

Effective portfolio management has become crucial for energy companies, but creating the optimal portfolio is fraught with challenges, writes *Colin Cooper*

Optimal results



Colin Cooper, director at Arthur D Little Energy

★ Effective portfolio management is now more important than ever for energy companies. Not only does it reduce costs and improve earnings significantly, but the current volatile price environment and regulatory requirements for risk management make it even more compelling. Stringent regulation, coupled with increasingly complex markets mean portfolio management is no longer an option, but an essential working practice.

Although energy companies have been carrying out effective physical management or optimisation of the value chain for some time, increased focus on management of risk throws up challenges that many companies are ill-equipped to meet. Whether it's referred to as portfolio management, portfolio optimisation or risk management, the aim is the same – to manage the optimal portfolio of physical and financial assets. For this, a company needs to be able to view its financial and physical position in as close to real-time as possible, have full netting across trades and positions, and make adjustments – be they physical or financial – as

they are needed. Realistically of course, no portfolio will ever be perfectly optimised, but that certainly shouldn't stop a company from putting the necessary capability in place.

The reasons that make portfolio management so critical at present also make it particularly challenging. Simply balancing supply and demand while mitigating risk has, in many cases, never been more demanding.

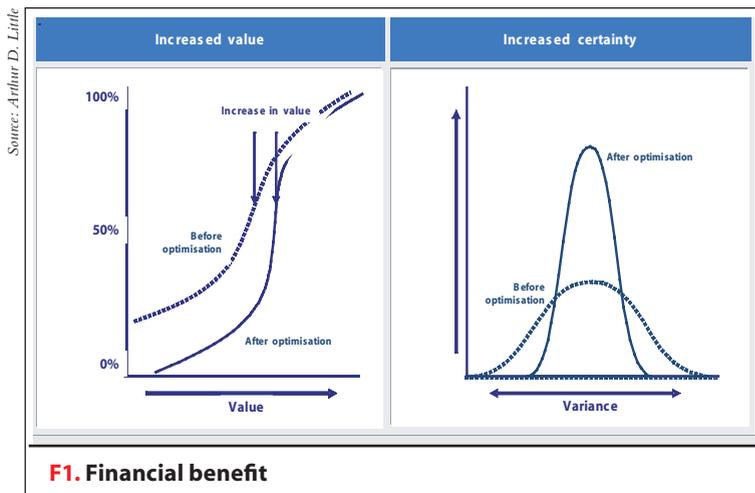
The challenge of optimising the portfolio involves understanding of current and future positions and exposures. It also needs to take into account the inventory of opportunities and constraints such as outages, fuel supply, emissions limits, demand management, plant, transportation and storage usage, as well as limits imposed by the risk policy.

The recent volatility of the energy markets has brought the issue of risk sharply into focus. However, companies are still expected to meet the challenge of growth targets, cost reduction and efficiency objectives.

Following the demise of Enron, companies that retreated from trading to more asset-based activities, such as generation, are now faced with different market circumstances than a few years ago, when fuel and electricity markets were less volatile.

The withdrawal of many companies from trading, combined with considerable M&A activity, has created a shortage of liquidity in many markets. This, in turn, has been partly responsible for increased prices and volatility, and the inability to manage risk through the markets.

Some retail suppliers of energy responded several years ago by vertical integration into upstream generation or production activities, which may offset supply risk to some degree but increases the challenge of portfolio management.



The return

Value gained from portfolio management comes from three main areas. First, there is financial benefit. The synergy of looking at the portfolio on an overall basis can produce increased revenues and profit, as well as cost reduction. Financial benefits also include minimisation of capital requirements, improved credit positions and balance sheets. Portfolio optimisation can bring financial benefits by reflecting the economic value and the expected variance around a set of current or proposed assets or activities. Portfolio optimisation also seeks to identify mixes of activities that increase value while minimising variance over an appropriate range of business conditions.

