Alexa - Optimize My Energy Use

Since 1880, it is estimated that fewer than 100,000 American women have been named Alexa. But whether or not you knew or know any of them, many of you will likely soon have a new friend with that name.

Based on the reports I read from the recent Consumer Electronics Show (CES) in Las Vegas, Amazon's voice-based wireless speaker and voice command device named Echo was quite the hit. Alexa is Echo's "wake" word, and you can think of it as similar to the well-known Siri on the iPhone. It is not the only such device on the market, and I am not endorsing it. (I don't even like to mention products in the news blurbs that I select for Update). But based on what I read, Echo seems to be the device that many other technology and service providers are working to integrate with (one example being a major appliance manufacturer and its voice-activated dryer). But it is really the concept of Alexa that I want to talk about, not the device it speaks from.

Energy Management Systems (EMS) became available to commercial and industrial customers decades ago and became an important platform for Energy Service Companies (ESCOs) to use in Energy Performance Contracting (EPCs). The systems seemed to have done their job but even as they evolved over time but to deploy them they had to be built on top of and into a building's infrastructure and operations. There was no ubiquitous technology and communications technology already embedded in the building that would allow anything else. Notably, these systems were much too expensive to deploy into the mass market.

The original forms of demand response were largely curtailment programs, with things simply being turned on and off, sometimes manually. These were not dynamic interactive style programs. The technology was not there for that. But DR evolved as technology evolved and it has yielded more sophisticated programs and deployments, primarily with commercial and industrial customers.

Today, those of us in the electricity community are running as fast as we can on what often

feels like a technology treadmill (an analogy might be the conveyer belt that Lucy manned when she worked at the chocolate factory). And now the belt is speeding up as more and more technology comes to the residential sector the long-neglected small-business mass market.

Those in our community also now understand that the name of the grid-modernization game is optimization, i.e. having all the information, all the controls, and all of the sensory feedback to do the right thing at the right time on an ongoing basis. It is the ability to optimize that is the essence of something being "smart", whether it is a grid, a city, a building or a home.

I don't know what Alexa can actually do and I suspect that it is not the energy optimization assistant I want or will get some day. But we are approaching the point where there is going to be an entirely new way to reduce energy (primarily electricity) use in our homes. It will be simply telling someone like her to use all of the information available to her from all the components in our home, and use her smartness to take the actions that will result in the lowest energy usage and/or energy costs.

Hmmm....let me think.....

Alexa - Charge my EV tonight when the price is the lowest while still leaving enough time to give me a full charge in the morning.

Alexa - If I reach the point today where you predict I will spend more than $10 on electricity, cut back my temperature setting up to a max of 5 degrees until you are able to stay below that cost level.

Alexa - Turn off the lights in any room I am not in right now.

But wait - We shouldn't be thinking only of usage and costs when we seek to optimize. Electricity production is starting to be tagged by Regional System Operators. I know of at least two new tech applications that are focused to allow a building to use that data to monitor and modify its operations based on the emissions tied to the electricity it is using.

Alexa - Reduce my emissions.

Now that would be cool. (in more ways than one).

It used to be that the only people that had the ability to try to optimize the electricity system were the ones in the control room watching the demand rise and fall and bringing power plants in and out of service accordingly. Today the control room has more resources to call upon than just power plants, and there are now sub-control rooms being developed at the distribution level that will have many more resources, - both by type and in number - to dispatch and thus use in optimization. Now comes Alexa, and smart homes and sub-sub control centers operated by you and me.

So stay tuned. Try to follow technology developments. But at least try to understand the trends they are setting and what those developments are providing in terms of capabilities and potential. If you think it is wild now, just wait. Fasten your seatbelts.

Dan