

Risk and reward in allowance portfolios

Power generation companies that store all their sulphur dioxide emission allowances until compliance dates are unknowingly making high-stake speculative decisions about future allowance prices. Like other commodities used in power generation, SO₂ allowances have market value, liquidity, and other uncertainties that require proactive risk management, says **Michael Canterbury**

Emissions allowances held by US power generating companies have market values which in many cases exceed \$500 million. Yet they were allocated at zero cost to help companies comply with the US Clean Air Act. Furthermore, annual price volatility of sulphur dioxide (SO₂) allowances can exceed 40%. But traditionally these allowances have been managed only to meet compliance obligations without regard to their fluctuating market value.

Now, however, a growing number of generating companies are learning to retain, and often improve, the economic value of these assets. A decision to hold allowances until compliance not only poses market price risk, it also suspends considerable financial value in a vacuum of underutilised and often undervalued assets leading to higher net generation costs and lower profits.

Consider this analogy. If a company burns natural gas to generate power and is offered a 30-year supply of gas delivered today at no cost, there are a number of things it can do with the commodity. First, it could store the gas and defer future purchases, assuming there is available storage at an acceptable cost. Second, it could sell the gas today and buy it back later, as needed, at spot market prices, given available transportation at acceptable rates. In neither case is the decision based on the fact that the gas was obtained at zero cost. Rather, it is based on expectations of future gas prices. Most likely, some combination of buying and selling would be used to accommodate risk management and operational needs. To achieve the optimal financial position the company may sell, swap, or write options on inventory or, in the relatively near-term, use financial instruments such as futures and options on futures to shift the risk between the firm and the market.

While the energy industry has come to understand these choices for oil, gas, and most recently power, portfolio and risk management techniques are often not applied to allowances despite inherent risky positions.

Without risk management, companies face random gains or losses on the value of the allowance portfolio as a result of volatile market prices. At a minimum, disciplined risk management provides 'value boundaries' for the allowance portfolio that are consistent with capital investment and operational decisions involving plants, fuel choices, and compliance strategies.

A common misperception is that risk management necessitates speculative trading with derivative instruments lurking in the wings. Managers may therefore believe they are being conservative by not applying risk management to their allowances. In fact, to hold an unchecked 'long' portfolio regardless of market value is a speculative move in any type of commodity management. A conservative company would use risk management to minimise the financial uncertainty of the speculative position while ensuring compliance objectives are met.

Making the fundamental choice between risk and reward is central to risk management and is certainly applicable to allowance portfolios. The greater the extent to which risks are managed, the narrower the range of profit margins and the higher their probability. Conversely, unmanaged risk yields a wider range of outcomes each with a lower probability (see Figure 1).

As an example, assume that in October 1999 a company held a 30-year portfolio of SO₂ allowances that had a market value of \$600 million. After nine months the market value decreased to \$400 million as SO₂ prices fell. Whether managing for compliance or to meet risk management objectives, does this company have an obligation to its shareholders and/or ratepayers to protect itself against loss in market value of a commodity portfolio acquired for the purpose of production? Does this loss in value also represent higher costs of generation and lower profit margins?

The answer in both cases is yes. Fortunately, hedging strategies learned in other markets can be readily applied to allowance portfolios. For instance, one way to hedge the inherent long position of companies receiving allowance allocations would be to sell options on portions of the portfolio. If spot prices drop, the loss is partially offset as the company still gains the option premiums. But it does so at the expense of foregoing large profits if market prices rise higher than the collected option premiums. This is the risk-

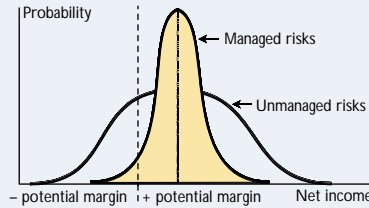
Emissions allowances are allocated free but they represent a valuable asset which should be subject to normal risk management

1. Risk-reward trade-off

reward trade-off. In the event the options are exercised, a short position in allowances could be created, requiring additional trades to keep the inventory at its optimal level. There are many possible structures to create the optimum risk profile for each company's portfolio.

Business longevity in a deregulating and increasingly competitive environment demands that companies realise the potential of all major assets. Many allowance portfolios represent between \$100 million and more than \$1 billion of assets. Clearly the company has an obligation to ratepayers and shareholders to protect the bottom line by minimising net costs and by maximising assets that provide potential competitive edges. To fully incorporate the trade-offs between cost minimisation and profit maximisation, all in the context of meeting compliance obligations, requires the application of risk management principles to allowance portfolio management. This is true whether the portfolio is maintained strictly for compliance or for risk management and hedging.

Among the benefits of applying risk management to the allowance portfolio is that it gives a better perspective on capital investment analysis. For example, when allowance prices reach new highs plant managers may find that the mark-to-market value of the allowance portfolio for their plant far exceeds the cost of scrubbers or other clean-up technology. This could affect capital allocations to the plant.



Accounting professionals have not, so far, been interested in mark-to-market gains or losses on allowances but instead have focused on realised and unrealised gains or losses. Referring to our previous example, because these losses are not realised accounting losses does not discount the fact that value was lost and the company is missing \$200 million. Risk managers and market traders not only work to minimise such losses but they can profit from the volatility in the market and improve their portfolio positions. As liquidity is generally good in the SO₂ market, it would have been possible to hedge a portion of the financial risk from earlier this year without losing sight of compliance obligations. Options, swaps, index deals, and plain fixed-price trades are all possible in the allowances market, providing portfolio managers with a number of tools to shift risk within, and to and from, the marketplace.

Generating companies should regard their allowances as valuable assets worthy of ongoing management. The costs of allowances are normally low relative to fuel prices but

they make up a significant portion of the profit margin for many power deals.

Whether it is gas, allowances or any commodity, there is a commitment to deliver the commodity when the production process demands it. Delivery may be through a pipeline, in the case of gas, or via the internet for emissions allowances. As for any asset, companies should maximise the value of the allowance portfolio while assuring the availability of the asset when production demands. Federal and state issued allowances and credits are not only here to stay in the US but their number will dramatically increase as new programmes surface in the coming years, most notably for greenhouse gases (GHGs). The global GHG market is expected to dwarf existing markets in SO₂ and nitrogen oxides, thus making emissions allowance portfolios more and more valuable to corporations.

The process must begin today, if it has not already, to manage the exposure of allowance portfolios to changing prices in secondary markets. The growing implications of environmental issues in the future of power generation will demand that companies optimise environmental assets in order to gain and maintain competitive advantages. Risk management affords the opportunity to pursue allowance portfolio optimisation without jeopardising compliance obligations. ■

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