

Smart Grids: *CSPs Retool Utilities for the Broadband Economy*

By Becky Bracken

Michael Valocchi was working on smart grids before it was fashionable, about six years ago. Now, as vice president of Global Energy and Utilities, IBM, he says he's encouraged to hear people outside of the energy industry getting serious about smart grid technology.

"Smart grid has become mainstream, which is where it belongs," Valocchi says. "We've been on an interesting journey for a number of years."

But for CSPs, the fun is just getting started.

What is a Smart Grid, Really?

Essentially, smart grids are the integration of utility networks with modern communication networks so that real-time data can be shared between consumers, utilities and others, like municipalities. As economic and environmental pressures mount on utilities, they are looking toward smart grid technology to become more efficient and responsive to customer demand.

But smart grid is far from a one-size-fits-all solution. There are as many business models for smart grid as there are communities trying to deploy the technology. Valocchi says there are eight to ten different business models out there for smart grid, and it uses two particular U.S. jurisdictions as examples of how smart grids are evolving to solve different kinds of problems.

Texas and California: Lessons From Smart Grid Pioneers

First is Texas. Deregulated since Jan. 2002 and seriously competitive, Texas energy is a new frontier. Smart grids are being deployed in Texas as a means to differentiate services in a highly-competitive environment. There, Valocchi adds, smart grids will allow upstart utilities to be more competitive and transparent and lure customers away from other providers.

More than 4 million smart meters have already been installed in deregulated parts of Texas, according to the Public Utility Commission, and many more should be installed by the end of next year, said Donna Nelson, the commission's chairwoman, in the *Texas Tribune*. There are also several public-private projects in Texas



working as incubators for smart grid technology, including the [Pecan Street Project](#) in Austin Texas, headed up at the University of Texas (and funded, in part, by the energy sector) that is testing smart meters in more than 1,000 homes and businesses, so far with promising results.

The lesson in Texas: There's money to be made in smart grid technology and the private energy sector already knows it.

On the other hand is California. Following the huge spikes in energy prices in California, state regulators saw smart meters as an opportunity to keep a sharp eye on consumption and bills. The California Public Utilities Commission (CPUC) and PG&E worked to roll out smart meters in 2007. As of June 2010, 3,146,000 electric and 3,101,000 gas smart meters have been installed throughout PG&E's service territory.

And the result of the smart meter roll-out in California? Unhappy customers.

By the fall of 2009, the CPUC had received over 600 SmartMeter consumer complaints about "unexpectedly high" bills and allegations that the new electric Smart Meters were not accurately recording electric usage, almost all of which were from PG&E's service area.

An independent [report](#) commissioned by the CPUC found that, "By not deploying the communication backbone prior to meter deployment, the time to transition meter reading from manual to Advanced Metering Infrastructure (AMI) system readings is exacerbated, extending to an average of 131 days over the implementation period. This allows a continuation of the higher error rate associated with manual meter reading, and may contribute to the perception that the smart meters are inaccurate."

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The lesson in California: Smart grids and smart meters just aren't so smart without a hearty communications and IT network to support them.

While Texas illustrates a private sector push for efficiency and customer uptake, California's story is essentially a public-sector, regulatory one. But no matter the particular business model or driver for smart grid development and deployment, there are particular roles CSPs are perfectly suited to fill across the gamut.

SmartGrid Opportunities for CSPs

Utility networks are aging, increasingly unreliable, rigid and difficult to deploy. And population growth and the explosion of electronic devices is rapidly overburdening these dinosaur networks. Communities aren't interested in erecting more unsightly power lines. Communications and information networks are naturally positioned to fill in the gap.

Customer Service and Differentiation

The 2011 IBM Global Utility Survey of more than 10,000 people across 15 countries explored the wants and needs of energy consumers worldwide with a distinct "behavioral economics" approach. It exposed a shocking lack of consumer knowledge about how to reduce energy consumption and benefit from smarter energy initiatives. As consumers look for not only cheaper, but more environmentally responsible energy solutions, CSPs will need to leverage SmartGrids to empower customers to make those choices in real-time, from wherever they are.

"A simple way for an operator to get involved in smart

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grid is to enable the homeowner to interact with utilities, etc., when they are outside of the home," John Aalbers, Volubill CEO says. "It is already possible to use a phone line to turn central heating on and off. This will become even more comprehensive in the future. We will be able to control lights, the washing machine, and even the oven from outside of the home. Heating might power down when the kettle is on to distribute energy use more evenly or street lights might use less power at dinner time when people are cooking."

The IBM study went on to identify three distinct opportunities to engage customers more fully with their energy consumption that are natural fits for CSP services to add value to utility networks:

Alternative Motivation: Financial incentives are not the only factors that encourage consumers to decrease their energy consumption.

Information Availability: How a choice is framed and presented can make a big difference. For instance, presenting too many options can at times be detrimental. While in theory more options should always be a plus, the resulting complexity can

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ultimately demotivate consumers.

Social Drivers: Another approach for greater adaption of smarter energy is to tap into people's inherent social nature. People rely on social proof, or the behavior of others, to determine the right ways to act in many situations.

Data Centers

Utility networks generate enormous amounts of data. The more equipped a CSP is to store and process the vast amounts of usage, billing and network data, the more comprehensive their solution for SmartGrids are.

Cisco is one provider which is all-in on its bet on smart grid and has forecast that smart grid is a potential \$10 billion market. Data center build-out, among other initiatives, is one of the cornerstones of Cisco's smart grid [strategy](#).

"Securing information generated in a smart grid network requires that data center storage and access are secured and that diagnostics, telemetry, and control commands of intelligent devices in the utility control network are authenticated and protected," Cisco says about its data center initiatives.

Analytics

After all of that data is sucked down from the network, secured and stored, someone needs to make sense out of it all for utilities.

Oracle is a good example of a solution provider looking at smart grid analytics as a [strategy](#).

"Far too many so-called business intelligence products today provide little more than an additional analytic engine or reporting framework requiring months of consulting time to implement and extensive staff time and training to use and maintain," Rodger Smith, senior vice president and general manager, Oracle Utilities says. "Oracle Utilities Meter Data Analytics is a major step beyond those costly halfway measures. It answers utilities' most pressing metering questions at the click of a mouse. While others deliver 'tools' and 'foundations,' we deliver out-of-the-box results."

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Managed IT Security and Consulting

As utilities ramp up their technological know-how to work with CSPs, there will be big opportunities for consulting and managed IT services to bridge the knowledge gap. This is where companies like Telcordia are staking their claim with smart grid communications management, smart grid network and operations consulting, and smart grid security and reliability services.

Smart Grids and 'Social Capital'

Besides the increasingly obvious business proposition for CSPs to get on the smart grid bandwagon, there's a real "We Are the World," "do it for your fellow man" case to be made here. Smart grids help the environment, our quality of life and are an increasing necessity in today's broadband economy.

Lou Zacharilla, co-founder of Intelligent Community, a New York-based think tank focused on supporting community innovation, points to communities like the 32,000 residents of Stratford, Ontario and Chattanooga, Tenn., which have decided to incubate smart grid technology as a means of creating what he calls, "social capital."

"The Police commissioner of New York, where I live, attributed the fact that New York is the 'safest city' due to the ability of the police force to take in data and push it out to those who need it," Zacharilla says. "Smarter cities where the private and public work together are retaining the best and brightest and support our digital media-based economy. There's real compelling logic there for the benefits of smart cities."