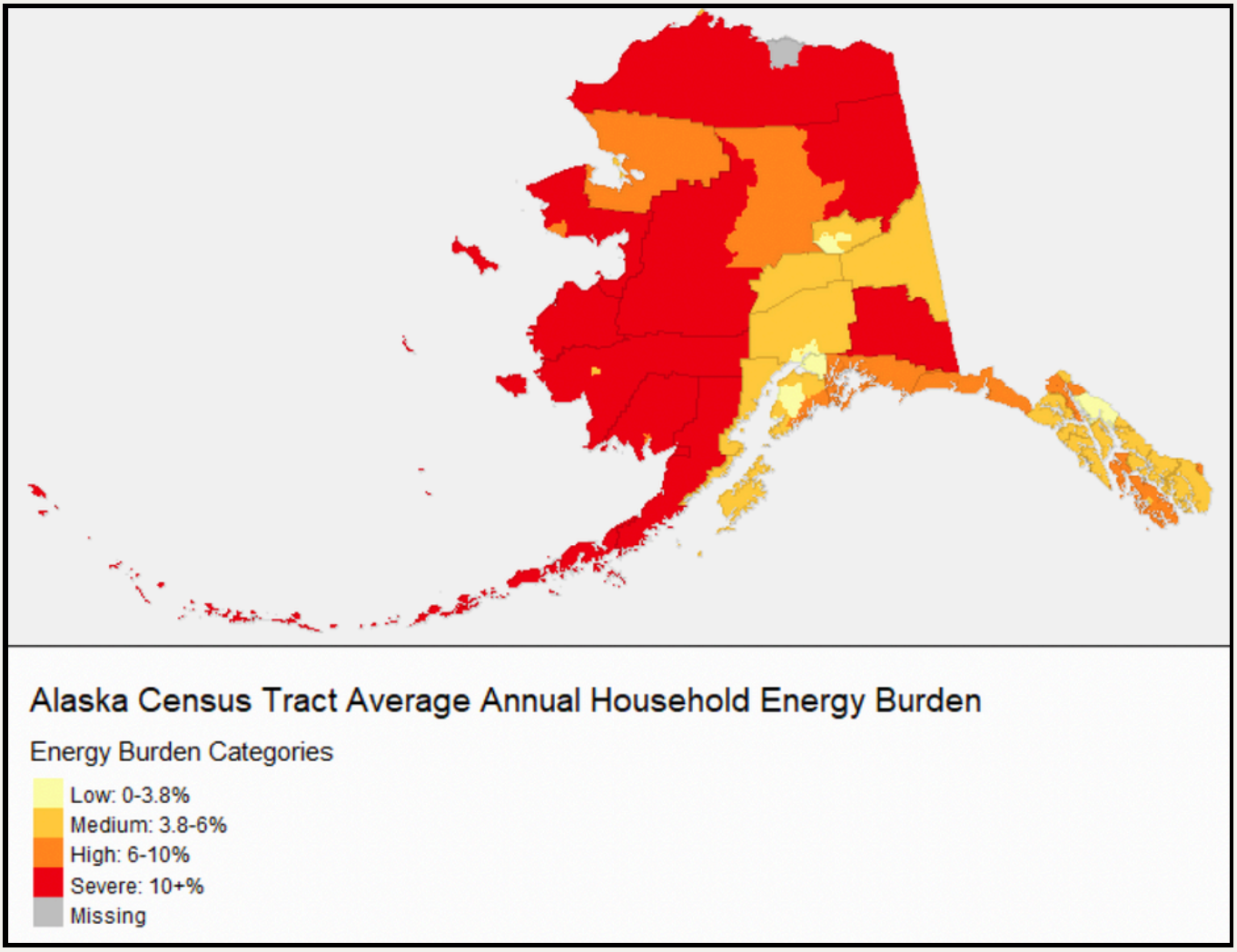
*** Note:** Total number of census tracts is 177; However, 2 (1.1% of total #) census tracts have no data from LEAD Tool ; Percentages are calculated from the full N=177 value.
**** Note:** Total number of census tracts is 436; However, 12 (2.8% of total #) census tracts have no data from LEAD Tool ; Percentages are calculated from the full N=436 value.
***** Note:** Total number of census tracts is 83,889; However, 787 (0.9% of total #) census tracts have no data from LEAD Tool and one census tract was removed as an outlier; Percentages are calculated from the full N=83,889 value
****** Note:** The maximum for the data set (204.0%) is for a census tract in NY and is an outlier compared to other census tracts, so it was removed from this analysis. The LEAD data used for this analysis includes the 50 states. Puerto Rico, and the District of Columbia; Puerto Rico and the District of Columbia were not included in the comparative analysis of Alaska, Hawaii, and the Lower 48 states.

Statewide Analysis - All Heating Fuel Types

Alaska's median household energy burden of 3.3% is significantly higher than the Lower 48 median of 2.5%. For households using any type of fuel, 6.2% of census tracts experience a high annual energy burden, and even more (8.5%) of census tracts face a severe burden, underscoring the challenges many Alaskans encounter in meeting energy costs.

Although the state average (mean) burden is 4.3%, the visual below reveals that burdens vary widely across Alaska, with the highest burdens appearing in the Southwest and Northern regions.

This choropleth map shows the distribution of average annual household energy burden categories for all main heating fuel types (electricity, gas, and other fuels) across Alaska census tracts.



Note: Total number of census tracts is 177; However, 2 (1.1% of total #) census tracts have no data from LEAD Tool ; Percentages are calculated from the full N=177 value.

By capturing the full picture of energy burdens, this map highlights the compounded challenges faced by many Alaskans, particularly in rural areas. This distinction underscores the importance of considering total energy costs when analyzing energy burdens and developing targeted interventions.

