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Smart grid firm's technologies aim to help utilities save money

A focus of many smart grid efforts is helping consumers become better energy managers and making it easier for them to use less power at peak demand periods. The same principle can be applied to utilities themselves, and a relatively new firm, Power Tagging, has developed technologies that can save utilities about 4% of the power they need to send to consumers, executives said in a series of interviews.

Unlike many smart grid vendors that focus on consumer applications, a primary aim of Power Tagging is to improve utility functions on a couple of fronts, including better voltage management and integration of electric vehicles, said John LoPorto, the company's president and CEO.

The company's communication technology, which can be installed at the customer meter, gives Power Tagging "the ability to fingerprint" the power being used by consumers and a real-time communication module on the customer premises, which can help with voltage management and making the power grid more "self-aware," LoPorto said. The conservation voltage reduction applications of the technology will be a key benefit for utilities, helping them avoid bulking up the power grid for high-demand applications such as EVs, flat screen TVs and such, LoPorto said.

Rather than using signal repeaters, wireless communications systems or other methods currently used by utilities, Power Tagging sends signals through substations and transformers and provides utilities with data on grid operations in a much more detailed manner than currently available, LoPorto said. Dominion, which has an investment in the Boulder, Colorado-based firm, has used Power Tagging technology on an experimental basis and it worked as expected, said Dominion spokesman Jim Norvelle.

Besides looking at changing consumer behavior to trim peak demand through smart grid efforts, utilities can use Power Tagging to reduce voltage on their systems at specific points, saving between 3% and 8% off the amount of generation needed across their system, LoPorto said.

Dominion has seen a 4% reduction potential with the use of the technology, which will allow the company to defer a couple of power plants and delay the need for a few others, Norvelle said. He said Dominion has not calculated the dollar savings from such steps at this point, and the utility has no specific plans for using the technology on its system. "We're taking our time on this," much as the utility is doing with advanced meters and other technologies, Norvelle said.

For a utility that is interested in using Power Tagging technology, "we provide a power quality meter on the grid" and "make every home a real-time feedback loop," enabling the utility to make voltage adjustments in a much more granular way than currently possible, LoPorto said.

The fingerprinting technology, with modules installed at the meters and software support, also can aid EV integration by avoiding submetering, or separately measuring usage for EVs. The system would enable an EV owner with Power Tagging technology to charge a vehicle anywhere in the utility territory and have the costs added to the owner's utility bill, rather than paying for each charge at different locations. It would eliminate the back office hassles tied to separate billing, charging and metering for EV owners, but it would be limited to a particular utility that uses the technology, LoPorto said.

"We envision a regional utility effort," where utilities serving large population centers can team up and use the technology to help EV integration, he said.

For EV integration, many utilities are looking at submetering as a key issue if they want to offer off-peak charging rates or special rates for charging the vehicles, noted Mark Duvall, director of electric transportation at the Electric Power Research Institute. Submetering is important for utilities and customers if they want to track vehicle charging separately from other home uses for carbon reduction purposes, payment of transportation or road taxes or other uses, Duvall said. "This is something the utility industry is still working to understand," he said.

Duvall said he sees "almost no interest" in the utility sector for tracking power for EV charging as Power Tagging would allow, but he acknowledged that he was not very familiar with the privately held firm. Chasing down the small amount of power for EV charging in order for the utility to assign the cost to a particular bill is not likely to be worth the cost or effort, Duvall said, suggesting that EV owners will probably prefer charging and paying wherever the charging facilities are located.

Besides Dominion, several other utilities are testing Power Tagging, though they have nondisclosure agreements so LoPorto could not identify them. He did say they included cooperative, municipal and investor-owned utilities.

LoPorto declined to disclose the pricing or cost of Power Tagging's technology, but said it is considerably more cost effective than existing wireless or wireline technologies being used by utilities today.

Lockheed Martin, which has a business that includes systems to improve power grid management, has partnered with Power Tagging and Lockheed executive Chris Demain sits on the board of the company.

"We look at opportunities to bring our capabilities ... to the energy market," including smart grid, demand response, microgrid development and cybersecurity efforts, said David Jewell, spokeman for Lockheed Martin.

He declined to say if Lockheed has an investment in Power Tagging, and LoPorto also identified Lockheed solely as a strategic partner. "We consider the nature of that relationship proprietary," Jewell said. — *Tom Tiernan*