THE ROLE OF LOCAL UTILITIES IN IMPROVING COMMUNITY ENERGY RESILIENCE

A new report, "Indicators for Local Energy Resilience," published by the American Council for an Energy-Efficient Economy (ACEEE), suggests that communities can become more resilient by strengthening local energy systems and helping to provide more reliable and affordable energy to users in their communities. "A reliable energy supply allows businesses to serve their communities, homes to maintain habitable temperatures, and transportation systems to operate," said the report.

In the past, ACEEE defined "resilience" as "a community's reduction of, and preparation, for risk." In this paper, the organization takes the concept a step further, replacing the term "resilience" with "local energy resilience," which it defines as "the relationship between community resilience and various aspects of energy supply and consumption."

The paper lists nine dimensions or indicators that determine "local energy resilience," based on the social, economic and environmental impacts that the energy supply and consumption have on community resilience. "These indicators can help inform the activities of local government stakeholders who are interested in the role their energy systems can have in increasing community resilience," said the report.

While four of the nine dimensions/indicators are not directly connected to utility performance and programs (Transportation Connectivity, Urban Heat Island Effect, Climate Change, and Particulate Matter Pollution), five of the dimensions/indicators do relate directly or indirectly to local utilities, especially municipal utilities and rural electric co-ops. These are: Energy Infrastructure and Reliability, Distributed Generation, Thermal Building Performance, Energy Burden, and Energy Bill Stability.

Issues for Everyone in the Community

1 - Energy Infrastructure and Reliability: The report noted that communities need a reliable energy supply for daily life. "Energy infrastructure must maintain reliability through times of peak demand to ensure this steady energy supply." For example, besides making life uncomfortable for residents, power outages can affect critical community services, including water treatment and distribution, communication, hospitals, and dispatch centers. "To this end, utilities have reserve margin requirements that set aside a designated amount of electricity capacity in excess of the forecast peak demand."

2 - Distributed Generation: According to the report, distributed energy resources (DER), like combined heat and power (CHP) and distributed solar, have begun securing a foothold in the electricity system. "Centralized generation is a reliable source of electricity, but blackouts and brownouts occur even in the most reliable systems," said the report.

3 - Thermal Building Performance: While well-insulated homes and buildings reduce energy consumption year-round, they can be particularly important during power outages, especially those that occur during the winter, when temperatures will drop faster than they would in well-insulated structures, and the summer, when temperatures will increase faster than they would in well-insulated structures.

The primary solution that the report recommends to improve community energy

is for utilities and communities to create, roll out, and manage programs focused on energy efficiency. “Energy efficiency can alleviate stress on infrastructure by reducing energy use and lowering peak demand,” said the report. In addition, “Reducing energy consumption ... can help shave the load of a building. The more efficient building will then require less storage and distributed generation to meet its critical load.” For thermal building performance in specific, the report recommends energy efficiency programs that target Weatherization Assistance Programs. “Weatherization includes some of the lowest-cost building envelope improvements, like adding insulation or weather-stripping doors and windows.”

Issues for Low-Income Households

4 - Energy Burden: According to the report, the median energy burden for low-income households in the U.S. is more than double that of the average household. “A combination of low household income, high utility bills, and inefficient housing stock can drive energy burdens upward,” said the report.

5 - Energy Bill Stability: While retail electric rates are generally regulated and not subject to substantial swings from month to month, as can be the case with natural gas, periods of excessive heat or cold can cause electric usage, and subsequently bills, to skyrocket, which can be particularly problematic for low-income households.

For these final two dimensions/indicators, the report recommends the same solution that it recommended for the first three - energy efficiency. However, here, the focus should specifically be on programs that target to low-income households. “Energy efficiency programs can support low-income households through energy and cost savings, and a variety of other health, safety and quality of life benefits,” said the report. “Energy efficiency can also work to reduce consumer vulnerability to volatility. A home retrofit will increase building efficiency and lower a home’s energy demand, which can mitigate the magnitude of bill swings.” Such strategies, however, can require some high up-front costs that present a barrier to low-income households. “Local governments can help overcome this barrier by working with their utilities and/or using other resources to provide support for existing and new energy efficiency programs,” said the report.

About the Author

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