U.S. DEPARTMENT OF
ENERGY

Office of
ENERGY EFFICIENCY &
RENEWABLE ENERGY

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

What Is the LEAD Tool?

The LEAD Tool is designed to help states, communities, and other stakeholders create better energy strategies and programs by improving their understanding of low-income housing and energy characteristics.

The LEAD Tool provides interactive state-, city-, and county-level graphs and data by household income level, including:

- Housing characteristics
- Heating fuel type
- Average annual energy expenditure
- Average energy burden

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

(Source: LEAD Tool factsheet)

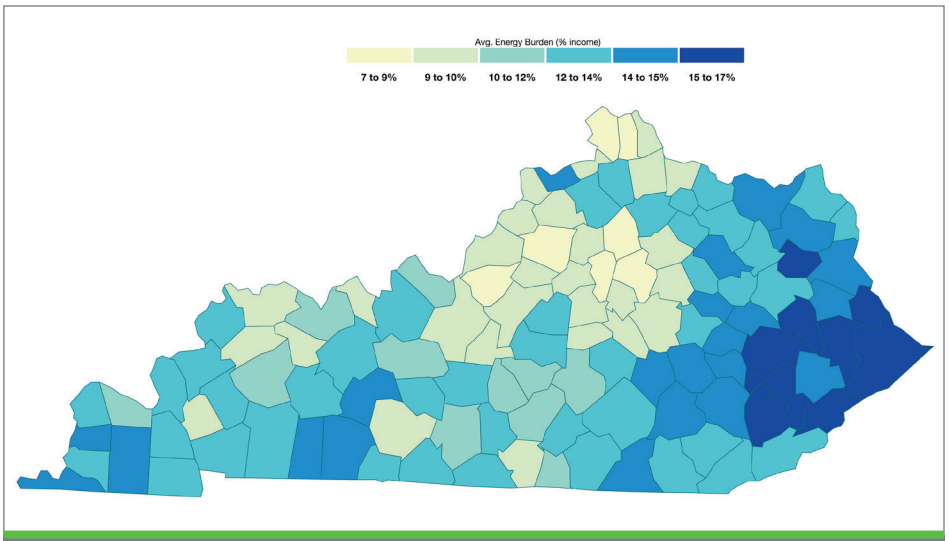

Figure 1: Average energy burden for households earning up to 60% area median income (AMI) by county in Kentucky. *(Source: LEAD Tool)*

The Kentucky Office of Energy Policy (OEP) used the U.S. Department of Energy's (DOE's) web-based Low-Income Energy Affordability Data (LEAD) Tool[1] 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 can 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: more efficient homes retain heating or cooling during extreme weather events, and money saved on energy bills can go toward other expenses.[3]

Kentucky OEP's 2019 grant funding allocation process included gathering data on counties with the greatest energy affordability needs. OEP staff used the LEAD Tool to identify counties where the average energy burden was highest for households earning less than 60% of area median income (AMI) (Figure 1). Whereas the average energy burden in Kentucky for households earning less than 60% AMI is 11%, for some concentrations, present 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.

1 U.S. Department of Energy, Low-Income Energy Affordability Data (LEAD) Tool: www.energy.gov/eere/slsc/maps/lead-tool.
2 Kentucky Energy and Environment Cabinet, Office of Energy Policy website: https://eec.ky.gov/Energy/Pages/default.aspx.
3 American Council for an Energy-Efficient Economy (ACEEE). (2018). "Blog post: How energy efficiency can boost resilience." https://aceee.org/blog/2018/04/how-energy-efficiency-can-boost.

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 HVAC upgrades.

The grant also supports HDA's Hope Building program, in 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 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 multi-partner pilot project included the Tennessee Valley Authority and third-party administrator CLEAResult, 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]

Housing Development Alliance (HDA) staff and volunteers build new energy-efficient affordable housing for Kentucky residents. *(Source: HDA)*

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 "1 unit detached" or "other" building type (Figure 2), which includes mobile homes, RVs, boats, vans, and others.[9] Having a 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 of AMI who occupy single-family and "other" housing in the five counties served by HDA and the energy burden for each group.

