



The Smart Grid

## Mining The Grid's Middle Mile

Brian Wingfield, 02.02.10, 6:00 PM ET

Here's an odd possibility: parts of the so-called "smart grid" could actually make the nation's electricity infrastructure less reliable.

As the grid has evolved in recent years, much attention has been focused on its "edges," where power companies generate electricity and where people consume it. The result: Early deployments of advanced power meters and home-operated energy management systems, and an increasing number of wind and solar power sources, which often need to be backed up by coal and natural gas plants.

Ray Gogel, president and chief operating officer of the Current Group, a Germantown, Md. smart grid firm, worries that the edges of the grid are acquiring too many nodes that haven't been planned for.

"All of that interjects more volatility into the grid, which scares utility people like myself," he says.

Volatility may be frightening, but it's also a boon for Current, which makes its money selling to utilities its own patented technologies to control the grid's power fluctuations. But instead of focusing on the consumer, as many smart grid companies do, Current's niche is what Gogel describes as the "middle mile"—local electricity networks that consist of power substations and distribution lines. Gogel's goal is to adorn this portion of the grid with computerized nodes that can alert a power company when too much or too little electricity is being used, or when a blackout is likely to occur.

Current supplies the hardware and the software. It's the company's software that matters most. "Everyone who's in this business is a software business at heart," says Current Chief Executive Officer Tom Casey.

Of course, scores of firms—from startups like Silver Spring Networks to behemoths like Google—are trying to establish a toehold in the smart grid industry, which is still very much evolving. Current executives say the company is different from its competitors in several respects.

For one thing, it's got Gogel, a utility veteran who was until last April was the chief architect behind SmartGridCity, Xcel Energy's enormous project to make Boulder, Colo. the city of the future for energy efficiency. After abruptly resigning from Xcel last April "to pursue other opportunities," according to a filing with the Securities and Exchange Commission, Gogel joined Current in June. Current is one of seven companies, aside from Xcel, that are part of the SmartGridCity consortium.

It's good news for Current, then, that the Obama administration is putting more than \$3.4 billion in stimulus money behind smart grid implementation. In October the administration announced the winners of 100 federal grants for smart grid-related projects. The grantees ranged from utilities like FPL Group's Florida Power & Light to Honeywell International to the Sacramento Municipal Utility District. A month later the Department of Energy awarded \$620 million for 32 smart grid projects to firms like Boeing and PG&E subsidiary Pacific Gas & Electric. Current, a private firm, doesn't release revenue figures or its client list, though a spokesman says the company is working with a dozen of the firms that received money in October.

There's so much investment in this sector because it's clear that as energy prices rise—and they very likely will, either due to increased demand or regulations calling for cleaner energy—utilities are looking for

ways to keep their costs down. Existing capacity needs to be replaced periodically, and new solar and wind facilities, which provide power intermittently, need to be backed up with traditional coal, natural gas or nuclear power plants. Add in grid volatility and suddenly electricity delivery becomes a variable cost instead of a fixed cost. If that happens, "you have a serious revenue problem," says Casey.

Another uncertainty is the sluggish process of constructing power lines. It often stalls at the state level due to not-in-my-backyard disputes. In certain regions of the country, like the mid-Atlantic and Southern California, the U.S. government has the authority to speed the process along, but, in general, regulatory disputes at the state level can slow utilities' investment in power lines.

Current executives point out that the U.S. isn't the only place for smart grid companies to thrive, and the company wants to get in the game early in other markets. In the European Union Current is working alongside firms like Spain's Iberdrola and Italy's ENEL to develop a grid architecture that can handle renewable power on a large scale. At a November meeting of the European Utility Telecom Council in Budapest the company demonstrated what it says is the industry's first comprehensive effort to tackle distribution and metering issues in Europe, Australia and Pacific Asia.

No matter where it operates, the company is betting that intelligent distribution networks are the future for the smart grid industry.

"This is about the middle mile," says Gogel. "This is about innovation."