Credit is widely seen as the biggest challenge facing energy risk managers in 2009, with many believing a radical overhaul of existing risk practices is due. *Pauline McCallion* investigates

Give us credit

★ Energy trading, with its capital-intensive nature, has always relied heavily on credit so last year's financial turmoil has had wide-reaching repercussions. The collapse of Lehman Brothers in September 2008 and the subsequent lack of lending between banks caused most market participants to scrutinise counterparties and reel in credit lines, squeezing trading volumes. The reduction in trading led to a lack of liquidity, which quickly became a key risk closely related to credit risk.

A migration towards clearing happened quickly, with figures from the Chicago Mercantile Exchange Group showing trading volumes in September 2008 were 31% higher than those for the same month in 2007. However, clearing is not a complete solution for every form of trading given the margin outlay required. In addition, at smaller clearing houses there is the potential risk to the clearing house itself if a major trader defaults and depletes the funds it requires to service the rest of the sector's trades.

Many market participants feel another long-term solution to credit issues is required to run alongside the function carried out by clearing houses. A long-lasting solution will almost certainly require some form of re-examination, especially on the part of those companies that require a high level of liquidity to operate. As such, energy firms have begun to examine their risk management systems and look for fresh solutions to credit issues.

"Even for the simple shops, it's important to take a really close look at credit risk mathematics and make sure that you're not missing some important insight into the future"

Bob Anderson, CCRO

Network of risk

While assessing counterparty credit risk is a major factor in risk management for firms operating in a capital-intensive industry like the energy sector, the events of 2008 have shown a need to look beyond a unilateral analysis of counterparty credit risk. David Shimko, managing director of NewOak Capital and member of the board of trustees of the Global Association of Risk Professionals, says such analysis must go even further than a firm's immediate counterparties. "I'm looking at my counterparty and my counterparty is looking at me," he says. "But the problem with that is that I don't know the exposure that my counterparty has to other counterparties. I can't see the network of risk – no one can."

In assessing this network of risk exposures, Shimko stresses the importance of looking not just at counterparties, but also at the potential connections between the market players a particular company might deal with. He explains: "In classic credit analysis you assume that with everyone you deal with there is a probability of default and that if they default you have a probability of a loss associated with that default. But what we don't really focus on a lot is to what degree there are correlations among the default behaviour of different counterparties."

Bob Anderson, executive director of the Committee of Chief Risk Officers (CCRO), adds that rather than simply concentrating on price changes, as may have been the case in the past, changes to the situations of counterparties also need to be included in any risk

Firms need to look at the whole network of risk , not just their immediate counterparties

assessment. "As time passes, some of your counterparties will become more creditworthy, others will become less," he reasons. In the past, Anderson believes, energy companies simply measured their counterparty's creditworthiness, failing to step back and take an overall view of the sectors in which their counterparties were operating.

He points out that energy companies previously would have thought a high level of exposure to large banks was a good thing, rather than concentrating too much exposure on energy sector players. The events of last year proved no sector is totally risk-free and so all businesses must ensure they structure their risk assessment methods to take this in to consideration.

Identifying the key exposures you have to other counterparties and sectors should be placed in a current context, as well as including an assessment of potential future risk. "Having a heightened focus on potential changes or potential liquidity events in counterparties is something that's more of an issue for risk managers than it has been in the past," says Mark Allan Smith, a partner in the energy advisory practice at PricewaterhouseCoopers.

The need to develop and use the correct tools to ensure potential risks are placed firmly on the radar is an important step to recovery, post-financial crisis. It will allow a business to highlight the exposures it could realise in the future as markets move and as counterparties' credit worthiness changes, both of which could affect a firm's risk profile over time. Anderson explains: "If you do the maths correctly you come up with a measure of potential credit risk and that can be hugely surprising because it generally shows credit risk that you have, even on contracts that are at-the-money."

Necessary tools

While there are companies in the energy sector that "are on top of it all" in this respect, Anderson warns that there are still too many that take a relatively simplistic approach to their risk assessments. "Even for the simple shops, it's important to take a really close look at credit risk mathematics and make sure that you're not missing some important insight into the future," he says.

But if it's so important to assess such types of risk, what is stopping all energy companies from developing the necessary tools to keep these threats at bay, or at least on the radar? Randy Baker, senior consultant with advisory firm R.W. Beck, agrees that some energy firms underestimate the importance of constantly monitoring their exposure to potential risks. "Sometimes the mentality is that unless a company can come up with something

that's as articulate and credible as whatever it may use on the market risk side, it won't apply it towards the credit risk side. But you're talking about expecting [to be able to establish] criteria on things that just aren't directly observable," he says.

