

Microgrids: Utility vs. Private Ownership

by Jeff St. John

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Microgrids — office parks, college campuses or communities that can generate their own power and disconnect and reconnect from the grid at large at a moment's notice — [could be integral building blocks of the smart grid](#). That's why Dave Pacyna, senior vice president of Siemens Energy's North American transmission and distribution division, sees [microgrids as a natural step in utilities' smart grid plans](#).

Most microgrids of the future won't be making and storing enough power to be grid-independent all of the time. Instead, microgrids will maintain a constant and complex relationship with the utility — buying power at some times, selling it back at others, either disconnecting from the grid to avoid a power outage or reconnecting to help the grid balance its way through instabilities, depending on the circumstances. So a central question for the future of microgrids is what will the relationship be with utilities — will

it be utilities, or their customers, that pay for them and control them?

“I don’t think it’s even close to being baked out yet, as to what those relationships will look like,” Pacyna said in a recent interview. But [Siemens, a major player in the smart grid](#), does appear to be making some bets. For example, the German engineering giant is [working with BPL Global](#) to link up its utility-controlled distributed generation and demand response devices in homes and other buildings in a microgrid-like fashion — and [BPL](#) is “fully focused on the theory that all of their capabilities are basically designed to be utility-sponsored and utility-driven,” he said.

Some of the [first working examples of a microgrid](#) have been installed by [American Electric Power](#), which wants to own and operate them to help communities prone to loss of grid power and avoid building new transmission lines. And most of the microgrid projects currently underway are being led by utilities.

On the other hand, [Siemens is also working with Viridity Energy](#), a startup that makes software to manage microgrids and has projects underway [in New York](#) and [Philadelphia](#). [Viridity Energy](#)’s CEO, Audrey Zibelman, places herself firmly on the customer side of the microgrid debate.

Zibelman’s idea of an effective microgrid is based on the premise that the customer owns the resource and maximizes its value by selling self-generated power — or “negawatts” of reduced power demand — into more and more markets that have traditionally been the domain of utilities and their big power plant partners. The more money microgrids can make that way, the faster they’ll be built, and that should help the utilities with grid stability and integrating distributed generation sources like rooftop solar panels into their renewable energy goals.

But not if the utilities get in the way. “I think the model for the industry can’t be one that says it’s exclusively the utility’s domain to develop these microgrids,” she said in a February interview. “I just don’t see where utilities that want to operate microgrids for stability will be as aware of the economic benefits to the customer.” To be sure, it’s not that she’s advocating an adversarial relationship between utilities and their microgrid customers, but instead likens the relationship to telecom customers, as in, “They don’t want the telephone company to tell them what kind of cell phone they can buy.”

Indeed, the evolving relationship between utilities and their customers could be likened to the changes that have come to the telecommunications industry since the breakup of Ma Bell. The [Galvin Electricity Initiative](#), which is leading a Department of Energy grant-backed [microgrid project at Chicago's Illinois Institute of Technology](#), sees microgrids as a path toward what it calls a “[consumer-driven electric power system](#),” one in which every customer has full access to open markets for power that's priced dynamically, and every community has the right to an electricity distribution system that meets its needs.

In some cases, microgrids are being planned alongside communities' efforts to gain energy independence from their utility. Take Marin County, which has created [Marin Clean Energy](#), a “community choice aggregation” (CCA) public power entity allowed under California law to buy and sell electricity from wholesale power markets on behalf of residents in place of their local utility, in this case Pacific Gas & Electric. Marin County is also hosting a [microgrid demonstration project linking five municipal buildings](#), featuring software from Boulder, Colo.-based [Infotility](#) and backing from DOE and Pacific Northwest National Laboratory.

The idea, according to Infotility, is to scale up the microgrid model to eventually “enable utilities and communities to manage distributed renewable energy supplies such as solar and wind as conventional grid assets, as a foundation and reliable part of their energy portfolio” — a future that sounds pretty close to that envisioned by smart grid proponents. But in this instance, utility-community conflict is already built in — PG&E is the sole backer of a [California ballot measure that would amend the state's constitution to require a difficult to obtain two-thirds vote for citizens to form a CCA](#), a move that has drawn the ire of backers of public power, including the [Galvin Electricity Initiative's executive director, Kurt Yaeger](#).

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