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. "What We Offer." https://www.housingdevelopmentalliance.org/whaweoffer.
6 ENERGY STAR. "Partner Resources: About the ENERGY STAR Residential New Construction Program." https://www.energystar.gov/partner_resources/residential_new/about.
7 Appalachian Regional Commission (ARC). "About ARC." https://www.arc.gov/about/index.asp.
8 Building Performance Institute website. http://www.bpi.org/.
9 LEAD Tool, description when user hovers over 'information' icon beside 'Building Type' criteria filter heading. https://www.energy.gov/eere/slsc/maps/lead-tool.

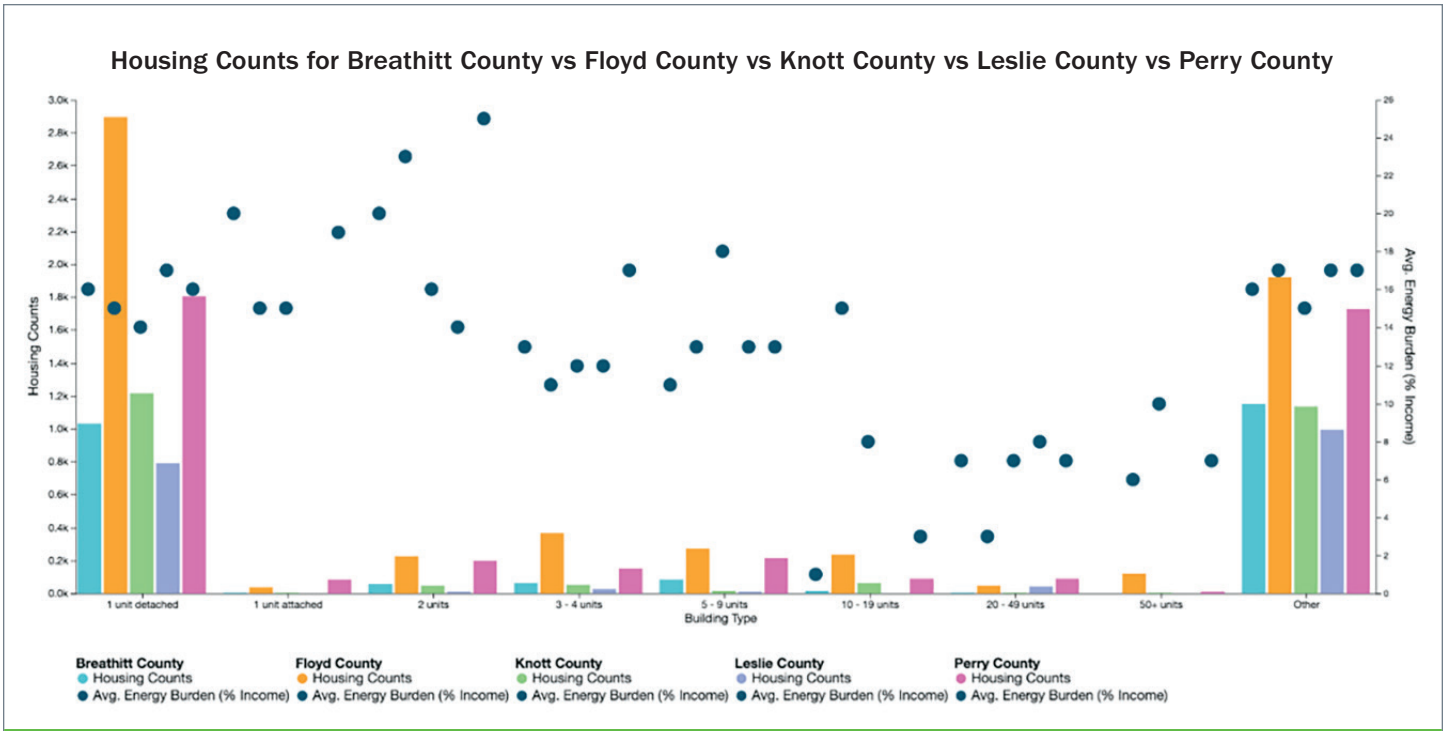

Figure 2: Housing counts by building type and average energy burden for households earning up to 60% AMI in five Kentucky counties served by HDA. *(Source: LEAD Tool)*

In addition, the LEAD Tool can be used to understand the drivers of high energy costs in geographic areas. Figure 3 of 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 and "other" housing types, and the vast majority of households use electricity as their primary fuel for home heating. Electrically heated homes also appear to spend considerably more on fuel for home heating than those heated by the next most common fuel type, utility gas.