Measuring credit risk is more of an art than a science, by contrast with market risk, for example, where you can track oil prices as part of your assessment. While there are a range of other tools and solutions that a firm can build upon to properly assess future exposures of credit risk, they need to be used as a package.

Know your limits

So what information should a company rely on to give it as clear a picture of credit risk as possible? While a range of information can be used by energy firms to detect both potential and current risks, in using the results there needs to be an awareness of their inherent limitations.

Ratings agencies' credit assessments are a major source of such information for all types of companies, but the folly of relying on such a source too heavily was highlighted quite painfully last year when institutions such as Lehman Brothers and Bear Stearns collapsed, to the disbelief of market participants. For instance, Bear Stearns' rating remained at investment grade level up until its collapse, according to Moody's, with its last rating action on the company being to downgrade it to BAA1 from A2 on March 14, 2008. Lehman's A2 rating was placed on review with direction uncertain on September 10, 2008 before being downgraded to B3 on September 15 – the day it filed for Chapter 11 bankruptcy.

Similarly, Lehman's long-term counterparty credit rating was lowered to SD (selective default) from A on September 15, 2008 by Standard & Poor's (S&P).

In a report entitled "Why was Lehman Brothers rated A?" published on September 24, Scott Sprinzen, primary credit analyst at S&P, said ratings provided value by taking an intermediate to long-term view, rather than reflecting prevailing market sentiment. "In general, when appropriate, Standard & Poor's Ratings Services will take rating action when the credit implications of market sentiment – for example, in terms of cost and access to funding – become reality."

Regardless of whether this is how ratings agencies should conduct their assessments or not, it simply reinforces the fact that energy companies must diversify the sources of information they use and develop additional tools with which to assess potential counterparty risks.

Shimko agrees: "Energy companies should use the [ratings] information, they shouldn't just ignore it of course, but they should take it with a grain of salt and not use it as a substitute for their own analysis." (See box on page 52 for more on ratings agencies).

Randy Baker encourages energy firms to carry out their own due diligence about counterparties or sectors to which they are exposed. This should involve questioning counterparties or trading relationships, and could take place on any number of levels, from the chief financial officer down. "Energy companies should also look at the macro issues," he adds. "Instead of trying to focus on historical balance sheets or income statements, which are important, also look at stock prices and how stock markets are reacting to different companies and to their equities."

There is also a need to develop more forward-looking sources of information, according to Allan Smith. "Traditional techniques, such as looking at credit ratings or financial statement analysis are necessarily backward looking and respond too slowly in the current market environment," he says. "Even more sophisticated measurements, such as potential future exposure, to an extent are based on backward-looking measures of volatility and credit events. So they also have that limitation of being somewhat backward looking in terms of their influence on that model exercise."

While examining the credit default swaps market and looking at bond spreads could provide more real-time, forward-looking information, such options also have their drawbacks. For instance, Vincent Kaminski, professor at Houston's Rice University, says: "It's obvious that the more information you have about credit quality, the better. Now, the industry is increasingly relying on credit

"We can all use the fanciest of spreadsheets, but if you lack experience and that human touch, people often just rely on models"

Andrew George, Marsh

Mark Allan Smith, PwC

default swaps as a source of information about the credit quality of a counterparty. But the behaviour of spreads in some credit default swaps is raising eyebrows – there are some concerns about whether they convey correct information and that sometimes they may be influenced by rumours."

Allan Smith adds: "One of the major limitations of the credit default swap market would be the extent to which it is actually trading at any point in time. With bond spreads you have the same kind of limitations – if there's a seize-up in the credit market, if there is not much trade going on in that company's desk, then the bond spread will not be adequately reflective of their current credit worthiness."

Facts and figures

Formulae such as value-at-risk (VaR) are also used throughout the sector, but again the limitations of such tools must be acknowledged, not only by risk managers, but also by any decision-makers in the firm who may have an interest in the results.

Kaminski believes that too much attention is often given to developing "more isoteric, mathematically sophisticated models for producing VaR", at the expense of developing a risk management system that can produce a holistic representation of all the risks that a trading organisation is taking. "You cannot squeeze all the risks relating to energy into overnight VaR," he adds.

Allan Smith acknowledges that the focus for today's risk managers has changed. "The things that we would read about five or 10 years ago would be the latest technique for simulating price processes, or the way to improve a VaR model, and those are the things that were top of my issues for a chief risk officer in a merchant energy company. Now, with financial market conditions where they are and with the broadened understanding of enterprise risk, I see its evolution in the risk management function as risk managers begin to take a much more holistic approach. Rather than being many miles deep in the latest and greatest market risk analytics, they now take a much broader view of the overall risk profile facing the organisation."