Disparities Within Alaska - Income Groups

Income emerges as a critical determinant of energy burden with the data revealing a stark relationship between household income and energy costs. The full findings of the average annual household energy burden for all fuel types (electricity, gas, and other fuels), separated by AMI categories are presented in the table below.

Area Median Income (AMI) Category	# of Households (% of Total)	Av. Annual Household Energy Burden for All Heating Types (Electricity, Gas, and Other Fuels)											
		Low (0-3.8%)		Medium (3.8-6%)		High (6-10%)		Severe (10+%)		Min. (%)	Mean (%)	Median (%)	Max. (%)
		# of tracts	% of total	# of tracts	% of total	# of tracts	% of total	# of tracts	% of total				
Total (0-150+%)	264,390 (100.0%)	98	55.4	51	28.8	11	6.2	15	8.5	1.4	4.3	3.3	**15.8**
0-30%	31,292 (11.8%)	3	1.7	5	2.8	10	5.6	156	88.1	0.6	**26.8**	**22.9**	**120.0***
30-60%	42,384 (16.0%)	9	5.1	45	25.4	70	39.5	51	28.8	2.0	**9.5**	**7.6**	**65.4**
60-80%	29,774 (11.3%)	31	17.5	61	34.5	58	32.8	25	14.1	1.8	**6.8**	5.7	**40.2**
80-100%	28,433 (10.8%)	66	37.3	46	26.0	43	24.3	19	10.7	1.4	5.6	4.5	**21.5**
100-150%	60,257 (22.8%)	105	59.3	42	23.7	21	11.9	6	3.4	1.1	3.8	3.1	**13.1**
150+%	72,249 (23.7%)	151	85.3	17	9.6	5	2.8	1	0.6	0.5	2.4	2.0	**10.2**

Note: The analysis is limited by missing data from 3 census tracts (1.7% of the total 177). Percentages are calculated from the full N=177.
*** Note:** A result of energy burden that is more than 100% is not intuitive but is likely the result of summing across census tracts with aggregate household statistics.

Energy burden analysis by income level shows that **Alaska's lowest-income households (0-30% AMI) are disproportionately affected by higher energy burdens** with a median energy burden of 22.9%. Alarmingly, the lowest income households experience severe energy burdens in nearly 90% of census tracts.

Households in the 0–30%, 30–60%, and 60–80% AMI brackets show a notably wide range of energy burdens, with maximum burdens reaching 129%, 65.4%, and 40.2%, respectively. This suggests extremely high energy burdens remain a significant risk for many low- to moderate-income households. In stark contrast, households in the highest income group (150%+ AMI) face a median energy burden of only 2.0%, with households in this group experiencing severe burdens in only one census tract.

This pattern highlights a clear disparity, where low-income households pay a much larger share of their income on energy than wealthier households. The data emphasizes a critical energy affordability crisis among some of Alaska's most vulnerable residents. While the overall state mean energy burden is 4.3%, this percentage masks the severe challenges faced by low-income households, underscoring the need for targeted policies and interventions to address energy affordability for those most in need.

Disparities Within Alaska - Poverty Status

A similar trend emerges when comparing households in poverty (below 200% of the FPL) to those not in poverty as shown in the table below.

Household Income	# of Households (% of Total)	Av. Annual Household Energy Burden for All Heating Types (Electricity, Gas, and Other Fuels)											
		Low (0-3.8%)		Medium (3.8-6%)		High (6-10%)		Severe (10+%)		Min. (%)	Mean (%)	Median (%)	Max. (%)
		# of tracts	% of total	# of tracts	% of total	# of tracts	% of total	# of tracts	% of total				
Total	264,390 (100.0%)	98	55.4	51	28.8	11	6.2	15	8.5	1.4	4.3	3.3	**15.8**
< 200% Federal Poverty Line	69,428 (26.2%)	6	3.4	14	7.9	64	36.2	90	50.8	2.4	**12.4**	**10.1**	**72.8**
> 200% Federal Poverty Level	222,531 (84.2%)	109	61.6	40	22.6	15	8.5	11	6.2	1.2	3.9	2.9	**14.5**

*** Note:** Total number of census tracts is 177; However, 3 (1.7% of total #) census tracts have no data from LEAD Tool; Percentages are calculated from the full N=177 value

Alaska households in poverty face a median energy burden of 10.1%, more than three times higher than the 2.9% median burden for households not in poverty.

Importantly, Alaska households in poverty face higher median energy burdens (10.1%) than those reported nationally (8.1%).[29] These Alaska households experience severe energy burdens in more than half of the census tracts, with some spending up to almost three fourths of their income on energy, further highlighting the urgent need for targeted solutions to support Alaska's most vulnerable populations.

Alaska's Heating Assistance Program (HAP) helps to offset the costs of heating the homes of eligible residents. HAP provides assistance to residents with 150% of the FPL or lower. That is, eligible households must be at or below the income guidelines, defined by the Alaska Department of Health and outlined in the table below.[30]

Heating Assistance Program Thresholds	
Number of People in Home	**Monthly Gross Income**
1	$2,350
2	$3,192
3	$4,033
4	$4,875
5	$5,715
6	$6,556
For each additional household member, add $841	

This assistance may be crucial to addressing the costs of home heating fuels for households at or below 150% the FPL.

[29] Drehobl, Ross, and Ayala, "How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burden across the United States," 10.
[30] Alaska Department of Health, "Heating Assistance Program."

This table shows that the vast majority of these households shoulder high or severe average energy burdens.

