

EMERGING TECHNOLOGIES SHOWCASE WEBINAR: CEA-2045 STANDARD FOR DEMAND RESPONSE

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September 23, 2014
Question and Answer session

Q: Is there any way to retrofit existing appliances with the CEA-2045 standard?

A: CONRAD: Basically no. The reason that it lowers the cost of demand response so much is because instead of building a power relay and electrically attaching it outside of the appliance (I call that the crowbar method), you're using the controls of the appliance itself. If the appliance isn't designed from the factory to accommodate CEA-2045, you're out of luck.

Q: Have you thought about how to give the customer a share of the value of the service that is being delivered to the grid?

A: CONRAD: As a retail utility, absolutely. Just as with energy efficiency, the customer who participates gets most of the benefits. And because it's a least cost option, everybody gets benefits. But in a demand response program, there would be a recurring fee paid as an incentive. It won't be huge but it will be noticeable to encourage them to participate in the program. Many years from now, and I mean decades, it will be sort of like recycling garbage. It will become sort of a civic duty to allow devices to run, according to your flexibility, to accommodate more renewable on the grid. In cultures like Denmark they're already starting to get to this point. They already have 50% of the renewables on wind. And they already are doing things that are dispatched when the wind blows.

TONY: That's the second phase. The first is getting the physical ports and widgets to be available and deployed. The second piece of this is how you design a demand response program. That's what the question is all about. How do you compensate? How do you keep customers there year after year because you don't want to have attrition. After a big sign up, everyone is excited but then over the next year or two they drop out for one reason or another. Customer engagement – how do you bring them to the table, how do you keep them engaged. Those are more than just the \$5 or \$10 a year, they need to be (what Conrad is saying) understanding. Am I willing to give a lot or a little and what type of compensation is there? It needs to be equitable. There is plenty of marketing challenge here for the marketers and those folks to be thinking about how we engage the public and participants.

Q: I imagine time of use pricing being beneficial for both customers and utilities. How well does this technology support that and how well can time of use work in the NW where wind loads are less predictable?

CONRAD: The standard already anticipates time of use. There's the idea of sending just control commands like "shed" and "return to normal". There are also a whole set of commands around high price, low price, mid-price, as well as the ability to send relative price or absolute price. So when we get to a more dynamic wholesale market price when we've got renewables in much more greater quantity,. Time of use works because there are predictable times when the lows are high and prices are high. Once you get to a world when renewables vary day by day, we're going to have to move towards more dynamic pricing. The type of time of use when there is a tariff on the book with fixed prices at fixed times isn't going to work. People don't want to babysit their appliances. One way or another, smart appliances are going to happen. They'll happen faster when we can start to perfect the mechanisms and use. We all sort of support CEA-2045 in the short run and we'll be finding uses for it for decades.

Q: If customer's needs for heat, hot water, car charging, etc., are prioritized, and if installation of the DR control gizmo costs \$400, wouldn't it make sense to select participants in the new DR program that are more flexible and accommodating?

A: CONRAD: Just to be clear, the \$400 is the old paradigm. This project is not about that. Twenty years from now hopefully they'll pick up the communication module at Walgreens or someplace like that. Utilities trying to figure out when to control things and deal with customers' flexibility will never work in the long run. Usually customers want to know if the device will meet their demands. The appliance manufacturers are much better able to take the inputs directly from customers as they change day to day. It's a paradigm change. It's not going to happen overnight. It will be at least decades before it's a common concept. Flexible participants will be rewarded accordingly. That's a market program design, not a technical design.

Q: How does the cost of the CEA-2045 infrastructure compare to the avoided cost of the power saved over the projected life of the product?

A: CONRAD: It's extremely cheap. Take water heaters as an example. Taking Tony's 0.6 per kW resistance water heater, if the water heaters show up in the NW with the socket then in volume the communication devices can be as cheap as \$15. The chips are completely dependent on volume. If you divide \$15 by 0.6 you're all the way up to approximately \$30 per kW compared with a power plant at \$800 per kW. It's many many times cheaper. But we have the barrier of getting the sockets on the appliances.

Q: Seems like all the customers who signed up with their utilities to support renewable generation would be more likely to support this technology and control if they relate it to their choice to support renewables.

A: CONRAD: There are generally two types of people interested in demand response – people that need to save money such as low-income households, and others such as puzzle-solvers that like to minimize their bills. They don't really need to save the money but they like to do it. I'm really hoping that in the long run, it will be a social right thing to do to get more renewables on the grid. It will be so painless that much more than 50% of the people will do it. But you're right, the early adapters will be people who are very supportive of renewables.