Rural Energy Efficiency Series

Transforming the Rural Energy Economy through Energy Efficiency and Distributed Energy Resources

The electric power sector is undergoing rapid transformation, in part because of the increased use of technologies that can be located closer to the customer, such as solar power, energy storage, and electric vehicles. Because of its reliability and low cost, energy efficiency can help scale up clean energy technologies as the market continues to develop.[1] Coordinating energy efficiency and renewable energy resources can reduce energy burdens, increase local ownership of electricity generation, and reduce a building's energy use to make it possible for renewables to meet remaining energy needs.[2,3]

How to use energy efficiency to enable investment in rural distributed energy resources

Electric co-ops, investor-owned utilities, state and local governments, and efficiency program administrators can take several steps to align their energy efficiency and renewable energy programming in rural communities.

Conduct an energy audit and make efficiency improvements before installing renewable energy.

Through the Florida Renewable Efficiency Demonstration (FRED) program, the Florida Office of Energy (OOE) offered incentives for agricultural producers in the state. The program covers the cost of an energy audit as well as the recommended measures, such as energy-efficient lighting and water pumps, fuel efficient tractors and generators, and small-scale renewable energy generation. OOE educated farmers about the role that efficiency can play in reducing the payback period for renewable energy investments.[4]

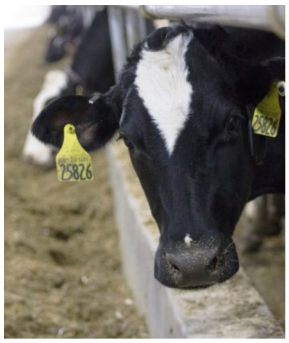
Jointly promote energy efficiency and renewable energy offerings to rural customers.

The New York State Energy Research and Development Authority (NYSERDA), through its Community Energy Engagement Program, has a locally based community energy advisor for each of its 10 Economic Development Regions. Advisors connect residents and businesses with efficiency and renewable energy financing options and project support.[5]

Seek programs that fund both renewable energy and energy efficiency measures such as Commercial Property Assessed Clean Energy (C-PACE) and the US Department of Agriculture's (USDA) Rural Energy for America Program (REAP).

Lean & Green Michigan, the statewide PACE administrator, was the first project developer to combine PACE financing with a REAP grant. Cambridge Court Apartments in Greenville, Michigan, used PACE financing to make energy efficiency upgrades and a REAP grant to add a 20 kW rooftop solar system. The project reduced electricity and natural gas consumption by 40% and reduced water use by 29%.[6]

Energy-efficient electric pumps irrigate a farm participating in FRED.



Plymouth, Indiana-based Homestead Dairy leveraged WVPA incentives and a property tax abatement to reduce operating costs in a new robot dairy facility – the largest in the United States.[10]

- **Look to generation and transmission (G&T) co-ops that deliver energy efficiency and develop co-op solar projects for one or more of their distribution co-ops.**[7]

The Wabash Valley Power Association (WVPA) is a non-profit G&T co-op that serves 23 rural co-ops across Indiana, Illinois, and Missouri. Through its Power Moves program, WVPA offers energy efficiency rebates and incentives to homeowners, businesses, and farmers.[8] WVPA also offers a community solar program for participating distribution co-ops and has deployed 1.7 MW – the third most community solar of G&Ts across the country.[9]

- **Incentivize super-efficient, high-performing buildings like zero-energy modular housing. These high-efficiency, all-electric, prefabricated houses can fit on lots for mobile and manufactured homes and include rooftop solar to generate electricity.**

The McKnight Lane Affordable Housing Development in Waltham, Vermont, is a pilot project consisting of 14 high-efficiency modular homes with solar and battery systems. Developed by the Addison County Community Trust and Cathedral Square, an affordable housing nonprofit, the net-zero -energy units are available to qualifying low-income tenants. The batteries also allow the local utility, Green Mountain Power, to manage peak energy demand and reduce costs for all customers.[11]

Endnotes

1 aceee.org/research-report/u1604
2 Energy burden is the percentage of household income that is spent on energy bills. See Drehobl and Ross 2016 for more detail.
3 aceee.org/blog/2018/12/renewables-are-getting-cheaper-energy
4 aceee.org/sites/default/files/pdf/conferences/rural/2018/kelley%20smith%20burk.pdf
5 www.nyserda.ny.gov/All-Programs/Programs/Community-Energy-Engagement-Program
6 leanandgreenmi.com/uploads/PDFs/CaseStudy3.pdf
7 NRECA describes recent co-op solar trends in their recent report: www.cooperative.com/programs-services/bts/sunda-solar/Documents/Solar-Revolution.pdf
8 www.powermoves.com/
9 www.electric.coop/wp-content/Renewables/community-solar.html
10 www.powermoves.com/case-studies/home-sweet-homestead/
11 www.cesa.org/assets/Uploads/McKnight-Project-Data.pdf

For more information on ACEEE's Rural Energy Initiative, see:
aceee.org/topics/rural-and-small-town-communities

ACEEE
American Council for an Energy-Efficient Economy
May 2019