	Av. Annual Household Energy Burden for All Heating Types (Electricity, Gas, and Other Fuels)							
	FPL: 0-100%				FPL: 100-150%			
	Avg. Annual Household Energy Burden: 27.8%				Avg. Annual Household Energy Burden: 11.5%			
	Low 0-3.8%	Medium 3.8-6%	High 6-10%	Severe 10+%	Low 0-3.8%	Medium 3.8-6%	High 6-10%	Severe 10+%
# of Census Tracts (N=177)*	2 (1.1%)	3 (1.7%)	7 (4%)	162 (91.5%)	9 (5.1%)	21 (11.9%)	64 (36.2%)	80 (45.2%)

*** Note:** Total number of census tracts is 177; However, 3 (1.7% of total #) census tracts have no data from LEAD Tool; Percentages are calculated from the full N=177 value

Disparities Within Alaska - Tenure (Home Owners vs. Renters)

Housing tenure adds another layer of complexity to energy burden dynamics. This table shows the findings for the average household energy burden for all heating fuel types (electricity, gas, and other fuels) for renter- and owner-occupied housing.

Tenure Status	# of Households across 177* Census Tracts (% of Total)	Av. Annual Household Energy Burden for All Heating Types (Electricity, Gas, and Other Fuels)											
		Low (0-3.8%)		Medium (3.8-6%)		High (6-10%)		Severe (10+%)		Min. (%)	Mean (%)	Median (%)	Max. (%)
		# of tracts	% of total	# of tracts	% of total	# of tracts	% of total	# of tracts	% of total				
Total	264,390 (100.0%)	98	55.4	51	28.8	11	6.2	15	8.5	1.4	4.3	3.3	**15.8**
Owner-Occupied	175,212 (66.3%)	97	54.8	48	27.1	12	6.8	16	9.0	0.5	4.4	3.3	**22.6**
Renter-Occupied	89,178 (33.7%)	104	58.8	39	22.0	19	10.7	12	6.8	0.5	4.4	3.3	**51.5**

*** Note:** Total number of census tracts is 177; However, 3 (1.7% of total #) census tracts have no data from LEAD Tool; Percentages are calculated from the full N=177 value

Owner-occupied and renter-occupied households experience the same median annual household energy burden of 3.3%. However, there are substantial differences in the range of energy burdens experienced by each group. The maximum burden for owner-occupied households reaches 22.6%, while renter-occupied households face a significantly higher maximum burden of 51.5%, spending more than half of their income on home energy bills.

Despite these extreme differences at the high end, the distribution of census tracts across various burden categories (low, medium, high, and severe) is relatively similar for both owner- and renter-occupied households. **This suggests that while both groups share the same median energy burden, renters are more likely to experience the most extreme energy burdens**, highlighting the heightened vulnerability of renter-occupied households in Alaska.

Disparities Within Alaska - Regional Energy Burdens

Regional energy burdens are presented by Alaska's boroughs and census areas by economic region, as defined by the Alaska Department of Labor and Workforce Development and presented in the figure below.[31] Each region groups census areas and boroughs by similar economic conditions which can include community type (e.g, urban, suburban, or remote), transportation infrastructure (e.g., connectivity to the road system or Alaska Marine Highway System), and grid structure (e.g., Railbelt or microgrid).

[31] Alaska Division of Homeland Security and Emergency Management, "State of Alaska Hazard Mitigation Plan," 2–2.

Alaska's energy burden shows a sharp urban-rural divide. Anchorage/Mat-Su posts the state's lowest median burden, while the Southwest and Northern regions, where 68% of residents identify as Alaska Native or American Indian, face much higher burdens.[32]

Southwest and Northern Regions - High and Severe Energy Burdens

The Southwest Region experiences the highest median energy burden in Alaska, classified as severe at 12%. All census tracts in this region face either high or severe burdens, highlighting the significant financial strain on households. **In the Northern Region, the median energy burden is classified as high at 8.3%, with more than half of the census tracts falling into high or severe categories.** These elevated burdens reflect the compounded challenges of extreme climates, high transportation costs, and reliance on expensive fuel sources. These communities are predominantly off the road system without large commercial ports and are only accessible by plane, seasonal barge, or snowmachine. The full breakdown of average annual household energy burden by economic region is presented in this table.

Economic Region	# of Census Tracts	Av. Annual Household Energy Burden for All Heating Types (Electricity, Gas, and Other Fuels)											
		Low (0-3.8%)		Medium (3.8-6%)		High (6-10%)		Severe (10+%)		Min. (%)	Mean (%)	Median (%)	Max. (%)
		# of tracts	% of total	# of tracts	% of total	# of tracts	% of total	# of tracts	% of total				
Anchorage/ Mat-Su	85*	76	89.4	8	9.4	0	0.0	0	0.0	1.4	2.6	2.3	5.3
Gulf Coast	22	8	36.4	10	45.5	3	13.6	1	4.5	2.2	4.7	4.2	**10.0**
Interior	29	5	17.2	20	69.0	1	3.4	3	10.3	1.8	5.0	4.5	**11.5**
Northern	7**	0	0.0	2	28.6	2	28.6	2	28.6	3.8	**8.1**	**8.3**	**11.7**
Southeast	23	9	39.1	10	43.5	4	17.4	0	0.0	1.9	4.6	4.7	**8.4**
Southwest	11	0	0.0	1	9.1	1	9.1	9	81.8	5.2	**11.9**	**12.0**	**15.8**

*** Note:** Total number of census tracts is 85 for Anchorage/Mat-Su Region; However, 1 census tract has no data from LEAD Tool; Percentages are calculated from the full N=85 value

**** Note:** Total number of census tracts is 7 for Northern Region; However, 1 census tract has no data from LEAD Tool ; Percentages are calculated from the full N=7 value

[32] Alaska Department of Labor and Workforce Development, "Alaska Population Estimates."

