DISTRIBUTED AUTONOMOUS DEMAND RESPONSE

Distributed autonomous demand response matches the DR solution to the problem. Customer loads are complex open loop systems that are, stochastic, distributed, self-learning, and require a low level of human interaction. And yet the solution has been to solve the problem with simple deterministic systems that are closed loop, programmed for repetitive tasks, not self-healing, and require intense human interaction. Habersham Electric Member Co-Op has installed a pilot residential DR program to test innovative methods of managing customer loads during peak power periods. Customer participation, installation & operation costs, lack of energy shift verification, and last mile communications have always plagued DR programs. Last mile communications costs have dropped dramatically with the advent of the World Wide Web, wireless technology, and reduced micro-electronics costs. Installation and Energy shift verification costs have dropped dramatically with the smart phone elimination of in-home displays, value bundling of digital broadband products like Vo-IP, video streaming, web surfing, and cloud based games. That leaves utility operational costs and customer participation as the two hurdles to full implementation of smart grid enabled DR. Utilities & customers have common issues: operator training and persistent involvement to know when infrequent DR events should be activated for small periods of time over a long time frame. Combine this with customer’s concerns over big brother having detailed knowledge of their activities at home and it makes for a tuff sell with soft paybacks. Our research during the pilot has revealed that sending data used to make load decisions at the utility, combined with smart devices that make the same load decisions but at a local distributed level enable widespread load shifting and savings by removing the need to send detailed routine data and since the decisions are being delegated to the local level, the Load Operator’s work load is reduced.

Jon VanDonkelaar
President
Bellbrook Energy, LLC
633 McBee Rd
Bellbrook, OH 45305
Ph. 937-974-6412
Email: jvandonkelaar@yahoo.com