



Kentucky: Using LEAD Tool Data to Fund Energy Efficiency Programs Where Energy Affordability Assistance Is Needed Most

What is the LEAD Tool?

The U.S. Department of Energy's (DOE's) web-based Low-Income Energy Affordability Data (LEAD) Tool¹ helps stakeholders make data-driven decisions on energy goals and program planning by improving their understanding of low-income and moderate-income household energy characteristics.

The LEAD Tool is an online, interactive platform that allows users to build their own national, state, county, city, or census tract profiles. LEAD provides estimated low-income household energy data based on:

- Income
- Energy expenditures
- Fuel type
- Housing type.

The LEAD Tool is based on 5-year averages from U.S. Census Bureau and DOE's Energy Information Administration data.

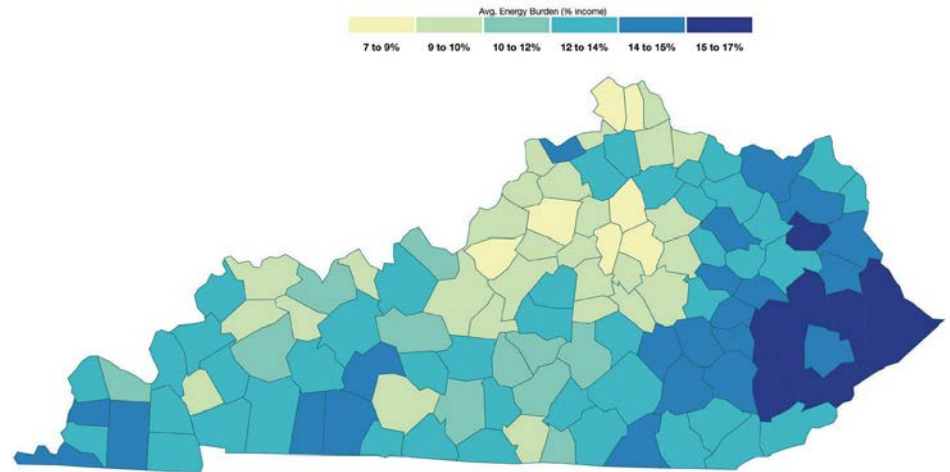


Figure 1: Average energy burden for households earning up to 60% AMI by county in Kentucky. (Source: 2020 LEAD Tool Data)

The Kentucky Office of Energy Policy (OEP) used the LEAD Tool to identify areas of their state with energy affordability needs. DOE's LEAD Tool enables organizations and stakeholders to understand household energy characteristics by geographic area and inform strategic decision-making. Kentucky OEP staff used the LEAD Tool to identify counties in Kentucky with the highest energy burden, which is the percentage of household income spent on energy. With this knowledge, Kentucky OEP staff allocated funds to relevant nonprofit organizations that provide home repairs, weatherization upgrades, and other solutions in areas where these services have the highest potential energy-saving benefits and could reduce energy burden.

Identifying Areas of Greatest Need

Funded in part through DOE's State Energy Program (SEP), Kentucky

OEP is responsible for administering state-led energy programs, as well as advancing initiatives related to energy security, efficiency, and affordability.² One way Kentucky OEP addresses energy affordability is through grants to organizations that provide home repairs and weatherization upgrades in areas of greatest economic need. By funding low-income energy efficiency programs, Kentucky OEP supports local jobs and contributes to increased community resilience. Their work supports efficiency measures in homes to retain heating or cooling during extreme weather events, and the money saved by residents on energy bills can go towards other expenses.³

Kentucky OEP's 2019 grant funding allocation process included gathering data on counties with identified greatest energy affordability needs. OEP staff used the LEAD Tool to identify counties where the average energy burden was highest for households

1 DOE. "Low-Income Energy Affordability Data Tool." <https://www.energy.gov/scep/slsc/lead-tool>.

2 Kentucky of Energy and Environment Cabinet. "Office of Energy Policy." <https://eec.ky.gov/Energy/Pages/default.aspx>.

3 3Relf, Grace. 2018. "How energy efficiency can boost resilience." American Council for an Energy-Efficient Economy. <https://aceee.org/blog/2018/04/how-energy-efficiency-can-boost>.

earning less than 60% of area median income (AMI) (Figure 1). The average energy burden in Kentucky for households earning less than 60% AMI is 11%. For some concentrations in both eastern and western Kentucky, the average is as high as 17%. Kentucky OEP staff then identified local nonprofit organizations serving those areas and informed them of grants available to support home repairs and weatherization upgrades.