Additionally, we display the average annual household energy burden for all heating fuel types (electricity, gas, and other fuels) by each borough/census area.

Average Annual Household Energy Burden for All Heating Fuel Types (Electricity, Gas, and Other Fuels)			
Economic Region	**Borough/Census Area**	**Mean**	**Median**
Anchorage/ Mat-Su *	Anchorage Municipality	2.2%	2.1%
	Matanuska-Susitna Borough	3.4%	3.1%
Gulf Coast	Chugach Census Area	**7.4%**	**7.3%**
	Copper River Census Area	**10.0%**	**10.0%**
	Kenai Peninsula Borough	4.1%	3.9%
	Kodiak Island Borough	4.1%	4.5%
Interior	Denali Borough	4.8%	4.8%
	Fairbanks North Star Borough	4.1%	4.1%
	Southeast Fairbanks Census Area	5.4%	5.4%
	Yukon-Koyukuk Census Area	**10.3%**	**10.8%**
Northern	Nome Census Area	**9.3%**	**9.3%**
	North Slope Borough	**7.7%**	**7.7%**
	Northwest Arctic Borough	**7.3%**	**7.3%**
Southeast	Haines Borough	**7.8%**	**7.8%**
	Hoonah-Angoon Census Area	5.7%	5.7%
	Juneau City and Borough	2.8%	2.8%
	Ketchikan Gateway Borough	3.3%	3.0%
	Petersburg Borough	5.4%	5.4%
	Prince of Wales-Hyder Census Area	**6.7%**	**6.6%**
	Sitka City and Borough	5.6%	5.6%
	Skagway Municipality	4.7%	4.7%
	Wrangell City and Borough	4.7%	4.7%
	Yakutat City and Borough	**6.9%**	**6.9%**
Southwest	Aleutians East Borough	**11.6%**	**11.6%**
	Aleutians West Census Area	**13.4%**	**13.4%**
	Bethel Census Area	**9.9%**	**10.8%**
	Bristol Bay Borough	**12.9%**	**12.9%**
	Dillingham Census Area	**12.2%**	**12.2%**
	Kusilvak Census Area	**12.0%**	**12.0%**
	Lake and Peninsula Borough	**14.2%**	**14.2%**

*** Note:** Total number of census tracts is 85 for Anchorage/Mat-Su Region; However, 1 census tract has no data from LEAD Tool ; Percentages are calculated from the full N=85 value

**** Note:** Total number of census tracts is 7 for Northern Region; However, 1 census tract has no data from LEAD Tool ; Percentages are calculated from the full N=7 value

Interior, Gulf Coast, and Southeast Regions - Moderate Burdens with Localized Strain

Regions such as the Interior, Gulf Coast, and Southeast exhibit more moderate energy burdens, but specific areas still experience severe financial pressures. For example, the Yukon-Koyukuk Census Area in the Interior Region has a severe median burden of 10.8%, and the Copper River Census Area in the Gulf Coast reports a similar burden at 10.0%. These localized pockets of severe energy costs underscore the variability within otherwise moderately affected regions. Not all communities in these regions are on the road system or connected to the Railbelt electric grid. Some coastal communities in these regions have low cost hydro-powered electricity, commercial port infrastructure, and connect to the Alaska Marine Highway System of ferries.

Anchorage/Mat-Su Region - Low Burdens and Urban Advantage

In contrast, the Anchorage/Mat-Su Region has the lowest median energy burden in the state at 2.3%. No census tracts in this region report high or severe burdens, reflecting the advantages of more robust infrastructure, greater accessibility to energy services, and lower transportation costs. This contrast illustrates the substantial divide between Alaska's urbanized areas and rural, more isolated communities. This region is at the center of the Railbelt electric grid, Alaska's road system, and the Don Young Port of Alaska.

Rural Challenges and Systemic Barriers

Rural communities across Alaska face unique and intersecting challenges that exacerbate energy burdens. The diverse and difficult topography and sheer size of the state are key factors that lead to the isolation of many of these communities. Approximately 30% of the state's population lives in over 200 rural and Tribal communities with most only accessible by plane or boat.[33] Relying on these transport methods significantly increases the cost of living and impact of rising fuel costs. The Western region, for instance, operates on a 180-day fuel delivery window by boat, creating logistical hurdles that drive up energy prices.[34] Unlike urban areas, rural electric utilities operate as stand-alone entities serving small ratepayer bases, making them particularly vulnerable to the financial impact of national regulations and rising energy rates. **As a result, Alaska's remote communities experience energy cost burdens more acutely than consumers in the contiguous United States.**

[33] Alaska Municipal League, "State of Alaska Priority Sustainable Energy Action Plan," 15.
[34] AlaskaBusiness, "Beating the Ice."

Case Study

An Interview with Wayne Morgan on Energy Sovereignty in Aniak

The Village of Aniak is situated within the Bethel Census Area of the Southwest Region of Alaska, an area with some of the highest median energy burdens in the state. In May of 2023, Tribal residents of Aniak experienced a drastic 400% increase on their monthly energy bills. This sharp and sudden spike illustrates the vulnerabilities many remote communities face, from reliance on a single utility provider to limited control over local grids, creating skyrocketing costs that threaten subsistence activities, cultural traditions, and overall community well-being.

Wayne Morgan, a community leader and advocate for Tribal energy sovereignty, sat down to share his insights on how this crisis has spurred Aniak to explore new models of local control, renewable energy adoption, and policy reform. Wayne's insights provide a firsthand look into the challenges, successes, and broader implications of confronting severe energy burdens. A reflection is provided beneath each of Wayne's responses; these are not Wayne's words but rather the co-authors' interpretation of his response.

