

Integrating Demand Response Completes the Systems Integration Picture

The Situation

In today's business environment, companies are thinking about energy as a strategic asset that is important to every aspect of their business.

We're all familiar with the scenario. CEO's are under pressure from shareholders and board members to green-up and cut greenhouse gas emissions, reduce energy consumption and shrink their carbon footprint. CFO's are looking for increasingly more creative ways to trim costs and gain a return on investments, and facilities managers are tasked with the challenge of keeping a wide range of systems operating efficiently and effectively under a myriad of conditions, including a volatile energy market and a steady increase in capacity costs. Is the decision to fire up the generators the right one when the ISO calls for a curtailment on the hottest, or coldest, day of the year or is there a more sophisticated approach for today's fiscally and environmentally minded CEO?

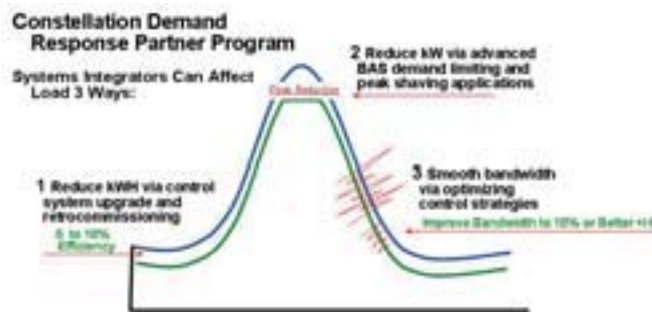
The Opportunity

LON Systems Integrators already utilize one comprehensive platform to manage the lighting, HVAC and building systems within a facility. Integrating demand response into this platform brings the supply side of the picture into perspective, further leveraging their customers' ability to control the internal environment not only with regards to creature comfort, but also energy consumption. The result is a smarter and more energy responsive building that is positioned to react flexibly to curtailment demands from the ISO and changes in the energy market as well.

Systems Integrators who are able to combine a demand response program are well-positioned to help customers leverage both the demand and the supply side of the equation. Load management and energy efficiency strategies

are most effective when all elements of the energy chain are linked together for the customer. Systems Integrators who are able to bring supply and demand side expertise to the table have a competitive edge when assisting end users with managing energy in their facility. This expertise can be brought to bear in three primary ways:

- 1) Shaping load via control system upgrades and retrofitting.
- 2) Reducing load via advanced demand limiting and peak shaving applications.
- 3) Smoothing bandwidth via optimizing control strategies.



Enhancing the elasticity of a company's facilities is fundamental to reducing energy needs in the future and taking unnecessary stress off the grid during peak demand. There are a multitude of opportunities to leverage – from lighting, primary air handling and pumping equipment, central plant operations and HVAC systems. Further savings can be realized from access to meter and price information systems, which allow up-to-the-minute views of energy usage and costs and the ability to employ this information to better shape and control usage patterns. Real-time energy information and the ability to shape energy load will put a business in the driver's seat when responding to a demand for curtailment from the ISO and when navigating a volatile energy market.

Demand response can be integrated into energy efficiency upgrades to old-

er, existing facilities or incorporated into the design and construction of new buildings. This successful bridging of energy supply with actual on-site demand addresses everyone's needs from the corner office to the control room. For example, ConstellationNewEnergy has worked with Syracuse University since 1995 on multiple projects involving more than 40 buildings. Among the upgrades is a new energy management system which controls all HVAC systems in 44 buildings. VAV conversions were made in more than 12 buildings, including more than 185 lab fume hoods and VSDs were placed on more than 50 individual pumping and air-handling systems ranging in size from 7.5 to 100 horsepower. ConstellationNewEnergy worked with the incumbent Systems Integrators to help design and install the controls upgrades. Matching funds from NYSERDA helped off-set

the initial investments, which have resulted in annual cost savings of \$1.9 million and reduced energy costs by more than 10 percent over a five-year period. New electric metering, measuring and monitoring systems provide necessary information for the university to comprehensively evaluate, assess and shape its energy load going forward.

The Benefits

Demand response provides measurable benefits to customers that go well beyond the financial. Among these are contributing to the effort to prevent regional blackouts without resorting to on-site generation.

Whereas many demand response providers typically use generators as their main load reduction product, better results can be achieved by leveraging building automation systems →

and applying advanced control strategies for true load shaping. This method helps to prevent brownouts, rolling blackouts and high cost peaking plants from coming online during ISO emergency curtailment events. Shaving off-peak usage results in additional kilowatts becoming available where they are most needed on the grid without the need to fire up older gas, oil or coal plants to meet regional demand. This puts companies in a position to contribute to the larger effort of preventing regional blackouts, without resorting to on-site generation and the

associated issues of run-time and air emissions that accompany them.

During demand response events, customers who are set up with the technology and metering applications to curtail at least 100 kilowatts of electricity consumption during peak demand hours are able to reap year-round financial benefits. The result is a reduction in energy costs through regular monthly payments for committing to participation in the ISO curtailment program as well as the savings earned during actual curtailment events. And, finally, integrating demand response

into existing platforms positions customers to fully take advantage of an ever evolving and increasingly more sophisticated energy market. As an experienced energy advisor, Constellation NewEnergy looks forward to working with LON Systems Integrators to assist businesses in charting a course in this evolving energy market.

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