



WHITE PAPER

ENERGY AND COMMODITIES

**ENERGY MARKETING: MANAGING RISK
THROUGH IMPROVED FORECASTING**

Energy marketing: Managing risk through improved forecasting

Retail energy can be a very difficult business – customer acquisition requires near constant development of innovative products and programs that provide price visibility and surety for consumers, while system reliability issues, unexpected supply interruptions and weather-driven peak day pricing can blow out what are otherwise balanced and profitable supply/sales positions. Utilities and merchant generators that service retail loads face the same exposures in which extreme weather days can, and will, increase demand beyond capacity and require the acquisition of additional supplies on the competitive real-time and day-ahead markets at the worst possible times.

However, for pure retail energy marketers, those not holding generation or supply assets, the ability to provide customers with a competitive energy product is their life blood – new customer acquisition drives growth and in intensely competitive markets, each new customer comes with diminishing returns.

Acquiring and servicing these new customers profitably requires creative structuring of campaigns, economic supplies supported by active hedging, and an ability to react ahead of the market when demand for power or gas spikes during periods of unexpected cold or heat in order to limit volumetric risks. If weather were fully predictable, it would be relatively simple to buy supply to service the forecast demand, apply the appropriate hedges, and lock in a profit for the period. Unfortunately, within almost every market in the U.S., there will be that day or days where demand will spike or delivery upsets will occur due to an overstressed production or delivery infrastructure, forcing retail energy providers out into the competitive hourly or day-ahead markets to cover shortfalls. And time and time again, history has shown that a single-day event or a misaligned forecast can virtually wipe out any profit for the period.

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Weather-driven demand

In most competitive markets, the first demand forecast (and for some the only forecast) available to retail marketers is provided by the utilities or the independent system operators (ISO). While these forecasts – based upon historical demand patterns and short-term weather forecasts – may be generally accurate as much as 95 percent of the time, the reality is that within the 5 percent of the time that demand substantially exceeds the forecast volumes, significant and potentially damaging exposures can occur for retail energy suppliers.

For example, during the extreme cold period in early 2014, with gas supplies for power generation limited, the weighted average price for power in the PJM market area shot up from around \$40/kwh on Jan 17, 2014 to over \$440/kwh less than three days later, with some deals being done over \$550/kwh. Similarly, in the Texas ERCOT region in 2014, extreme heat in the summer months caused demand to spike and lead to a doubling and trebling of power prices across multiple days. Clearly, such extreme market events have the potential to blow away profits, and as history has demonstrated, bankrupt small companies and seriously impact returns for larger companies.

Forecasting and risk

While a multitude of factors can affect demand and usage of energy, including political and economic changes and delivery infrastructure outages, weather remains the primary driver of retail natural gas and power usage. Without an accurate forecast of usage and a properly positioned supply portfolio, energy supplies may fall short of meeting demand on what would be considered normal days; and on extreme weather days, an inadequately structured supply portfolio of generated capacity and/or purchased supplies can spell catastrophe for a retail energy company that is forced to purchase shortfalls in a market of weather-driven price extremes.

As previously noted, ISO or utility-provided demand forecasts do provide a generally reliable view of demand in the short term, generally up to 24 to 96 hours. Beyond that, most retailer providers rely on spreadsheets, populated with meter-level historical data, heating or cooling degree day data and publicly available or commercially provided weather forecasts, creating a web of complex cross-tabbed data sheets that are difficult to manage, manipulate and analyze. Additionally, these spreadsheet-based models are error-prone and lack the ability to layer in committed supply positions and costs for a thorough analysis of volumetric and financial exposures as forecasts change.

Without reliable and complete mid- and long-term forecasts of demand, energy providers cannot effectively develop an accurate forecast of cash flows and profitability, and are left reacting to swings in forecast demand conditions with near constant adjustments to their supply portfolio or supply hedges. Bottom line, without the ability to accurately forecast demand, energy providers simply cannot optimize their business to ensure they are maximizing profit and minimizing volumetric risks.