Question 1: Defining Energy Sovereignty in Aniak

From your perspective, what does true energy sovereignty mean for Aniak beyond just infrastructure—how does it connect to your community's cultural values, economic self-determination, and vision for future generations?

> *"Being in control of energy and control of prices within Aniak is what benefits all users. It means having more dollars that can be used for other things in our communities. We need more subsistence activities, but because of the high cost of energy for heating homes, keeping lights on, and fuel for vehicles, we have to be restrictive in how we use our money. This means less money for doing subsistence activities. ... In summer there is less fishing you can do because of fuel prices, so you may or may not get what you need for the winter. ... For me personally, I do less boating and have to be really selective about going out. You try to stay closer to the community to do things."*

Wayne underscores how energy sovereignty goes beyond technical solutions; it directly affects cultural practices like subsistence fishing and fosters a vision of economic independence in which communities can determine how their dollars are spent.

Question 2: Immediate and Long-Term Impacts of a 400% Rate Increase

Could you describe the immediate and long-term impacts of the 400% rate increase on Tribal members, and how this experience has shaped the community's approach to energy independence?

> *"The 400% increase has had a big impact on our community. It means hundreds of dollars more each month for families. It limits how we travel ... It takes families longer to recover from financial hardships like this, especially when they're living paycheck to paycheck or if they are Elders living off of their disability checks. Everything involving activities is limited now. This crisis has put us in focus - we need to pursue renewable energy, pursue Tribally owned utility development, and push for policy change within the state of Alaska to benefit and protect communities like Aniak. These policy actions affect our everyday lives. We want to keep this at the forefront for our community and other rural communities in the state."*

Question 3: Mobilizing the Community

How did the Aniak Traditional Council and community mobilize to respond to the energy crisis, and what key lessons did you learn about the importance of Tribal leadership in addressing energy challenges?

> *"Right after the rate increase in May 2023, we participated in the RCA*[35] meeting that happens monthly. ... People shared their frustrations with the RCA and let them know our frustration about the way they approved the rate increase. ...The Tribe wrote letters to the governor's office and to the RCA, asking them to fix the problem. That's how we started getting the word out to the state."*

This direct engagement with regulators and state officials highlights the power of organized community leadership, showing that grassroots advocacy can raise awareness and help to drive policy change.

Question 4: Barriers to Tribal Utility Development

What specific barriers prevent Aniak from developing its own Tribal utility or becoming an Independent Power Producer, and what systemic changes would be needed to overcome these challenges?

> *"We have to work with our current utility by bringing Aniak Light & Power to the table and starting talks about the future. ...We need to discuss the future of what we need to do for our community, especially related to energy. The number one issue is that the utility is in need of upgrades. The grid system also needs to be upgraded. They need to sell the grid system so we can proceed with creating our own Tribal utility. ...Since we don't have ownership of our grid system, we'll need to establish a purchase power agreement with them. We have to start somewhere. It's a challenge, but we have to keep pushing forward to achieve lower energy costs."*

Core obstacles include aging infrastructure, lack of utility ownership, and the logistical hurdles of negotiating purchase power agreements. These factors often delay or complicate community-led energy solutions.

[35] ***Note:** The Regulatory Commission of Alaska (RCA) includes five governor-appointed commissioners that regulates public utilities. RCA, "Regulatory Commission of Alaska."

Question 5: Renewable Energy Opportunities & Tribal Advantages
How do you see renewable energy technologies fitting into Aniak's vision for future energy sovereignty, and what unique advantages might Tribal-led energy development bring to your community?

> *"Renewable energy is something we can definitely do. We can get funding for projects like a large battery storage system that could help reduce our energy costs while having something Tribally owned. ...We had to become energy advocates out of necessity. We didn't know much when this all started." Initially, we really focused on policy because there is no rural representation on these boards and commissions in the state. ...We have a little more sway when we testify and write letters now. We're working on a bill that can be part of the process to create a rural energy taskforce and create more understanding about rural Alaska. We are part of Alaska - you can't ignore us. We need to raise urban legislators' understanding and awareness of our situation.*

Wayne highlights how battery storage, wind and solar installations, and Tribal utility structures can reduce long-term costs. He also emphasizes the importance of legislative advocacy to ensure rural perspectives are recognized in statewide decision-making.

Question 6: The Role of Traditional Knowledge and Cultural Practices
Can you elaborate on how Traditional knowledge and cultural practices inform your community's approach to energy systems and infrastructure?

> *"We need to work right now on developing a vision and mission statement explaining why we want to move this forward. We're working on achieving energy sovereignty coming from the Tribe while also including the community to create one unified vision. ...These are our goals, and we want everyone to be a part of that. We're making our own decisions on how energy should look in our community. We are taking ownership of what we want that to look like."*

For Aniak, energy sovereignty isn't just a cost issue, it's about weaving cultural values and traditional governance into modern utility planning.

Question 7: Meaningful Regulatory Reform
What would meaningful regulatory reform look like to ensure that rural Alaska Native communities have genuine representation and protection in energy decision-making?

> *"My hope is to establish our own commission/taskforce or rural representation that has an equal say within the state of Alaska. We need a body that can speak on behalf of rural Alaska regarding energy issues that affect us. It is up to us to get that resolved. We envision our own Tribal energy commission of five to seven people that can meet regularly to represent Native communities throughout Alaska."*

Wayne's vision points to structural changes, including a Tribal energy commission, that offer rural communities a more direct, equitable role in state-level energy governance.

Question 8: Energy Sovereignty and Broader Community Goals
Beyond addressing immediate energy costs, how does energy sovereignty connect to broader goals of cultural preservation, economic resilience, and community well-being?