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

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

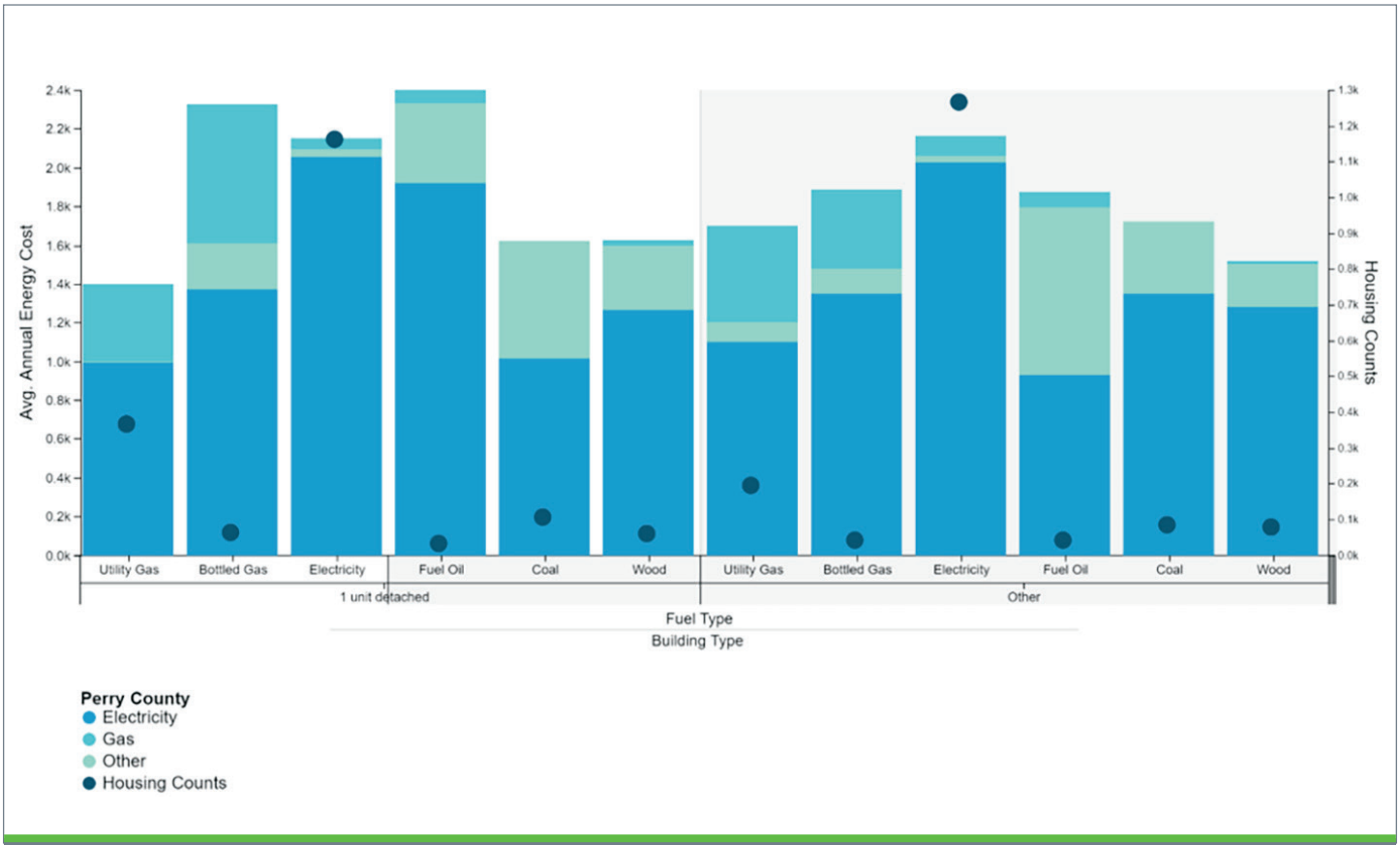

Figure 3: Annual energy cost and housing counts by fuel type for households earning 0–60% of AMI in Perry County, Kentucky.
(Source: LEAD Tool)

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. ■

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For more information, visit: https://www.energy.gov/eere/slsc/low-income-energy-affordability-data-lead-tool

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