Targeted Funding Solutions

Through use of the LEAD Tool data and Kentucky OEP outreach efforts, the state provided SEP grant funding to four affordable housing organizations for the 2020 fiscal year.⁴ One recipient, Housing Development Alliance, Inc. (HDA), is a nonprofit organization that offers home repair, weatherization, and other programs to low- and moderate-income families in Breathitt, Floyd, Knott, Leslie, and Perry counties in eastern Kentucky.⁵ HDA uses grant funds to provide ENERGY STAR® inspections to certify the energy savings of affordable housing units,⁶ energy audits for low-income households, and rebates to homeowners for energy-efficient appliances and heating, ventilation, and air conditioning upgrades.

The grant also supports HDA's Hope Building program, by which people recovering from substance abuse receive paid job training in construction while they build new energy-efficient homes for low-income county residents. In addition to the SEP grant, the program utilizes funding from the Appalachian Regional Commission (ARC), a regional economic development agency,⁷ to



Picture 1: HDA staff and volunteers build new energy-efficient affordable housing for Kentucky residents. (Source: HDA)

support the long-term success of participants and rebuild local housing stock. By funding an organization that provides workforce development and energy-efficient affordable housing, Kentucky OEP is able to address low-income energy affordability in areas of the state where the energy burden is highest.

Another Kentucky OEP initiative aided by use of the LEAD Tool was Kentucky Home Uplift, a pilot project completed in June 2019 which provided energy efficiency upgrades to 25 low-income households. The LEAD Tool was used to identify potential participants in Calloway, Carlisle, Marshall, Graves, and Hickman counties in western Kentucky. This multipartner pilot project included the Tennessee Valley Authority and third-party administrator CLEARresult, the West Kentucky Rural Electric

Cooperative, and the West Kentucky Allied Services community action organization. Home upgrades reduced home energy costs by 25% and included replacement of heating and cooling systems, attic insulation, and air sealing, based on Building Performance Institute home audits.⁸

Assessing Housing and Energy Characteristics to Inform Program Planning

The LEAD Tool helped Kentucky OEP staff identify building types most commonly occupied by low-income households in counties where energy burden is high. A comparison of the five counties served by HDA reveals that the vast majority of homes in this area are “one unit detached” or an “other” building type (Figure 2), which includes mobile homes, RVs, boats, vans, and others.⁹ Having a

4 Kentucky Office of Energy Policy. “State Energy Program Funded Projects.” <https://eec.ky.gov/Energy/Programs/Projects/Grant%20Administration%202019.pdf>.

5 Housing Development Alliance, Inc. “Housing Development Alliance, Inc. Home.” <https://www.hdahome.org/>.

6 ENERGY STAR. “Partner Resources: About the ENERGY STAR Residential New Construction Program.” https://www.energystar.gov/partner_resources/residential_new/about.

7 ARC. “About ARC.” <https://www.arc.gov/about/index.asp>.

8 Building Performance Institute. “Building Performance Institute Home.” <http://www.bpi.org/>.

9 DOE. “LEAD Tool ‘Building Type’ criteria filters.” <https://www.energy.gov/scep/slsc/lead-tool>.

Housing Counts for Breathitt County vs. Floyd County vs. Knott County vs. Leslie County vs. Perry County

