

RETX Creates a Hub for Real-Time Energy Transactions

CASE STUDY

In today's energy market, the need for real time information is critical. Demand for electricity has outpaced supply over the last decade, resulting in power shortages, high prices, and reduced reliability. One way to resolve these issues is faster interaction between energy suppliers and consumers — a real-time flow of information between the two sides.

Enter RETX. Its goal was to enable a true market economy, where both energy suppliers and consumers could influence the amount and price of power.

RETX focused on two programs: *price response* and *emergency response*, where end users can adjust their usage based on the price of electricity, and release power back to the grid by shedding loads or starting up generators. They can also respond to utility requests for load curtailment due to power supply shortfalls or transmission constraints.

The overall results are higher reliability and lower prices. Ross Malme, president and CEO of RETX, Inc., notes, "Everyone benefits: the policy makers, energy suppliers, end users, and the environment."

The necessary metering and communications come from intelligent ION® devices installed at all participating end-user sites. The ION meters e-mail energy usage data directly to RETX's Load Management Dispatcher™ (LMD) software, which processes the business transactions.

Suppliers benefit because they don't have to invest in generation facilities. They can satisfy all their customers at times of peak demand and avoid expensive capacity contracts. The Independent System Operator (ISO) or Regional Transmission Operator (RTO) can ensure that the entire region's power needs are met. And end users reduce their power costs, often releasing energy back to the grid at a profit.

Malme observes, "Demand response programs are the cheapest and cleanest way to add capacity. Studies have shown that reducing demand by 5% can lead to a drop in market prices of up to 50%. But, to make the programs

work, we need real-time communications so that all market participants can access the same information and react immediately.

RETX's Negawatt Hub

RETX has created a full-featured web site, a "transaction hub" running on a RETX server, giving all participants easy access to energy information through a centralized service.

The service is called the *Negawatt Hub* (a "negawatt" is a megawatt saved from the grid), and its software engine is RETX's LMD software. "As an alternative to every utility and every retailer installing their own specialized software or computer network, RETX provides the complete system," says Malme.

ISO New England, Load Serving Entities (LSEs), and customers all can log onto the same web-based Hub. "It's like accessing a financial web site," Malme says, "to trade shares on the stock market. The difference is that our system provides access to the New England energy market."

Malme continues, "It's a completely seamless network that goes from the customer's meter, where we measure the asset, to the liquidity point (the ISO) where we turn that resource into dollars. Nobody has to buy software, and there aren't any expensive integration points between customer and utility, or the utility and ISO. What we've created is a place where end users can sell their capacity on the basis of price or reliability."

ION®

Application: Demand Response

System: **ION 7500 meters**
ION 7330 meters

Benefits:

- Real-time information
- Easy e-mail access
- Simple integration
- Higher reliability
- Expandability



ION meters e-mail energy usage data directly to RETX's Load Management Dispatcher software, which processes the business transactions

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Any of the 192 load serving entities (LSEs) in the six states of New England can subscribe to the Negawatt Hub. The Hub allows each LSE to call up its own book of customers, while the ISO can monitor the entire region.

ISO New England can now offer both emergency response and price response programs. Every transaction, from the time the ISO issues a signal to the point when a customer ends a curtailment session, is managed through the Hub.

In the "Class 1" Emergency Response Program, LSEs under contract to the ISO must curtail their loads by a pre-determined amount as soon as an ISO issues a warning about a capacity shortfall. The LMD software notifies all participants via e-mail, pager, or cell phone. It then collects metered data about the event to confirm energy consumption, curtailment, and timing.

