

Managing Energy Risk:

Enhancing Pre-Trade, Economic, and Post-Trade Risk Management at an Energy Trading Desk

INTRODUCTION

Physical energy supplies such as oil and liquefied natural gas (LNG) are a global market, made up of valuable shipping cargoes destined for distinct regional markets that have their own pricing, volatility, and shipping restrictions. With a mix of long-term, short-term, and spot markets, the result is a broad set of options and variables that affect portfolio management, optimization, and price exposure. Purchase and selling prices can involve elaborate formulas that depend on a combination of other commodity prices and long-term components such as inflation.

Beacon is working with the energy trading team at a global energy supplier to improve their capability to handle cross-market effects and dependencies and often complex pricing formulas. The trading, shipping, and operations teams actively buy, sell, and transport cargoes in support of an overall business that provides energy solutions for over 10,000 customers in more than 100 countries. The complex contracts and logistics of these operations are challenging to evaluate and manage, with many implicit and explicit decisions on what and where to buy, store, move, and sell. Opportunities and risk in this market continue to emerge and evolve, increasing the demand for flexible and customizable trading and risk management frameworks and development systems.

PROBLEM

“Our portfolio is expected to grow substantially over the next few years, and we need more flexible and customizable tools to enhance pricing valuation and risk analysis throughout the supply lifecycle.”

Vice President, Global Energy Trading

Working with a portfolio of long-, mid-, and short-term energy supplies and positions, the trading team was looking to strengthen existing capabilities to drill into valuation and risk. Their existing risk tools failed to fully capture risk and other portfolio impacts of high volatility or significant market shocks. This could have led to an overstatement of risk and failure to take best advantage of market opportunities.

The overall objectives of the project with Beacon were to develop better pricing models and contractual representations for projects of various sizes and durations and improve their overall confidence of portfolio valuation and risks. They wanted to bring traders, analysts, quants, and developer skills together at the trading desk to increase the transparency, timeliness, and flexibility of shipment and supply valuations and develop better hedging possibilities for complex contracts and options. And they needed an appropriate level of integration and interoperation with existing systems and data.

ENERGY SUPPLIER AT A GLANCE



One of world's largest energy development, trading, and shipping companies



Broad portfolio of short-, mid-, and long-term energy supply and shipping contracts



Deep expertise in energy trading and risk management to tailor contract solutions and help customers manage price exposures



Looking to significantly grow portfolio value over the next few years

KEY OBJECTIVES OF THE PROJECT INCLUDED:



Richer representation of contractual- and portfolio-level exposures



Improved representation of overall energy portfolio risks at a larger scale



Efficient and effective hedging, reducing or eliminating unnecessary hedges



Integration with essential legacy systems and data

SOLUTION

“We want to significantly increase the size of our portfolio, but cannot put that much additional capital at risk without better tools.”

Vice President, Global Energy Trading

The energy trading team is using their internally-developed collection of models and optimization techniques to manage the contractual constraints of physical assets and increase the granularity of their options hedging. They are deploying Beacon as an adjunct to their existing energy trading and risk management (ETRM) system, leveraging Beacon’s comprehensive data and application integration tools to deliver the desired level of data ingestion and system interoperability. They have connected Beacon to the necessary market and reference data, imported their existing quant library, and linked into the data flow of their existing ETRM system.

Building on top of Beacon’s out-of-the-box frameworks and functionality, the team is creating new apps and analytics for their business. Internal developers, aided by Beacon’s Professional Services team and Beacon-Certified third-party consultants have customized Beacon’s front office user applications and interfaces to meet the specific needs of their trading desk. Beacon’s provisioning of Technical Account Managers provides continuity and ongoing support, acting as a client-focused and technically resourceful bridge between client developers and Beacon’s tech support and subject-matter experts.



ESSENTIAL DELIVERABLES



Centralized and controlled location for risk and pricing models, enabling faster validation and better governance of changes



Collaborative research and development environment that connects to real-time market and trade data



Foundational set of out-of-the-box instruments, models and applications to build on



Elastic compute engine and dependency graph capabilities to enable faster and more frequent calculations of trade and portfolio risk



Dynamic intraday PnL and risk reporting, including Greeks, VaR, sensitivities, and mark-to-market

GREATER CONFIDENCE



Enhanced valuation and structuring that gives users the current market value of any transaction



Ability to examine incremental risk impacts of adding or removing trades from an existing portfolio



Flexible stress and scenario analysis under standard and user-defined scenarios



Full visibility of source code, including Beacon out-of-the-box foundational elements



Better understanding of portfolio exposure, risk-adjusted returns, and defensible mark-to-market



RESULTS

“Beacon is helping us become more sophisticated and risk-aware traders, increasing both the speed and confidence of our trades and portfolio exposure, and extending our visibility from six months to five years.”

Vice President, Global Energy Trading

Building on top of Beacon’s financial engineering foundations and integrating with existing systems and data significantly accelerated this energy trader’s product maturity and time to value, at a much lower cost than other systems or in-house development. An independent study by Celent, the leading research and advisory firm focused on technology for financial institutions globally, lays out the benefits of this model:

- Broader and more transparent access to existing modeling within the organization, making it easier to extend and adapt analytics with appropriate controls
- Allow quants, experts, and end users to consolidate, prepare, and report analytics data and components
- Act as a platform to distribute to and interface with a supply chain of connected applications or users that need access to the data and analytics within this environment
- Achieve more dynamic projections, better foundations for modeling, greater scalability to handle complex scenarios, and a faster ability to innovate

The cost and time savings associated with this approach include an accelerated time to first value of six months instead of four or five years, and a 70-percent lower cost of ownership after five years.

For this energy trader, the net results are a platform that turns years of development into months and delivers much higher confidence in the company’s energy risk exposure. They are now able to manage positions over a materially longer window, from months to years, and are experiencing a transformational shift of pricing models and risk analytics closer to the trading desk.