> *"Right now, the cost of energy affects our large organizations like the school and district office. It is taking dollars away that would otherwise be used for educational needs of the community, like extra teachers, administrative staff, or activities for students. ...Energy sovereignty for me means having your say, but when we have our own utility and renewable energy system, it won't be just one person that owns it - it will be the community that owns it, helping to reduce energy costs for everyone. Having that power, moving forward, means it would be on its own with some Tribal oversight. It would be governed by its own people within the community, focused on keeping the cost of energy low."*

Local ownership of energy infrastructure keeps economic benefits in the community and frees up resources for education, cultural activities, and public services, ultimately reinforcing social and economic resilience.

Question 9: Final Thoughts
Is there anything else you'd like to add?

> *"I didn't know anything about energy until the day I received my 400% electric bill increase. I've learned so much from partners in the Steering Committee about creating a Tribal utility and having renewables in the future. ...Our partnerships are continuing to grow. I recently applied to an energy leadership accelerator program through the Alaska Center for Energy and Power. ...I'm excited to share that I was selected! That is going to help me learn more about how to address our energy issues. They want to assist with both utility development and renewable projects."*

Wayne's personal journey from unexpected rate shock to active energy advocate exemplifies the grassroots leadership that can emerge when communities take ownership of local energy solutions.

Linking Back to the Broader Report

Aniak's experience provides a real-life example through which to understand the data on energy burdens in Southwest Alaska. Wayne Morgan's testimony demonstrates that policy reforms, renewable energy investments, and strong Tribal leadership are essential for transforming Alaska's most vulnerable communities into models of energy sovereignty.

As the above sections explore, these localized efforts in Aniak reflect similar challenges and opportunities faced by rural Alaska communities statewide and underscore why addressing energy burdens must be a top priority for policymakers and local entities alike.

Strategies to Reduce Energy Burden

Although energy burden is problematically high in much of Alaska, there are multiple tools available to address energy burden. These solutions range from realizing the compounding benefit of weatherization programs spread across a large number of homes, regulatory frameworks that address energy costs through utility billing, and deployment of low-cost renewable energy generation to offset the high cost generation sources.

Weatherization and Efficiency Programs
Weatherization and efficiency programs tackle readily accessible energy saving home improvements such as installing LED light bulbs, door and window sealing, upgrading inefficient appliances, and adding insulation. Alaska invested $640 million in low-income weathering and home energy efficient rebate programs from 2008 to 2015.[36] Those programs benefited more than 50,000 households in Alaska with an average heating cost savings of 30%.[37] The Alaska Housing Finance Corporation administered these funds, estimates that taken collectively, offsets an estimated 30 million gallons of heating oil annually.[38]

These efforts are ongoing under emerging programs. Under the Inflation Reduction Act (2022), the federal government created Home Efficiency Rebates and Home Electrification and Appliance Rebates programs that fund state-level efficiency and weatherization programs. The Department of Energy estimates this $8.8 billion program will save households up to $1 billion annually on energy bills.[39]

Power Cost Equalization (PCE) Program
Lawmakers established the PCE program in 1985 to offset high electricity costs in rural Alaska as part of a statewide energy plan to address high levels of energy burden in Alaska.[40] Through state investment in the Power Cost Equalization Endowment Fund, PCE equalizes the cost of power in rural communities to the average cost in Alaska larger metropolitan areas (Anchorage, Juneau, Fairbanks).

[36-38] Renewable Energy Alaska Project, "Energy Efficiency and Home Weatherization Programs: REAP."
[39] US DOE, "Biden-Harris Administration Awards First State Funding and Announces Progress on Historic $8.8 Billion Home Energy Rebate Programs to Lower Utility Bills."
[40] Thomas, "Power Cost Equalization Explained."

Over 84,000 Alaskans in nearly 200 communities across the state benefit from PCE reimbursements.[41] In 2018, the PCE program paid out roughly $26.2 million to equalize costs.[42] By reducing utility costs, this program improves quality of life, standard of living, and economic strength of the communities. However, PCE is only available to residential buildings and is not available to key community entities - such as school districts and Tribal and municipal buildings.

Community-Driven Renewable Energy Solutions

Energy burdens can be addressed directly by changing the source of electricity and heat. With billions of federal dollars and advantageous tax credits available for community-scale renewable energy projects, rural communities in Alaska are pursuing wind and solar projects that offset expensive fuel-based generation. These projects provide low cost electricity and any excess electricity goes to heating systems. Alaska is innovating with a novel Tribal Independent Power Producer program to integrate these programs with PCE to maximize community benefits. While there are challenges and obstacles to bringing new infrastructure into rural Alaska, the communities are leaders in microgrid practices and innovation nationwide.

Independent Power Producer (IPP) Model

Tribally led IPPs are a strong and powerful model of energy sovereignty that helps to promote economic resiliency within rural Alaska. Under IPP agreements, Tribes own and operate renewable-energy installations, such as wind turbines or solar arrays. The Tribes sell surplus power to utilities like the Alaska Village Electric Cooperative. That way, the model creates for Tribes the ability to generate not only clean energy but also the revenue streams for their communities through direct benefits. For example, the Native Village of Kongiganak has integrated wind power into their microgrid system to reduce diesel consumption, saving an average of 24,000 gallons of fuel a year, while creating a sustainable income source through power purchase agreements.[43]

Strengthening energy security in more than one way, the IPP model provides for diversified energy supply through local renewable generation, with a result of less dependence on expensive diesel fuel that must be barged or flown in during narrow delivery windows.

[41,42] Thomas, “Power Cost Equalization Explained.”
[43] Anderson, Jordan, and Baring-Gould, “Distributed Renewables for Arctic Energy: A Case Study,” 11.

