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Demand Response: The Standards Race Begins?

LBNL's OpenADR is a standard to make automated demand response and real-time power pricing quick and easy. Is the fragmented market ready for it?

Demand response – turning down power at factories, offices and homes to save energy and meet utility peak demands. It's the "[killer application](#)" for the smart grid, according to Federal Energy Regulatory Commission Chairman Jon Wellinghoff, capable of saving up to 188 gigawatts of power, or about 20 percent of the country's overall peak energy use ([see FERC report](#)).

But the real-world business of demand response is a highly fragmented affair, ranging from cutting-edge automated automation and communication technologies to old stand-bys of pager messages, phone calls, emails and price lists posted on public websites.

Smart grid proponents agree that standards to automate demand response – and link it with new variable pricing schemes – could open up this fragmented market to broader competition, improving efficiency and lowering cost for utilities and customers alike. But on what standards might this killer app of the future be built?

Lawrence Berkeley National Laboratory has an answer – [OpenADR](#), or open automated demand response. The lab has tested OpenADR with California utilities [Pacific Gas & Electric](#), [Southern California Edison](#) and [San Diego Gas & Electric](#), which have agreed to use it for some direct utility-to-customer demand response programs.

This week, the lab hired Lafayette, Calif.-based integration company [Utility Integration Solutions](#) (UISOL) to [develop it as a platform for real-world applications](#). UISOL plans to have source code and a toolkit for implementation by March 2010.

The premise is a simple way for data on demand response orders, as well as power pricing, to travel over any network and be understood by any device out there – air conditioners, water pumps, factory motors, building control systems and anything else that uses electricity. Close to real-time pricing data is key, since most utilities want customers' desire to save money to play a role in making the technology more popular.

The National Institute of Standards and Technology, the federal agency setting standards for smart grid deployments, has [named OpenADR an early leader](#) in the field of making all this possible (see [Smart Grid Standards Roadmap Unveiled](#)).

But it could take some time for a new standard to infiltrate the existing demand response market, which already accounts for about [41 gigawatts of power as of December 2008](#), or about 5.8 percent of nationwide peak power demand, according to FERC.

PowerIt Solutions, a Seattle-based company that automates energy management systems at commercial and industrial buildings, uses OpenADR to link its central servers to its customers' buildings, for example, company president Bob Zak said Thursday (see [PowerIt Lands \\$6M for Industrial Energy Efficiency](#)).

But on the utility side, PowerIt still has to deal mostly with pulling data posted publicly on utility websites, and translating it into commands to turn down power, he said.

That's why PowerIt is taking on the role of aggregating real-time pricing data for its customers, a service that about half a dozen of them are now using, he said.

As for standardizing, from utility all the way to end customer, "They can get it done," he said. "The challenge is, how long is it going to take for everybody to adopt it. Implementation can take awhile. In the meantime, these rate schedules already exist."

That is, many utilities already charge different rates to commercial and industrial customers, usually higher at afternoon peak demand times than at night, when demand is slack. Others are enrolled critical peak pricing programs that target the handful of days in the year – often hot summer afternoons – when utilities can face blackouts.

As established demand response providers integrate automation and pricing into what they do for their existing customers, they may have their own standardization options.

[EnerNoc](#) (NSDQ: ENOC), which manages about 3,250 megawatts of demand response capacity, has PowerTalk, which uses the XMPP standard for instant messaging, for example (see [Instant Messenger of the Smart Grid](#) and [EnerNoc Finally Turns a Profit](#)).

Demand response rival [Comverge](#) (NSDQ:COMV), which serves homes as well as commercial and industrial sites, is working on bringing demand response to utility customers through smart meters. That's a common goal of smart meter deployments, which now use a wide variety of networks, some based on proprietary technologies (see [Comverge's Home Demand Response: Pagers First, Then Smart Meters](#)).

Some kind of standardization is going to be critical to the demand response business, which now has "a humongous potential market, but very few solutions that are scaling to meet" it, Zak said.

"To do that you've got to have competition – and to have some standardization on how this information is going to be passed is going to open up choices," he said.

For a sense of how long it might take, however, Zak pointed to the industrial automation market, which has been the domain of proprietary systems from big corporations like General Electric and Siemens.

"Even today, although they all say they've got Ethernet, it's still their own flavor of Ethernet," he said. "I'm afraid you're going to get these different people who have some skin in the game on this, and want to subtly try to lock in their technology. So we'll see."