Smart Microgrids

Self-sustaining and Back-up Power Supplies

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THE IDEA.
The December 2015 edition of *American City and County* published an article entitled: ***The Birth of a Resilient Microgrid: Hoboken's Journey.*** The Sandia National Laboratory in conjunction with US DOE and US DOC did a study for the city.

The article had several effects on me. First, I had never heard of a microgrid. Second, I did not realize the extent of the study and application of this idea to cities, campuses and other small area communities.

The purpose of this article is to increase the awareness and applicability of this concept to small cities and towns, hospitals and education campuses and other small areas that want or need control over their supply of energy.

THE PROBLEM.
The City decided to pursue the microgrid concept is the aftermath of Superstorm Sandy. The storm-related catastrophe of power outages in hospitals, senior housing projects and other facilities with dependent populations inspired the City to find a way to better protect and respond to power outages regardless of their cause.

MICROGRIDS, SMART AND GREEN.
"A microgrid is a local energy grid with control capability, which means it can disconnect from the traditional grid and operate autonomously." **http://www.energy.gov/articles/how-microgrids-work**

Smart microgrids, through technology, can provide discrete control of generation, distribution, hours of operation, pricing and automatic load control and allocation down to individual customers.

Smart microsystems can also reduce greenhouse gas emissions and select from a wide range of energy sources.

THE TOOLKIT.
"To make the microgrid a reality, Hoboken hired Greener by Design, a private firm, as its energy consultant." Greener by Design engaged EDF Climate Corps to develop a toolkit to address Hoboken's situation and to serve as a "model to scale and adapt [the tools] to different types of buildings and different communities." *The American City and County* article goes on the present the three key features of the toolkit:

- A centralized dashboard,
- A customized timeline, and
- A scorecard.

"With the Resilient Microgrid Toolkit complete, Hoboken plans to begin installation of its microgrid in the summer of 2016." [p10]

THE APPLICATION.
Every community has groups of dependent populations vulnerable to power shortages. The use of microgrids, especially microgrids supported by alternative energy sources, offers a tremendous opportunity to avoid the misery caused by the lack of power and its many energy-dependent facilities and systems. The link to the study is: http://www.hobokennj.org/washingtonstreet/files/hoboken-microgrid-report.pdf. Internet research will yield many other sources of study and application.

The strategic deployment of microgrids can improve a city's resilience. The microgrid can be designed and developed:

- To connect and disconnect from the central grid as appropriate,
- To access alternative energy sources to provide cheap power in normal times and emergency power when necessary,
- To provide power in remote locations,
- To serve as a back-up source of energy during emergencies for dependent populations.