U.S. DEPARTMENT OF
ENERGY

Office of
ENERGY EFFICIENCY &
RENEWABLE ENERGY

Low-Income Household Energy Burden Varies Among States — Efficiency Can Help In All of Them

Nationally, low-income households[1] spend a larger portion of their income on home energy costs (e.g., electricity, natural gas, and other home heating fuels) than other households spend. This measure is often referred to as a household's "energy burden." One recent study found that low-income households face an energy burden three times higher than other households.[2] High energy burdens can threaten a household's ability to pay for energy, and force tough choices between paying energy bills and buying food, medicine, or other essentials.

But national averages do not tell the full story. While families facing a high energy burden live in every state, there is also significant regional variation in the energy burdens that low-income households face. As seen in the map to the left below, low-income households (those making less than 80% of the Area Median Income) in many Southeast states face energy burdens of 10% or higher. Many factors contribute to high energy burdens, including a home's heating fuel and local weather. Another key factor is high consumption of electricity.

In the five states with the highest low-income energy burden—Mississippi, South Carolina, Alabama, Georgia, and Arkansas—low-income households use 36% more electricity than the low-income national average. In these states, electricity is the dominant heating fuel and high air conditioning demand also contributes to high consumption. These factors contribute to the relatively high total energy burden, despite households paying lower prices per kilowatt of electricity, as shown in the map on the right. While weather, home age, and home size can also have an impact on energy consumption, low-income households in this region generally consume more energy and more electricity than most other regions, even when controlling for these factors.

One way to address high energy burdens is by implementing cost-effective energy efficiency measures to help reduce consumption of electricity and other fuels. Efficiency is a low-cost resource across the country and can reduce household energy costs regardless of climate, heating fuel, or energy price factors in a state. The map on page 2 presents analysis from a new study which found cost-effective efficiency improvements, such as insulation and more efficient lighting and appliances, in low-income households can reduce electricity consumption by 13% to 31%. These measures reduce a household's energy costs, freeing up money for other vital budget items.

In addition to reducing energy costs, household energy efficiency improvements result in multiple benefits for families.[3] For example, properly insulating a home reduces heating and cooling costs, but also improves indoor air quality. This results in healthier environments and can decrease sick days and hospital visits for families.[4,5]

There are unique barriers to achieving energy savings in low-income households,[6] which means efficiency

**Low−Income Energy Burden (% of Income)**

| | 4%–6% | 6%–8% | 8%–10% | 10%–12% | 12%–14% |
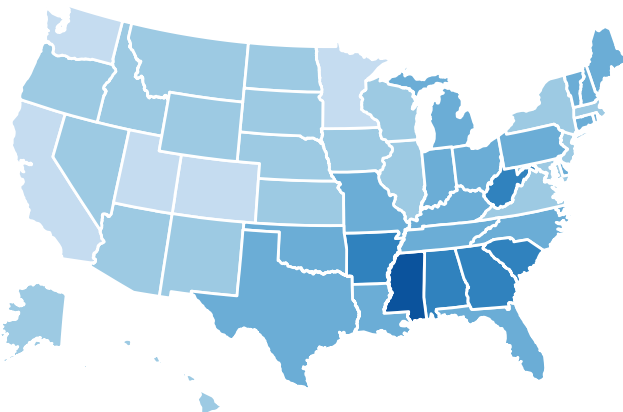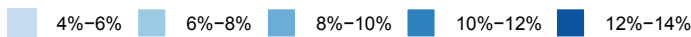
Average Electricity Price, 2015 (in cents/kWh)

