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Smart Grid's $200 Billion Investment Lures Cisco, ABB

Technology companies and established power-systems suppliers are vying for a share of the global electricity-management market

By David Bogoslaw

Technology companies from Cisco Systems Inc. (CSCO) to ABB Ltd. (ABB) are angling for pieces of the smart grid, the next-generation electricity-delivery network designed to monitor consumption better at households and businesses.

San Jose (Calif.)-based Cisco, the largest maker of computer-networking equipment and a producer of energy-monitoring devices, has partnered with meter-maker Itron Inc. (ITRI) for contracts. Zurich-based ABB, the biggest builder of electricity networks, is developing automation devices for power lines.

With $200 billion in global smart-grid investment expected in 2008 to 2015 by the Pike Research group, with almost $53 billion just in the U.S., technology companies have joined established power-systems suppliers as contestants in the power-management market.

Rather than employing a single technology, the smart grid comprises a network of networks that makes possible real-time two-way communication between power providers and users, omnipresent sensing control, and distributed automation throughout the electrical generation network.

The key difference between the current and future grids: decentralized management of electric power. That's essential when demand for electricity surges as a result of increased consumption.

Smart-grid technology will be a key driver of the $750 billion in incremental spending that Goldman Sachs Group Inc. (GS) foresees for the global transmission and distribution market over the next 30 years, according to a Sept. 15 research note.

STIMULUS GRANTS

In the U.S., development of the smart grid is near a critical point. Utilities face a Sept. 30 deadline to report their plans, budgets, and choice of vendors and technology for approved smart-grid projects to the U.S. Energy Dept. in order to qualify for $3.4 billion in federal stimulus grants.

Just how much of the money that utilities plan to spend on substation and transformer upgrades can be classified as smart-grid investments is open to debate since utilities' long-term capital budgets include upgrades anyway, says Andy Roehr, head of Smart Energy Services at Capgemini, a consulting firm to the utilities and other tech-oriented industries.

While a piece of the smart-grid pie will go to traditional suppliers of power-line equipment such as ABB and General Electric Co. (GE), the communication network that needs to be built is entirely new and is attracting Cisco, privately held Silver Spring Networks, and eventually some telecommunications providers.

$15 BILLION OPPORTUNITY

Cisco expects $15 billion to $20 billion in global opportunities to join electrical infrastructure with information technology over the next seven years.

"It's not going to happen overnight. A lot of regulatory issues have to be worked out," says Jennifer Gresson, a company spokeswoman.

Last year, Cisco began to sell a building mediator that tells facilities managers how much power elevators, heating and cooling systems, and other equipment are using and centralizes the information flow so they can monitor multiple business locations at once.

Cisco says one customer, NetApp Inc. (NTAP), a storage and data management provider, reported $2 million in savings in less than one year from using the building mediator. In 2011, Cisco plans to roll out a home energy controller that performs the same service for consumers.

VARIABLE POWER PRICES

Investment right now in the smart grid primarily means advanced metering infrastructure, one goal of which is to move billing from flat rates to variable rates based on time-of-use and letting consumers adjust their use accordingly.

Utilities have already contracted with meter vendors for one-third of the roughly 147 million total customer endpoints in the U.S. and another 40 million to 50 million will be contracted over the next two to three years, says Howard Scott, a managing partner at Cognyst Advisors, a consulting firm to the power industry.

Electric smart meter shipments totaled 4.5 million in the second quarter of 2010, compared with 3.7 million in the first quarter, according to Scott's August report on deployment of automated meters in North America. Total shipments for 2010 are projected at 15.8 million, up from 10.9 million in 2009.

To be sure, utilities are finding it hard to convince state public utility commissions of the financial benefits of these projects, as reported in *Bloomberg Businessweek*'s Sept. 20 issue.

HIGHER ELECTRICITY RATES?

Utilities need state regulators' approval to make capital investments that are ultimately recouped by charging ratepayers more for electricity. And fiscal constraints due to the recession and slow recovery have hampered smart-grid investment among municipal-owned utilities.

In the end, the smart grid may prove to be less about lowering ratepayers' bills than better managing increasing power loads. Experts are watching one thing in particular: electric vehicles. The number of plug-in cars and trucks is expected to reach 841,000 in the U.S. by the end of 2015, according to Pike Research.

Itron's advanced meter shipments, which include electric, gas, and water meters, have been far ahead of its competitors in each of the past five years and its projected volume in 2010 is roughly equivalent to the combined volume of its two closest rivals, Sensus USA Inc. and Silver Spring Networks.

Itron, the only publicly traded pure-play meter provider, saw its revenue jump 38 percent from a year earlier to $569 million in the second quarter, while North American revenue of $303 million more than doubled.

METER CONTRACTS

The Liberty Lake (Wash.)-based company has 14 million meters currently contracted and has delivered more than 3 million of those. Virtually all of its deliveries have been to its biggest customers: Southern California Edison Co., San Diego Gas & Electric, CenterPoint Energy Inc. (CNP) in Texas, and Detroit Edison Co.

Itron announced a strategic alliance with Cisco on Sept. 1 that aims to create a definitive Internet Protocol-based communications platform for the smart-grid market. By standardizing the communications platform and having a leading network provider as a partner, "we think we can really accelerate adoption" in the industry, says Philip Mezey, chief operating officer of Itron North America.

Some industry experts say reliance on any one communication protocol or vendor may be a hindrance, given the need for communication between many different grid-linked devices in the future. This could help give San Jose-based Echelon Corp. (ELON) a market advantage.

ECHELON, DUKE ENERGY

Echelon's new control system software platform, ECoS, is designed to be flexible enough to connect to multiple communications mediums such as Wi-Fi, 3G, and 900-megaherz radio frequency.

Duke Energy Corp. (DUK), which serves 4 million customers in five states, signed up on Sept. 3 to be the first user, with a $14.5 million order. Duke could eventually contract for well over 1 million units, Wedbush Equity Research said in a Sept. 9 research note.

Ultimately, semiconductor manufacturers may be the biggest beneficiaries as the smart grid is built. Embedded intelligence distributed throughout the grid will require more microprocessors to analyze information at transformers, substations, and the in-home energy management devices that will control home appliances.

SMART POWER

Bazmi Husain, head of the smart grid for ABB Worldwide, a division of ABB Ltd., expects more significant cost savings to come from greater automation to manage power lines, reducing the need for manual work. Husain sees grid modernization and the convergence of power and automation as major sources of future growth. ABB's network-management systems enable the utility to monitor conditions for each of its devices on distribution lines and control them if something goes wrong.

ABB is also making equity investments in smart-grid infrastructure companies such as California-based Trilliant and developing grid-scale energy storage systems, including the world's largest in Fairbanks, Alaska. In May, it acquired Ventyx Inc., which provides software to help utilities better manage equipment and employees.

Capgemini's Roehr says a more realistic goal than saving ratepayers money is handling additional energy demand, with electric vehicles likely the most disruptive factor. With a transformer for every three or four houses, "if two or three of them plug in their electric vehicles at 5:30, they'll kill the transformer and kill the circuit," he says.

The hope is that building out the smart grid won't add costs for consumers. "That will be a challenge," Roehr says.

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