While no mid- or long- range forecast, no matter how sophisticated, can predict the future weather with 100 percent accuracy, improving accuracy to within pre-defined risk tolerances will allow energy providers to develop a portfolio of supply and sales that will better ensure profitability, limit cash flow exposures and preserve credit.

How we can help with energy forecasting

There exists a wide range of variables including weather, economics, calendar, politics and more that energy producers, marketers and even large energy consumers must consider when forecasting supply and demand for power, gas, district heat, etc. These disparate variables, combined with market operations like balancing, scheduling and dispatching, all contribute to the forecast. Without a system that centralizes and accounts for contracted or available supplies, losses, costs and demand, these energy companies will not have a complete view of their operational options, preventing them from optimizing their business to ensure the best possible return for their energy procurement and trading operations.

Recognizing the need for a solution that centralizes the requisite commercial and operational data, and provides a sophisticated demand forecasting and analysis capability, we have partnered with a leading forecasting and advisory company, Esco Advisory, to provide an innovative ETRM and forecasting solution to energy retailers, utilities, marketers and traders.

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Esco's on-staff meteorologists create top-down forecasts informed by multiple weather models, each weighted according to historical accuracy, down to the zip code level. The combined Esco/SunGard solution leverages Esco's proprietary top-down and bottom-up forecasting models in its EscoWare solution in combination with SunGard's Aligne for managing physical and financial energy for utilities and energy traders and marketers.

This combined solution, scalable from smaller retail service providers to the largest multi-region utilities, offers a number of advantages over internally developed or commercially supplied solutions. It:

- Provides fully integrated load forecast process management
- Enables multi-horizon forecasting utilizing the appropriate algorithms.
- Handles a wide array of explanatory variables.
- Offers a set of sophisticated analytics models and tools, including what-if and sensitivity analysis that allows input of user-defined data sets to test any number of exogenous shocks that may occur.

- Provides a fully integrated solution across balancing, scheduling and dispatching.

SunGard's forecasting solution utilizes EscoWare's propriety models to support different processes across short-, medium- and long-term horizons. Users of the combined solution have been able to better anticipate changeable demand patterns, helping them ensure a properly balanced portfolio across all horizons:

- Short-term demand forecasting (hour, day, week-ahead) for balancing, scheduling and dispatching activities to minimize the risk of incurring unnecessary imbalance costs.
- Medium-run forecasts that have the ability to revise previous long-term forecasts and adjust purchases during supply campaigns, guaranteeing better resource management and increased portfolio profitability.
- Long-term forecasts that enable users to define the overall purchases needed to satisfy the final demand, and provide the ability to assess the overall budget needed for the supply campaign (and potentially lock in base supplies at the most economic cost) and estimate the expected profit for the period.

Our forecasting solution model can take into account not only weather, but also incorporates economics, calendar, and any number of user-defined variables to provide users with a customized forecasting tool to address those changes or events that the business deems most important to its particular market area; and in the process, provides the critical information needed to develop a supply and demand portfolio that better ensures profitable operations by minimizing volumetric shocks and risks.

About FIS' solutions for energy and commodities

SunGard's energy and commodities solutions help energy companies, corporate hedgers, hedge funds and financial services firms to compete efficiently in global energy and commodities markets by streamlining and integrating the trading, risk management and operations of physical commodities and their associated financial instruments. Through real-time data, connectivity and analysis, SunGard's energy and commodities solutions help customers achieve transparency and regulatory compliance, address end-to-end transaction and operational lifecycles, and meet time to market needs with flexible deployment options. For more information, visit www.fisglobal.com/hedgafunds

About FIS

FIS is a global leader in financial services technology, with a focus on retail and institutional banking, payments, asset and wealth management, risk and compliance, consulting and outsourcing solutions. Through the depth and breadth of our solutions portfolio, global capabilities and domain expertise, FIS serves more than 20,000 clients in over 130 countries. Headquartered in Jacksonville, Florida, FIS employs more than 55,000 people worldwide and holds leadership positions in payment processing, financial software and banking solutions. Providing software, services and outsourcing of the technology that empowers the financial world, FIS is a Fortune 500 company and is a member of Standard & Poor's 500® Index. For more information about FIS, visit www.fisglobal.com

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