This integration of renewables helps insulate communities from the severe price volatility of fossil fuels, which has historically created significant financial strain on rural households and Tribal governments.[44] Additionally, Tribal ownership of energy infrastructure promotes self-determination through giving communities direct control over their energy resources and associated economic benefits. Success stories, such as the solar project initiated by the Shungnak-Kobuk IPP and owned by the Native Village of Shungnak, bear out how IPP arrangements can build a virtuous cycle: lower energy costs, generation of revenue through power sales, creation of local jobs in operations and maintenance, and building technical capacity within the community.[45]

Successful Tribal IPP projects require careful attention to both technical and policy frameworks. On the technical side, integration of renewable energy systems with existing microgrids requires sophisticated controls and energy storage solutions in order to maintain grid stability. Power Purchase Agreements (PPAs) must be structured to account for the intermittent nature of renewable generation while ensuring fair compensation for Tribal utilities.

Key policy mechanisms supporting Tribal IPPs include:

- Standardized interconnection agreements that make it easier to integrate Tribal renewable energy systems into the existing utility infrastructure
- Clarified regulatory regimes allowing for fair PPA rates that accurately reflect the value of renewable generation and the saving of diesel
- Technical assistance in the form of feasibility studies, engineering design, and workforce training
- Dedicated funding streams for microgrid control systems and energy storage infrastructure, enabling higher levels of renewable energy penetration
- Streamlined permitting processes that respect Tribal sovereignty while assuring system reliability and safety

The nexus of Tribal IPPs and Alaska's PCE program offers an opportunity in strategic alignment for the communities. While traditional utility costs above 500 kWh per month are not eligible for PCE subsidies, Tribal IPPs can structure their renewable energy integration in a way that maintains the PCE benefits of the Tribe while simultaneously lowering the overall energy costs.[46]

[44] Anderson, Jordan, and Baring-Gould, “Distributed Renewables for Arctic Energy: A Case Study,” 1
[45] Anderson, Jordan, and Baring-Gould, 17.
[46] Thomas, “Power Cost Equalization Explained.”

This arrangement affords communities both the PCE support and additional savings from renewable energy, maximizing financial benefits passed on to residents. For example, if a Tribal IPP sells renewable power to the local utility, the community still receives PCE credits for the eligible utility-supplied power while reaping the benefits of reduced diesel consumption and revenue from the sales of renewable energy. This optimizes both the state support mechanisms and the clean energy benefits and creates a much more sustainable economic model for rural power generation.

Success in Tribal IPPs also requires strong partnerships with state agencies, utilities, and technical service providers. The partnerships must be structured to respect Tribal sovereignty while providing the technical support needed for successful project implementation and long-term operations. This model of Tribal energy development shows particular promise for scaling renewable energy adoption across rural Alaska while ensuring the benefits of clean energy transition flow directly to Indigenous communities.

Next Steps and Opportunities

With such high energy burdens in Alaska, policy implementation and direct ratepayer programs can make immediate and measurable differences in energy bills. These investments can take many forms.

In the 2024 session, the Alaska state legislature passed multiple pieces of legislation that expand energy resources and options for residents and improve the regulatory process to benefit ratepayers. House Bill 273 established a Green Bank in Alaska which will provide safe and low interest lending for residential, commercial and municipal energy upgrades and efficiency projects. Senate Bill 152, the SAVE Act, enables community energy projects which empowers communities to collectively invest in and share the benefits of renewable energy. House Bill 307 reforms electric transmission planning on the Railbelt, restructures transmission fees to improve economies of scale for large low cost renewables, and strengthens requirements for appointments to the Regulatory Commission of Alaska (RCA) - key decision makers for energy rates and cost recovery mechanisms.[47] [48] [49]

Passing this legislation is only one part of making meaningful impacts on energy burden. Successful implementation of these policies is essential. Alaska's green bank - Alaska Sustainable Energy Corporation - is still in the process of standing up and seeking funding to supply credit and lending. Community energy regulations are under development at the RCA and credit structures that dictate the benefit participating members receive are not yet determined. Additional policies would also improve the energy burden for Alaskans. In rural microgrid communities, adding renewable energy can create otherwise-curtailed energy that is converted to heat. However, using otherwise-curtailed energy for heat currently hurts PCE communities and increases rates. **In addition to the call to expand PCE to include community and municipal buildings, simple reform is needed to ensure using otherwise curtailed energy for heat does not increase rates for PCE communities.**

Another important area of implementation is utility on-bill financing, especially for weatherization, energy conservation, and residential-scale generation and storage (such as rooftop solar).

[47] House Rules by Request of the Governor, AHFC MORTGAGE LOANS; COMM. FISHING LOANS.
[48] Wielechowski et al., COMMUNITY ENERGY FACILITIES.
[49] House Rules by Request of the Governor, UTILITY REGULATION; RCA; AEA; ENERGY LOAN.

On-bill financing is a mechanism for lending and paying off energy investments that is built into a monthly utility bill. Although Alaska passed enabling legislation for on-bill financing in Alaska, few utilities have pursued establishing a program for their members.

Beyond expanding statutes and legislation, intentional investments can make a difference for energy burdens in the short and long term. Over $100 million in funding for Tribal and state energy efficiency and upgrades were guaranteed to Alaska through the Home Electrification and Appliance Rebates program as part of the 2022 Inflation Reduction Act.[50] Although these funds are not yet distributed in Alaska, they would provide the biggest influx of weatherization and upgrade funding since 2018 with the potential to bring measurable savings to participating residents. Alaska has also been awarded $125 million in Solar for All funding to bring rooftop and community solar benefits to lower income Alaskans.[51] **Long term, bringing on community-scale renewable energy, especially for communities dependent on fly-in and barge-in diesel is the best and most accessible way to reduce energy burdens and support thriving communities.** Not only does renewable energy reduce reliability on costly diesel and natural gas fuels, but it also reduces immediate air and noise pollution in the community to holistically reverse the physical impacts of high energy burden.

