

Construction considerations in the US distributed energy market

Microgrids are an increasingly attractive means to provide reliable electricity, generated on-site, customized for the needs of the individual location and sensitive to the environment.



By Aaron Potter and Jess Hollingsworth

Microgrids have flourished with the rise of the “prosumer”—the historically passive energy consumer who is now armed with data and equipped with a new menu of energy solutions to address unique business needs.

In the US, microgrids gained a new level of interest in 2012, after Hurricane Sandy inflicted devastating damage on energy infrastructure and left more than eight million customers without power. Businesses and communities began looking for options that would provide a reliable source of power not dependent on the aging and vulnerable electricity grid.

Since 2012, these concerns have only increased, as wildfires on the West Coast and extraordinary storms elsewhere have emphasized the growing threats posed by climate change.

Improvements in technology since 2012 have increased the range of microgrid options and made them financially feasible for a wider range of users. Alternative business models, such as “energy-as-a-service,” have also created new possibilities.

With energy-as-a-service, a provider such as the Schneider Electric and The Carlyle Group joint venture AlphaStruxure will install a microgrid at its own expense and risk in exchange

for the customer’s commitment to purchase energy from the microgrid over a specified term.

Multiple options

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The basic elements are one or more sources of distributed energy, such as solar panels, wind turbines or generators, possibly coupled with a means of storage such as batteries, and integrated through a central controller that operates as the “brain” of the system. The microgrid provides one or more local users with continuous power, and when necessary can be “islanded” to operate independently of the larger electricity grid to which it may be connected.

A developer looking to arrange for the construction of a number of microgrids is often interested in efficiency. Practical means to realize this include developing ongoing relationships with reliable individual vendors, including contractors and engineers. A single reliable vendor is good, but a collection of them is better.



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Just as modularity is an efficiency driver with respect to the components of a microgrid, it can also be used in the contractual arrangements for construction. For example, a developer could negotiate standard terms and conditions with a group of reliable vendors, leaving only the business terms to be established for individual projects where a vendor in the group is selected.

Another cost-saving option for a sophisticated developer is to unwrap a project, so the developer engages individual vendors directly, potentially using pre-negotiated terms and conditions. This differs from the more traditional model of engaging a design-builder as a single-source provider that in turn engages the individual vendors and charges a commensurate fee.

The largest downside and deterrent to the unwrapped model, namely the risk of gaps between warranties, can be mitigated by at least two factors common in the sector. One is that each component of the microgrid, like solar panels or generators, is typically modular, self-contained and mechanically distinct from the rest of the microgrid, and will have its separate warranty from the vendor of that component.

Another is that the technology involved in such individual components is increasingly proven and reliable, so the developer can be less concerned about warranties than it would be in a situation where a design-builder is delivering a bespoke product that may or may not operate as intended.

Much has changed since Thomas Edison constructed New York City's Pearl Street station, arguably the first microgrid, in the late 19th century.

But despite various legal and regulatory questions that are not yet resolved in the US, microgrids seem well positioned to expand substantially in the next ten years.

Even COVID-19, which has slowed the rate of microgrid construction has exposed the fragility of the "normal" and the need for individual businesses and institutions to make their own arrangements for unexpected events. All of these factors make microgrids an increasingly attractive option.



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