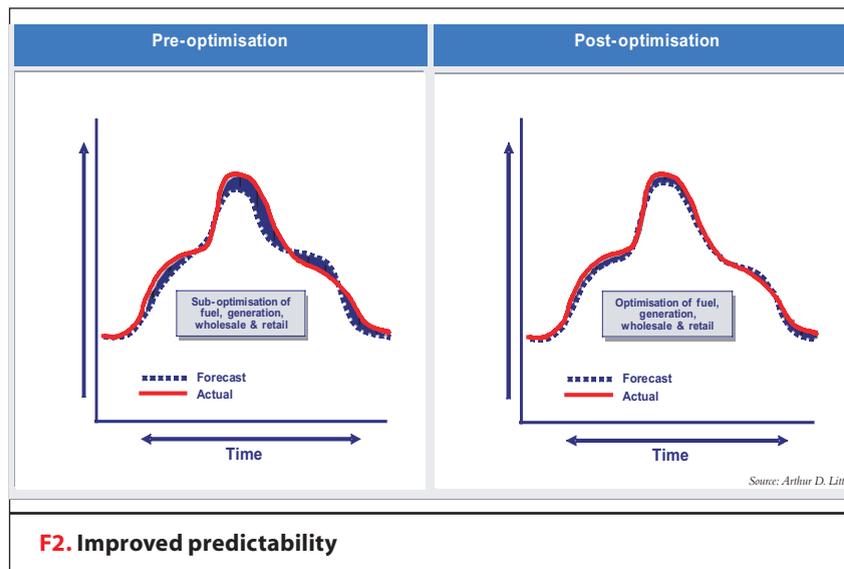
Studies of European utilities show portfolio optimisation can produce revenue increases of 3%–10%. The business case for the investment to establish effective portfolio management is good. The cost, to implement leading practice, is 10%–20% of total value on an annual basis. This is reflected in figure 1.

The second benefit is the value gained from increased risk management. The advantages include a reduction in volatility of revenue or earnings, an increase in predictability, confidence in reported results and the ability to meet targets, and increased conviction in the decision making process. This is demonstrated in figure 2.

The third major benefit is the greater operating efficiency brought by portfolio management. It assists increased or optimised asset utilisation, improved operating reliability, and reduced hedging costs due to the synergy of the entire portfolio. Portfolio management allows traders and risk managers to exploit natural hedges within the portfolio and physical hedges such as generation or production assets and storage. Reduced cost of energy procurement can also be significant.

The challenges of optimisation

The management of larger and more complex businesses, often following extensive M&A activity, has increased the scale and complexity of managing and optimising a company's portfolio. The move to more vertical integration in some markets has also resulted in companies



becoming involved in areas of business where they may have limited experience.

There is much greater scrutiny of the risk management and a much greater requirement for predictability of results. Management of the portfolio, particularly in terms of risk management and meeting targets, has therefore become increasingly important when meeting the demands of shareholders, regula-

“Realistically, of course, no portfolio will ever be perfectly optimised, but that certainly shouldn’t stop a company putting the necessary capability in place”

tors, customers, analysts and rating agencies.

Portfolio management is becoming increasingly complex. It involves input from all the value chain activity areas a company is involved in and multiple time horizons, from long-term to daily and real-time balancing activities. It should also take into account both position and exposure management and optimisation.

Significant cross-functional cooperation is necessary for effective portfolio optimisation. Corporate and business functions such as treasury and finance will need to coordinate with production, generation, wholesale and retail to measure and mitigate risk on a company-wide basis for currency and credit risk, as well as market and price and operations risk. Many companies are not equipped

to manage risk and portfolios on a company-wide basis. There are a number of reasons for this: in some companies, trading and other activities currently occur in silos, separated either on a commodity, location or subsidiary basis or, in some cases, a combination of all three. Lack of business and technical integration through use of non-standard processes and organisation often results in costly, people-driven risk and portfolio management activities that are slow, inconsistent and unable to cope with complex trade structures and increased of activity levels.

Existing risk management solutions are fragmented and IT systems often bespoke, old or a mixture of packages. Most companies have too many applications including uncontrolled and unsupported spreadsheets. Some companies struggle to achieve consistency of data. Many open themselves to substantial operational risk through overuse of spreadsheets driven by the inability of larger applications to meet requirements. It is not unknown for data to need to be consolidated across thousands of spreadsheets. It is hardly surprising in such cases that effective consolidation of risk, even on a daily basis,

is a challenge. While software is important, it is not the only issue. Even with the recent advances made by ETRM software vendors there is not a complete single application solution. Similarly, portfolio optimisation is not a black box solution. What is needed is a number of software applications operating in a business and architectural IT framework.

Effective management

There are a number of key components necessary to meet the challenges of effective management and optimisation of the portfolio.

★ **Dynamic management.** In order to optimise the portfolio effectively the management needs to be dynamic and have right time capability, which in some areas of activity is real time. There must be real-time information feeds, position monitoring and right time exposure information available, including credit and counterparty risk. Accurate and timely demand forecasting, effective price forecasting and curve management are also essential, particularly in illiquid markets. Fast and reliable what-if analysis and stress testing is a crucial part of the portfolio evaluation capability.