Another statewide priority should be fully funding Alaska's Renewable Energy Fund (REF). The REF is a catalyst for energy development and innovation across Alaska. For decades, the REF has provided a high return on investment to Alaskans and has led to hundreds of millions of dollars in federal and private investment in cost-saving energy infrastructure.[52] Every dollar spent on the REF has returned twofold financial benefits to Alaskans - displacing more than 85 million gallons of diesel and 2.2 million cubic feet of natural gas.[53]

Tribal and Rural Collaboration

Engaging Tribal and local governments in policy design requires a fundamental shift from top-down decision-making to collaborative, community-centered approaches that explicitly address historical systemic inequities. **This means moving beyond tokenistic consultation to establish processes based on Free, Prior, and Informed Consent (FPIC)** - where Indigenous communities have the right to give or withhold consent to projects that will affect their lands, resources, and communities, based on full information provided in advance of any decisions.

[50,51] Alaska Housing Finance Corporation, "Alaska Residential Energy Rebates."
[52,53] BW Research Partnership, "Alaska Renewable Energy Fund: Impact and Evaluation Report 2023."

Colonial decision-making processes - characterized by external agencies making unilateral decisions about Indigenous communities, without their meaningful participation, disregarding traditional knowledge systems, and imposing solutions that may conflict with cultural values and local needs - must be replaced with genuine partnership models that respect FPIC principles.

The process must respect traditional governance structures and decision-making timeframes, while ensuring cultural and linguistic accessibility in all communications. For example, the Tanana Chiefs Conference has demonstrated the potential of Tribal-led energy solutions, developing innovative approaches to address the energy challenges in Interior Alaska's rural communities through meaningful incorporation of traditional knowledge and local leadership. By establishing formal co-governance structures, providing dedicated funding for Tribal-led energy planning, and creating legal frameworks that recognize Tribal governments as equal partners in energy policy development, Alaska can begin to transform its approach to energy policy. This requires not just consultation, but meaningful transfer of decision-making authority, resources, and technical support that acknowledges both the profound energy infrastructure challenges facing Indigenous communities and their inherent rights to self-determination.

To support this transformation, funding mechanisms must be reformed to better serve Indigenous communities. Key changes should include reducing or eliminating cost-share requirements of high-burden communities, streamlining of application processes, providing technical assistance for grant writing, allowance of oral presentations of traditional knowledge where appropriate instead of written documentation, and creating flexible funding timelines that respect community needs around subsistence activities, particularly during summer fishing and fall hunting seasons when many community members are engaged in essential food gathering practices.

Equally critical is the development of culturally responsive communications strategies. **Communications plans must be redesigned to truly serve Indigenous communities.** This can happen through providing materials in Alaska Native languages, using culturally appropriate frameworks and examples, establishing multiple channels for feedback (including in-person meetings, radio announcements, and digital platforms), honoring capacity constraints during subsistence seasons, and ensuring adequate time for traditional consensus-building practices.

Charting a Path Forward for Alaska's Energy Burden Crisis

This report underscores the prevalence of and profound challenges posed by high and severe energy burdens in Alaska, highlighting their far-reaching impacts on household finances, health, and community well-being. Energy costs in Alaska are among the highest in the nation, disproportionately affecting our low-income, rural, and Indigenous communities. Alaska faces the highest proportion of census tracts with high or severe energy burdens, with regions like Southwest and Northern Alaska experiencing median burdens exceeding 10%. Among low-income households, nearly 90% of census tracts fall into the severe category, with some households spending as much as three-quarters of their income on energy costs. These burdens are more than just a financial challenge, they are a deeply personal and kitchen table-level issue that affects the daily lives of families. High energy costs directly impact critical aspects of life, such as the ability to afford education, access healthcare, and preserve cultural traditions, making energy affordability a pressing concern for every household conversation and decision.

The findings of this report emphasize the urgent need for innovative, community-driven solutions to tackle energy inequities. Alaska's geographic isolation, extreme weather, and limited infrastructure exacerbate energy challenges, particularly for rural households that face compounded barriers like limited road access and high fuel delivery costs. Yet, these same challenges present an opportunity for bold action to reimagine Alaska's energy landscape.

Energy burden is not just an economic issue but a deeply interconnected challenge affecting health, education, cultural resilience, and economic mobility. Policies addressing energy burdens must focus on reducing costs while supporting long-term resilience through infrastructure investment, community ownership, and renewable energy deployment. This report offers a roadmap of actionable strategies that can be tailored to Alaska's unique context.

A Call to Action

To achieve meaningful change, a coalition of policymakers, Tribes, advocacy organizations, and community members must work together to address energy burdens. This report, co-authored by the University of Washington Center for Environmental Health Equity, Cook Inletkeeper, Alaska Public Interest Research Group, and Native Movement, serves as a resource to guide these efforts. By prioritizing equity and recognizing the interconnected nature of energy, health, and economic stability, those working to address energy burdens can drive systemic change that improves quality of life for all Alaskans.

Alaska is at a crossroads. The energy burden crisis demands urgent action, but it also offers a chance to innovate, lead, and create a more equitable energy future. By addressing these challenges head-on, Alaska can become a model for energy sovereignty, economic resilience, and environmental stewardship. The time to act is now. Together, we can turn the tide on energy inequities and ensure a brighter future for generations to come.

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