Implementing Clean Energy Transitions for Small Communities

The City of Frankfort, Kentucky Pursues Ambitious, Affordable Clean Energy Goals Informed by NREL Data and Analysis

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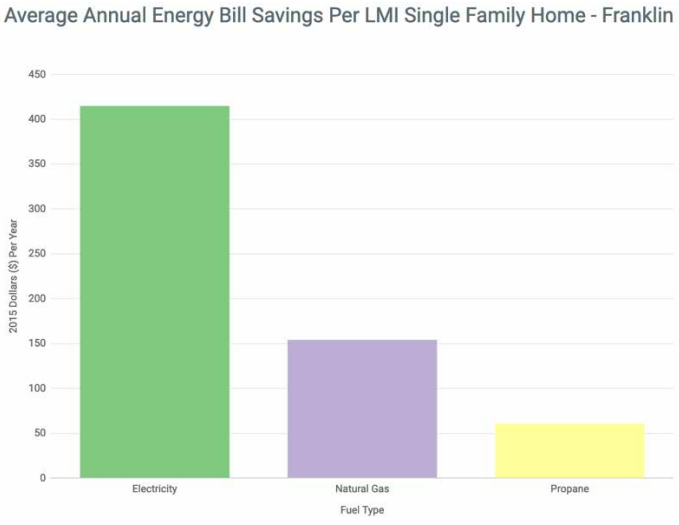
Setting Inclusive Clean Energy Goals: In October 2021, the city of Frankfort, Kentucky passed a resolution that set accelerated and ambitious clean energy goals: to supply 100% clean, renewable electricity to city government operations now and to the city as a whole by 2030.

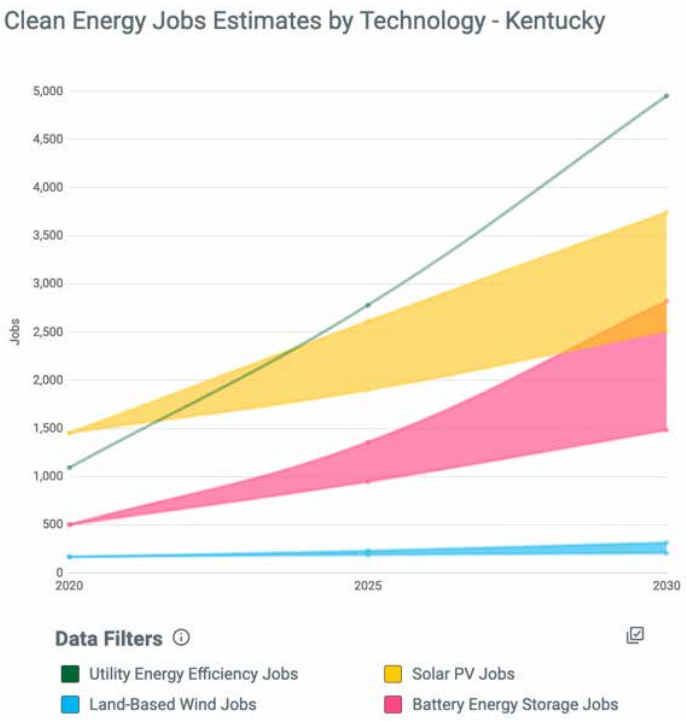
The city is also committed to equity and seeks to include all citizens in the energy transition. For Frankfort, this meant minimizing the costs for residents and insulating vulnerable communities from any cost increases. The city also sought to ensure all citizens reap project benefits, including air quality improvements and green jobs.

A Combination of Approaches: The city of Frankfort partnered with the National Renewable Energy Laboratory (NREL) to identify the most economically viable decarbonization pathways to meet the city's clean energy and equity goals. The NREL team hosted scoping calls to outline the city's goals and held regular meetings to communicate progress. Using local data, direct analysis, and mapping tools, including the State and Local Planning for Energy (SLOPE) Platform, NREL curated and interpreted data to inform the city's planning and pursuit of funding.

Energy Efficiency: Investing in energy efficiency upgrades in city operations and local residences would reduce electricity consumption and keep costs to a minimum. Low-to-Moderate Income (LMI) households in the county, for instance, could save over $400 on electricity bills and over $150 on natural gas bills annually with efficiency upgrades.



Using the SLOPE Platform's LMI Single Family Home Bill Savings Potential dataset, counties can estimate the amount of money that LMI households could save annually with efficiency upgrades. Frankfort found significant bill savings potential for electricity, natural gas, and propane.



States can forecast jobs in energy efficiency, solar, land-based wind, and battery energy storage using SLOPE's Clean Energy Jobs Estimates dataset. Kentucky, for instance, can expect increases in energy efficiency, solar, and battery energy storage jobs.

Realizing Economic Impact With Local Investments: An updated energy audit of municipal buildings, the last of which was conducted in 2009, will help the city identify the best time to make replacements for efficiency upgrades, either at the technologies' end of life or sooner. An audit would also help the city achieve another of its goals—creating local jobs. Kentucky can expect to see almost 5,000 energy efficiency jobs by 2030, a 5x increase over 2020 and higher than solar, battery-storage, and wind energy job increases.

Cost-Competitive Solutions: After planning for energy efficiency reductions in consumption, Frankfort and NREL considered three solution pathways for supplying 100% clean electricity to city operations in the immediate term:

- Utility-scale solar
- Renewable energy credits (RECs)
- A combination of utility-scale solar and RECs.

Rooftop solar was also considered as a supplementary renewable energy source, although NREL found that while solar and storage on the city hall and fire station rooftops would add resiliency opportunities, it would not produce enough electricity to offset the city's annual electricity consumption.

Frankfort sought a solution pathway that could meet all the electricity demand of city operations and prioritized affordability and job creation. NREL found that utility-scale solar largely met these criteria—utility-scale solar could supply the 8.2 MW needed for city operations and is more cost-competitive than RECs, community solar, and rooftop solar, in addition to coal and nuclear generation, saving the city money over the course of a facility's lifetime.

Leading by Example: Using the findings from their collaboration with NREL, the city of Frankfort is considering pursuing utility-scale solar generation, either by coordinating with the municipal utility or working with developers to build a new facility. The city has an option to use RECs in the meantime to meet the ambitious timeline and may lead by example by deploying rooftop solar on city buildings. The city is also considering conducting an energy audit to identify opportunities to reduce energy consumption with efficiency upgrades.

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