USDN | urban sustainability directors network

USDN Sustainability Innovation Report
January 2016

Scaling Local Energy Production Opportunities through Microgrids

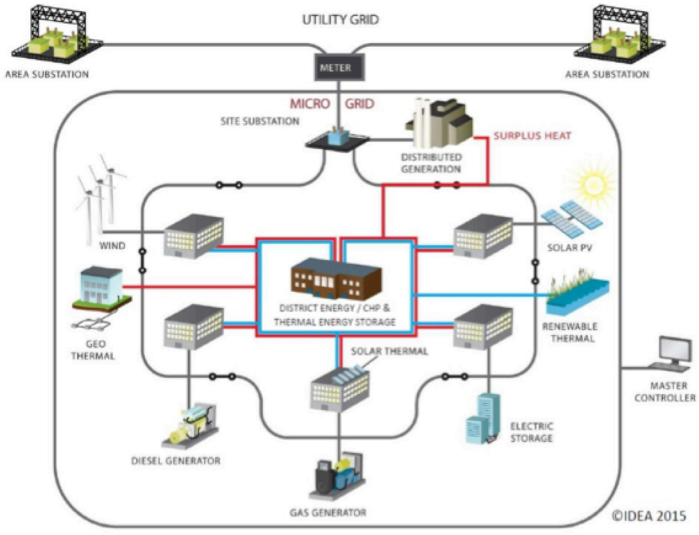
A new wave of microgrid exploration.

In 2015, USDN members undertook research on how to develop multi-user microgrid and district energy projects in U.S. cities. The outcome is a report that (1) introduces microgrid concepts, (2) identifies the benefits and most common road blocks to implementation, and (3) discusses proactive steps municipalities can take to advance economically viable and environmentally superior microgrids. It also offers advocacy suggestions for municipal leaders and officials to pursue at the state and regional level. The content is targeted to municipal government staff, but anyone looking for introductory material on microgrids can find it useful. The full report will be released in early 2016; the following is a summary of its contents.

What are microgrids?

A microgrid is an energy system specifically designed to meet some of the energy needs of a group of buildings, a campus, or an entire community. It can include local facilities that generate electricity, heating, and/or cooling; store energy; distribute the energy generated; and manage energy consumption intelligently and in real time. Microgrids enable economies of scale that facilitate local production of energy in ways that can advance cost reduction, sustainability, economic development, and resilience goals. As they often involve multiple stakeholders and may encompass numerous distinct property boundaries, municipal involvement is often a key factor for successful implementation.

The initial stimulus for microgrids has largely come from players who solely own a campus that they want to shift to a microgrid system. Examples of these players include state and local governments, schools, and universities, as well as progressive electric utilities. Their reasons for exploring microgrids range from desiring a public sector response to climate-related power disruptions to pursuing energy and cost savings goals. These reasons may vary by sector, but clearly the age of growing experimentation with microgrids has begun.



Key Microgrid Innovation

As the microgrid market expands beyond the single owner campus, more complex Multi-User Microgrids (MUMs) are beginning to emerge. Campuses are commonly treated as a single electric meter, so it is easy to account for resiliency and efficiency benefits when you bundle in renewables or combined heat and power. However, Business Improvement Districts can be made up of 500 individual electric meters, which makes qualifying for, accruing, and distributing monetary benefits very complicated.

As communities explore the potential for MUMs, supporting innovations in regulatory, statutory, and financing systems are also needed. Last century's regulations enabled the grid to scale up into regional networks; in the 21st century, new regulation is needed to allow ratepayers to benefit from locally deployed clean and resilient energy.