Source: Arthur D. Little

Benefit	Portfolio Optimisation Component	Potential Improvement
Financial Benefit		
Increased Revenues	Combined Portfolio Capability	1% – 10%
Increase Profit	Combined Portfolio Capability	10% – 15%
Increased Credit Efficiency	Combined Portfolio Capability	Situation specific
Risk Management Benefit		
Reduced Cash Flow Volatility	Business Unit Planning	0.5 – 2% Volatility Reduction
Increased Performance Predictability	Corporate & Business Unit Planning	0.5 – 2% Volatility Reduction
Credit risk reduction	Risk Management	Situation specific
Efficiency Benefit		
Increased Price Forecast Accuracy	Price Forecasting & Curve Management	0.5% – 5%
Increased Retail Planning Accuracy	Demand Forecasting	0.5% – 5%
Increased Asset Planning Predictability	Asset Management – Reduced Capex	15% – 25%
Increased Asset Operations Efficiency	Asset Management – Reduced Opex	5% – 15%
Increased Energy Procurement Efficiency	Contract Management	1% – 5%

F3. Portfolio Management

ity. Integrated systems are essential to facilitate the appropriate timeliness, consistency and accuracy of data and analysis.

★ **Global risk capability.** The ability to incorporate risk into portfolio management is critical. Obviously, it is necessary to manage risk on a consolidated basis if credit and counter party risk is to be mitigated. Risk also needs to be addressed on a global basis if the entire portfolio is to be managed effectively. There are many essential parts to creating a global trading capability. The ability to dynamically determine trading behaviour and adjust position and exposure through dynamic (“right time”) analysis and reporting of key metrics to support and control the business is central to optimisation and impossible without a global risk capability.

A trading strategy, which determines business objectives and establishes risk and reward expectations to satisfy corporate key performance indicators, must be developed and aligned throughout the company. A single or global function consolidating all trading activity in all locations is desirable. A risk policy translating and enforcing the risk and reward expectations through portfolio structures, limits, controls and instructions is also essential.

In order to effectively manage the portfolio risk, knowledge of current trading positions and exposures by different commodities, locations and counter-parties must be accurate. The ability to report across markets, locations and commodities supported by a rolling global operation is another key attribute.

★ **Global versus local.** The theme of global versus local is central to any discussion of portfolio management and consolidated risk capability. Not all activities need to be carried out centrally; indeed many activities should be carried out locally, but local portfolio information should be used by a global risk management capability to assess global risk. Flexible and high performance systems are needed to allow new trading functions to operate locally and to consolidate the risk data into the global solution.

★ **Single version of the truth.** Consistency across all activities is important, whether global or local. It is essential that there is a single version of the truth. If there are inconsistencies in data and information, positions and exposures are not correctly identified and acted upon.

There are a number of essential attributes that must be in place to create a single version of the truth. There must be a single point of entry for any piece of data – entry before execution for trades is critical in the maintenance of a single version of the truth. Data can be stored in multiple locations but these must be updated synchronously and immediately. Another associated attribute is straight through processing (STP) whereby processes are fully automated on an end-to-end basis. There must be consolidated risk analytics and reporting using consistent techniques and models. Underpinning these attributes is a Common Shared Language (CSL) for reference, transaction and master data.

“The synergy of looking at the portfolio on an overall basis can produce increased revenues and profit, as well as cost reduction”

Processes and systems

Processes, systems and organisation need to be designed and implemented in order to support a single version of the truth and ensure coverage of the required functionality. There should be accurate and timely analysis – this means when demanded by the business or mandated by the risk policy or “right time”. There should be effective and timely reporting of information that reflects organisational requirements and most importantly, the ability to “slice and dice” on any data attributes.

This is most likely to be achieved through the adoption of a service-based architecture. The robustness of systems is also important in terms of being reliable, scalable, and accessible.

The facility to share information and aggregate information views across the business for risk and regulatory compliance, such as the Sarbanes Oxley Act or IAS, is critical. As is the CSL, to provide consistent definition and usage of data to ensure information sharing is meaningful and relevant. Security for the viewing, updating and controlled sharing of confidential information is a vital consideration. [ER](#)

Colin Cooper is a director in Arthur D Little's Global Energy Practice, based in London.

Email: cooper.colin@adlittle.com