| | 9–11 | 11–13 | 13–15 | 15–17 | 17–29 |
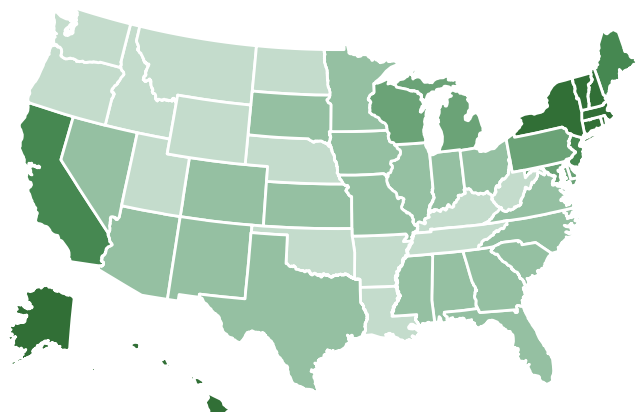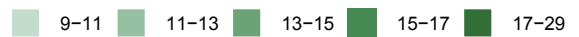
Electricity prices are just one factor that contributes to a household's total energy cost. States with the highest electricity prices in the nation do not have the highest total energy burden.

Potential Electricity Savings in Low−Income Households

13−17% 17−21% 21−25% 25−29% 29−32%
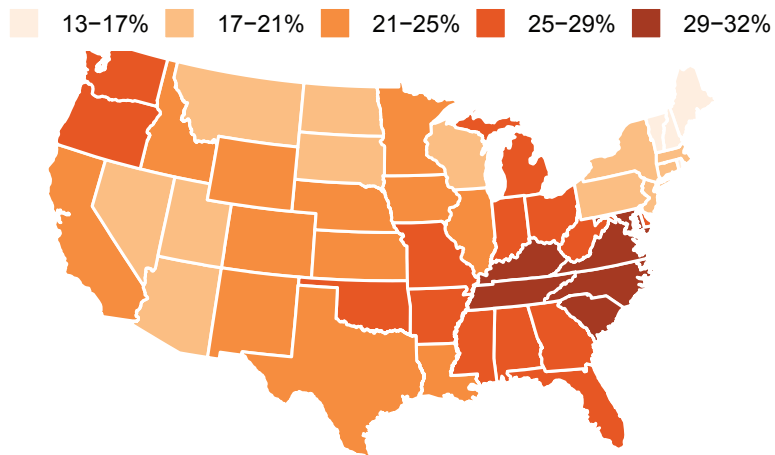
Recent analysis of cost effective energy efficiency potential among households below 80% of Area Median income (AMI) showed potential household electricity savings between 13% and 31% for each of the contiguous 48 states. *Source: https://resstock.nrel.gov/page/publications*

programs serving low-income customers must be thoughtfully designed and implemented. The U.S. Department of Energy (DOE)'s **Weatherization Assistance Program** has partnered with states and community agencies for over 40 years to achieve energy and cost savings in low-income homes. DOE's Clean Energy for Low Income Communities Accelerator (CELICA) partnered with state and local leaders that committed $335 million to help 155,000 low-income households access renewable energy and efficiency to save up to 30% or more on energy bills. CELICA also developed the Low-income Energy Affordability Data (LEAD) Tool, which provides state, city, and county data on energy burden. In addition to energy burden, there are a number of other factors that could make it difficult for low-income households to afford their energy bills, some of which can be explored through the Home Energy Affordability Tool (HEAT). More resources and tools to inform low-income program development are available at DOE's **State and Local Solution Center:** energy.gov/eere/slsc. ■

Data Sources

Low-income Energy Affordability Data (LEAD) Tool https://openei.org/doe-opendata/datasnet/celica-data.

2009 EIA Residential Energy Consumption Survey (RECS) https://www.eia.gov/consumption/residential/

NREL ResStock Low Income EE Estimates (forthcoming) https://resstock.nrel.gov/

Additional Resources

Clean Energy Low-Income Accelerator (CELICA): https://betterbuildingsinitiative.energy.gov/accelerators/clean-energy-low-income-communities

Low-income Energy Affordability Data (LEAD) Tool: https://openei.org/doe-opendata/dataset/celica-data

Solar for All, Home Energy Affordablility Tool (HEAT) layer: https://maps.nrel.gov/solar-for-all

State and Local Solution Center: https://energy.gov/eere/slsc

Weatherization Assistance Program: https://energy.gov/eere/wipo/weatherization-assistance-program

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