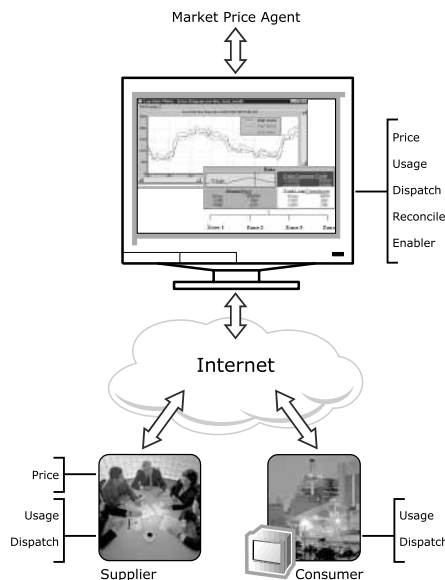
The "Class 2" Price Response Program is voluntary. It asks end users to release power back onto the grid in response to price fluctuations. Malme continues, "When forecasted prices exceed \$100 per MWh, the ISO declares that the doors to the "negawatt" store are open. End users are able to sell their capacity to the ISO at spot prices for that 24-hour period. Each one decides how much energy to sell during that session."

End users in the Class 1 and Class 2 programs earn payments reflecting the amount of power they release to the grid. The payments are based on the spot market price or a minimum amount. Class 1 participants also earn a regular monthly capacity payment. The LMD can arrange settlements based on rules defined by the region's generators, utilities, retailers, and end users.

Real-Time Information

The ability to measure customer demand in real-time is an absolute necessity for demand response programs. "ISOs live in a 10-minute world — grid conditions can completely change in minutes," says Malme. "A dial-up modem link to a meter once a day provides little value, because by the time we get the data, the event has passed. Using meters that are linked through a fast connection — something we can access in less than five minutes — is incredibly important."

Driven by that need for speed and affordability, RETX decided to install ION metering devices from Power Measurement at all the participating customer sites. The meters can e-mail data about energy usage directly to the LMD software through a MeterM@il® messaging feature.



Malme explains, "Because we had to retrieve data quickly and cost-effectively, we couldn't pay for a private communications link that would just poll the meter from time to time. With meters that could e-mail data directly to us at any time, we could link to the public Internet infrastructure and not even affect the end user's corporate security."

During a demand response event, the meter provides an audit trail of data confirming how much energy customers have made available, and how long they have shed loads or switched on generators. Even before the event, the meters create a load profile or baseline for each customer, detailing normal usage patterns which are compared with real-time conditions. All these details must be quantified accurately and in real time to help the ISO ensure grid reliability and compensate participants appropriately.

Especially in emergency response sessions, the end user has a very short window of time to respond. The LMD must quickly compare how much energy the customer was obligated to curtail, how much they actually did curtail, and for how long. If a customer doesn't free up as much energy as expected, the ISO must immediately take another course of action.

The intelligent meters can also help end users choose the most appropriate responses. Besides informing them of their total energy consumption and the amount curtailed or generated, they can allocate energy costs to different parts of their operation. In a fully automated setup, the meters can control on-site generators or shut down equipment.

Drilling into the Energy Zones

ISO New England is set up to use the Hub to identify problems with capacity or congestion anywhere in the region. Next spring, ISO New England is expected to divide the region into 13 separate zones, each with its own pricing. The Hub can then identify price variances and manage transmission congestion between zones.

ISO New England can view capacity for the entire region and also each congestion zone. Malme describes, "For example, the ISO can call up capacity in Boston but not in New Hampshire. They can then drill down to the next level to see the load supplied by each LSE. Finally, they can drill down to a fourth level and see what's available from individual end users in the form of load curtailment or distributed generation."

The LMD software makes it possible to group customers by geographic location or other criteria. For instance, on an ozone containment day, the ISO may want to target participants with clean generation capabilities, avoiding those that use diesel or coal.

Further Expansion

Malme is envisioning even more automation to make these operations easier for everyone involved. The company plans to take advantage of the ION meters' control functions for automated load shedding and generator startup at end-user sites.

In just a few years, RETX has opened the door to better business transactions in the energy marketplace. Malme comments, "Essentially, we're an enabler of customer choice, shaping new and more stable energy markets. We're an Internet service company that allows choice to work."

For More Information...

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