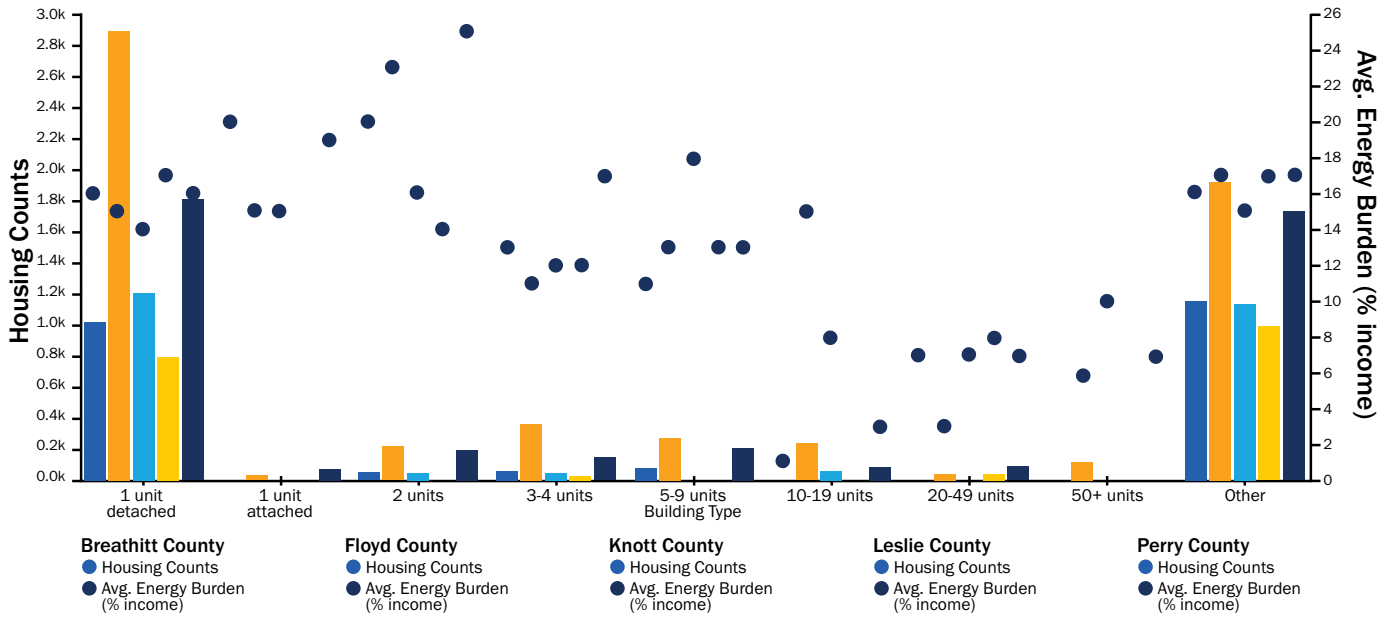


Figure 2: Housing counts by building type and average energy burden for households earning up to 60% AMI in five Kentucky counties served by HDA. (Source: 2020 LEAD Tool Data)

more detailed understanding of building types occupied by low-income households in these counties, OEP can assess how well the services offered by HDA address high energy burden in these communities and whether additional services may be needed. Downloading LEAD Tool data provides additional detail about housing and energy characteristics presented in Figure 2. Table 1 shows the number of households earning 60% or less AMI who occupy

single-family and “other” housing in the five counties served by HDA, and the energy burden for each group.

In addition, the LEAD Tool can be used to understand the drivers of high energy costs in geographic areas. Perry County, one of the five counties analyzed in Figure 3, shows that homes primarily heated by bottled gas, electricity, and fuel oil have the highest energy expenditures for both single-family

Table 1: Number of households earning 0–60% AMI in single-family and “other” building types and energy burden in five Kentucky counties served by HDA. (Source: 2020 LEAD Tool Data)

| Name | Building Type | Housing Counts | Energy Burden (%) |
|------------------|-----------------|----------------|-------------------|
| Breathitt County | 1 unit detached | 1,032 | 16 |
| Breathitt County | Other | 1,151 | 16 |
| Floyd County | 1 unit detached | 2,896 | 16 |
| Floyd County | Other | 1,924 | 17 |
| Knott County | 1 unit detached | 1,217 | 14 |
| Knott County | Other | 1,134 | 14 |
| Leslie County | 1 unit detached | 790 | 16 |
| Leslie County | Other | 996 | 17 |
| Perry County | 1 unit detached | 1,806 | 16 |
| Perry County | Other | 1,725 | 17 |

