



# POWER PLAY

ISO New England monitors the wholesale electricity market with SAS®

## Industry

Utilities

## Business Issue

Detect anti-competitive bidding practices on the wholesale electricity market.

## Solution

SAS® provides analytics and reporting for spotting unusual activity in real time.

## Benefits

Ensures a fair and efficient marketplace that provides reliable delivery of electricity to 14 million residents.

Responsible for keeping the lights on from Eastport, Maine, to Westport, Connecticut, ISO New England is the not-for-profit corporation that manages the 31,000-megawatt bulk electric transmission and generation system for all of New England. At the same time, ISO New England administers the region's \$4.5 billion wholesale electricity marketplace for 200 participants.

Ensuring reliable bulk power for 14 million residents in six states requires managing a fair and efficient wholesale marketplace as well as providing the information services that industry stakeholders need to participate in the marketplace. To meet such important goals, ISO New England must make sure that rules approved by the Federal Energy Regulatory Commission (FERC) are monitored and enforced in a timely manner. ISO New England relies on SAS to make sure the power plants are playing by those rules.

### Ensuring fair play, prices

"We need rules in the wholesale electricity markets to ensure that wholesale market prices are competitive," says Janine Dombrowski, PhD, ISO New England's Senior Market Analyst in the Market Monitoring and Mitigation Group. "Without market rules that limit anti-competitive behavior, power plants with market power may raise prices or withhold generation in an attempt to set the spot market price of electricity. ISO New England continuously evaluates the market rules for inefficiencies and monitors participant conduct to identify anti-competitive behavior in the marketplace."

Gaming refers to complex strategies devised by industry "players" to influence energy prices. Left unchecked, these strategies could produce market prices that are higher than is justified. In California, for example, such practices led to almost daily rolling blackouts in the nation's most heavily populated state.

If a power plant's market conduct defies the FERC-approved rules, ISO New England must act to deter behavior that could interfere with competitive and efficient market operations. ISO New England also reviews the market design to uncover potential obstacles to efficiency and competition, working with New England's wholesale market participants, the FERC and other agencies to correct design flaws.

"Market monitoring enables ISO New England to step in immediately to prevent anti-competitive practices," explains Peter Larsen, former Senior Associate of Stratus Consulting in Boulder, Colorado. Larsen helped put together ISO New England's SAS market monitoring application.

For example, says Larsen, during a typical summer heat wave when demand for electricity is high and local supply is scarce, power producers may have an incentive to offer their power to the grid in a way that causes the market price to be set at excessively high levels. "If the market rules are not enforced by ISO New England staff, this type of behavior negatively affects utility customers over the long run by forcing them to pay unfair prices," he adds. "Market moni-

“We couldn’t do this  
immediate analysis without  
a tool like SAS.”

**Janine Dombrowski, PhD**  
Senior Market Analyst  
ISO New England

toring ensures that markets work as well as possible, including in areas where competition is limited, and that markets evolve to ensure reliability, competitiveness and efficiency.”

Market monitoring tests are based on a power plant’s offer for the next day’s energy compared to historically accepted offers. Prices are different based on location. So in areas where it’s more difficult to deliver power, prices are expected to be higher. SAS helps make sure those producers are exhibiting competitive behavior particularly when locational market power conditions are present.

ISO New England uses SAS to sift through 15 million records each morning to help detect activities that are out of the ordinary. Analyzing the previous 90 days of operational information, including daily offer prices, hourly bid parameters and hourly generational data, SAS computes a competitive “reference level,” a rolling average of the accepted offers for each generator. SAS then compares the offer data that come in each day to the reference level and flags those that exceed the conduct thresholds specified in the market rules. The offers that fail this conduct test are then passed on to an additional market impact test that assesses whether the non-

compliant bid has an effect on the market price of electricity. “If it costs a plant \$50 to produce a megawatt-hour of electricity and the plant offers to sell its output for \$80, then that offer would be flagged for market impact assessment and passed to market monitoring staff for further investigation or justification,” Dombrowski says.

#### **From overload to intelligence**

ISO New England relies on SAS to export data in flat-file formats that can be read by commitment and dispatch software. “We actually calculate the mitigation prices in SAS and export that information to a server where it is uploaded into the market dispatch software by a system operator. If mitigation is warranted, the system operators who commit and dispatch New England’s high-voltage electricity grid replace the participant price with the reference price by selecting the mitigation schedule from a drop-down box in their user interface display. SAS allowed us to automate producing and writing that data.”

Operating on a Windows scheduler, SAS programs run at specific times each day, extracting and archiving data from 15 million records, cleaning it and e-mailing it to the market monitoring analysts for investigation.

With bids and offers arriving from more than 300 power plants for both a day-ahead and a real-time market each day and electricity prices calculated every five minutes for approximately 2,500 locations, the volume of data ISO New England’s market monitoring group analyzes each day is enormous.

SAS provides the flexibility needed to turn that information overload into reports that provide real intelligence to the market monitoring analysts. “We used to get files with variables we didn’t need; now we get a rich-text Word document that highlights the relevant information so we don’t have to look at numbers all day,” Dombrowski explains. “It’s all-inclusive, which is the real beauty of SAS. Before automating monitoring with SAS, the analysts were manually reviewing the offer data, which was not very efficient since the data wasn’t presented in a usable way and had to be manipulated by the analyst. SAS lets us target the specific things we want to see every day in Excel-like graphics, which is an incredible improvement. SAS provides a tool that processes volumes of data and offers a variety of methods for automating the presentation of data in reports, charts and graphs.”



**THE  
POWER  
TO KNOW**

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