According to Andrew George, leader of the energy practice for Europe, the Middle East and Africa at risk adviser Marsh, there is also an invaluable human element that risk managers can bring to the role. "The human element is key. We can all do Monte Carlo simulations and use the fanciest of spreadsheets, but if you lack experience and that human touch, people often just rely on models. But if something doesn't quite fit the model, then it doesn't work," he says.

Practitioners have always stressed that the limitations of VaR must be kept in mind. According to Eugen Weinberg, senior commodities analyst at Commerzbank Corporates and Markets, the fact that VaR uses

A new attitude to ratings agencies

Risk manager's attitudes towards credit ratings agencies have shifted dramatically since the financial crisis

"We will continue to use the agencies, but there will now be a lot less reliance upon them. Whereas they used to form 60-90% of a risk manager's view, depending on where one works, they now form around 30-40%."
A credit analyst at a European utility

"Years ago people would take ratings at face value, but now people are going to take a more careful look at what the ratings say, they will be more curious to know why exactly the rating was given."
A senior credit officer at a European utility

Internal measures are becoming more key:

"There is still a lot of looking outside for validation going on, but there is more work involved internally in regards for looking for that validation. We've seen an increased reliance on intra-day information and short-term forecasting. There's less emphasis on historical information from two or three months ago, instead we look at what might happen in the next week or two weeks."
A senior credit officer at a European utility

"I think risk managers are using more internal information now than they were before. The information from ratings agencies is now only part of the information we use, we have been looking at credit default swaps and market intelligence. This data, which we never really looked at before, has now become much more relevant."
Jaime Roman, chief risk officer at Spanish utility Endesa

Looking ahead…

"If they produced quicker responses to events by saying what actions they've taken on a more regular basis, or even stated that they have decided to take no action, that would be helpful."
A senior credit officer at a European utility

historical data and assumes a normal distribution means it can't properly assess the risks of a volatile market, such as that seen by the commodities industry over the past year. "It is not very flexible and also mostly assumes the distribution of the trends is normal, which, for example, hasn't been the case in the commodities market recently," he says.

Shimko adds: "I think people are trying to be a bit more creative about how to use this information to get better forecasts, but ultimately it's still a forecasting tool based on historical information. People should never believe that any number from the risk management department is a true representation of future risk – no one knows what the future risk is. The best we can hope for with these numbers is an indication of relative risk rather than absolute risk."

Information distribution

Allan Smith believes a key hurdle to pushing risk management forward within energy sector firms arises from access to information. "It's whether the systems are linked up in a way that this can be easily accomplished. So, for example, if the analytical capabilities have been housed inside the trading operation and have typically looked at elements of market risk for the trading operation, they wouldn't necessarily have those capabilities or those systems linked up to information on cash position, for instance. So frequently there are either some data linkages that need to be established, or some management information or management reporting that needs to be put together to assemble these disparate pieces for a new purpose, such as a liquidity report."

Kaminski adds that, when it comes to energy trading, some firms encounter problems arising from how they have grown and developed. "In some cases energy trading is a recent addition to the business of financial institutions, so they are not integrated well with the overall risk models for the entire firms."

He explains further: "You might have a financial institution or a hedge fund that does energy trading and they may have a risk management system for energy that was acquired from another firm. But the risk management system for energy is not integrated with the rest of the risk model. So, for example, if a financial institution has business with BP on the financial side, such as interest rate or currency swaps, and the energy unit is also trading with BP, in many cases the financial institutions cannot integrate these exposures, they cannot combine the total exposures that they see under the one umbrella."

Industry collaboration

While examining internal structures to ensure risk assessment procedures are up to scratch is obviously essential, looking outside of the company structure could provide a fresh perspective and new ideas. Industry collaboration is often seen as a crucial step towards implementing sustained change and the CCRO is dedicated to such an activity. Its latest project has been to establish a working group to draw up a list of important scenarios energy companies should keep in mind when assessing risk. Once this list of potential situations has been established, the CCRO will advise energy companies to apply them to their scenario planning in order to develop best practice models.

Bob Anderson believes this exercise will be of benefit to all kinds of energy operations, regardless of size or level of sophistication. "You could apply these external events or parameters to a very complex model or to a very simple model," he explains. "Energy companies are working with the CCRO in trying to come up with standard scenarios that would include some of the unthinkable things we all experienced last year, as well as how your model can incorporate those things."

The turmoil that enveloped the global economy as a result of the subprime crisis was due to a failure to detect the early warning signs. It's obviously important that all markets learn from the events of 2008 – and the mistakes made leading up to that point. Relying too heavily on purely quantitative risk measures certainly disadvantaged firms at the time of the crisis and has shown that risks still need to be measured, even if the risk measure has to take more of a qualitative stance. ER

"People should never believe that any number from the risk management department is a true representation of future risk. The best we can hope for with these is an indication of relative risk"

David Shimko, NewOak Capital