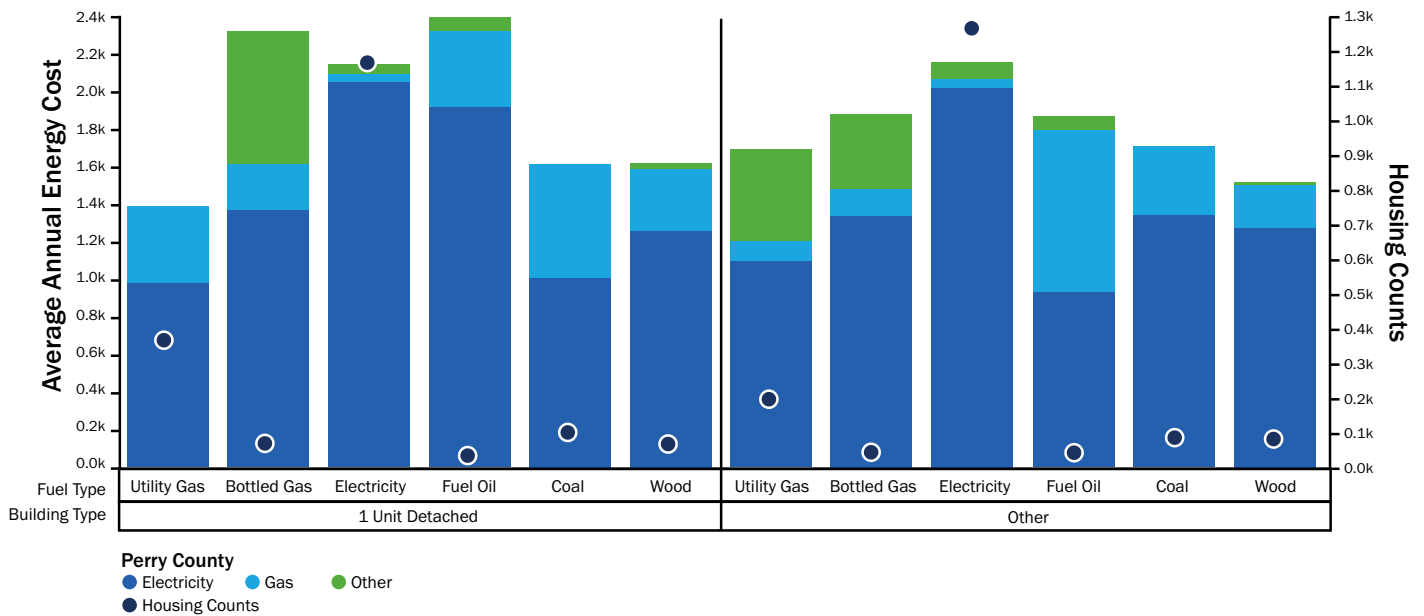


Figure 3: Annual energy cost and housing counts by fuel type for households earning 0–60% AMI in Perry County, Kentucky. (Source: 2020 LEAD Tool Data)

and “other” housing types, and the vast majority of households use electricity as their primary fuel for home heating. Homes heated by electricity also appear to spend considerably more on fuel for home heating than those heated by the next most common fuel type in the counties, utility gas.

Conclusion

Kentucky OEP’s use of the LEAD Tool to target geographic areas of greatest energy affordability need highlights that energy efficiency can be part of a coordinated economic revitalization strategy. Precise data about community energy characteristics enabled Kentucky OEP staff to identify partner organizations with the specialized knowledge and experience to address issues common to these targeted areas. With the geographic maps and charts generated by the LEAD Tool, state energy offices across the United States can help stakeholders visualize the dimensions of energy affordability at various geographic scales and engage in program planning driven by data.



Find additional resources on the [LEAD Tool](#) website and [SLOPE Platform](#).



Share your feedback and questions with us at LEAD.Tool@hq.doe.gov.

