RESEARCH AND REPORT

ETRM in a Low Commodity Price Environment

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INTRODUCTION

The collapse in wholesale energy prices, which began in earnest mid-year 2014, has resulted in a prolonged period of declining profits, declining trading volumes, bankruptcies in the up-stream markets, and a general malaise in the global wholesale energy markets. Though low prices are a benefit for consumers, this period has been extremely challenging for many in the energy industry, particularly those that produce and trade energy commodities.

Though oil prices have recently begun to rise off their 13 year low set in January of 2016, other energy commodity prices, such as power and natural gas, continue to be moribund – in a persistent oversupplied condition and with unpredictable volatilities. Given these conditions, Commodity Technology Advisory, with the support and coordination of study sponsors FIS and Capco, sought to examine the impact on the usefulness, utility, and capabilities of Energy Trading and Risk Management (ETRM) systems to improve financial performance and profitability, mitigate risks, and help find market opportunity for companies that operate in this difficult market.

This new research looks at the impacts and implications of low-priced energy commodities as they relate to the key technologies used to trade, manage, value and account for those trades. These ETRM systems, though vital to the industry, will vary in their utility and value among users depending on the scope, scale and age of those systems. While not seeking to quantify these potential differences, we did want to examine the implications of the current low price environment on the value and usefulness market participants assign to those systems and understand the impacts on those technology users as this low price condition persists.

It is important to note however, that low prices are not the only challenges facing the global and regional energy markets. Continuing regulatory changes, the influx of renewables energies into many markets (driven in part by support or mandate of regulators), the developing LNG markets, market structuring/liberalization (particularly in the European power markets) and many other changes have an impact on wholesale price formation and on the business strategies of energy market participants.

"Uncertainty is making transparency into and the management of market, credit and operational risk more imperative, especially as trading and treasury functions become linked. This means putting credit exposure and counterparty risk management at the top of their boardroom agendas."

Dr. Markus Seiser
COO – FIS, energy business

Given the regional regulatory differences, current and emerging structural changes, and levels of market maturity between the North American markets and those in Europe, we will present and analyze the responses from these two regions both separately and in total in this report.

DEMOGRAPHICS

Our research effort focused on ETRM users in North America and Europe, the two largest markets for trading natural gas, power and other energy commodities – and by extension, the largest markets for energy trading and risk management software. Our online survey received a total of 125 responses. After removing those that did not meet our criteria for inclusion, 87 responses, representing 80 different firms, were utilized in our analysis.

In terms of the geographic coverage of those respondents, approximately 60% were primarily US companies (some with offices in Canada and Mexico) and 40% were primarily European based, with the European responses reflecting virtually all regions of the pan-European markets. The company types reflected in our response group include energy traders/merchants, gas and power utilities, gas and power retailers, industry consultants and a lesser number of producers, pipeline/transmission operators and others. These companies trade or transact in all manner of energy commodities (including gas, power, oil and oil products, NGLs, LNG, coal, and emission credits), though natural gas and power were the most commonly noted, with more than 70% of the respondents trading either or both.

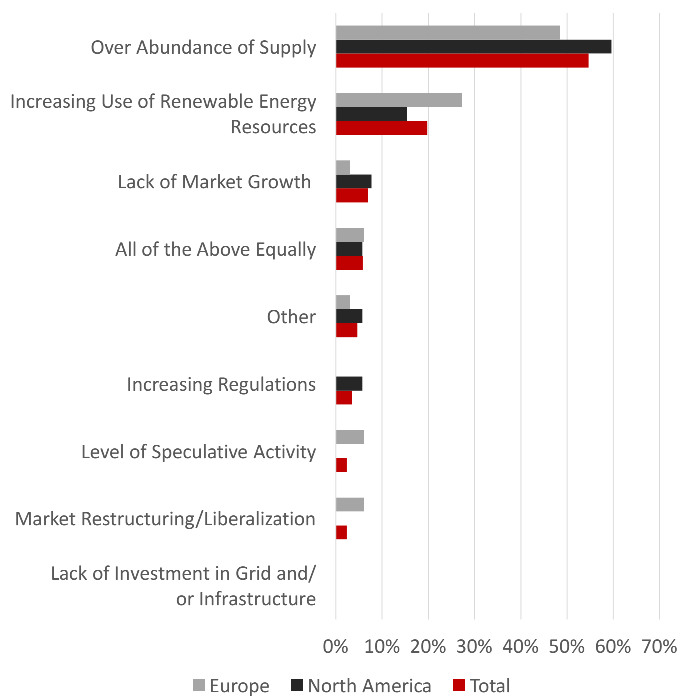
FINDINGS

Market Influences on Price Formation

Q: Which ONE factor do you believe has the greatest impact on CURRENT energy commodity prices?

While acknowledging the impacts that oversupply of energy commodities is having on prices, many European respondents note that the Increasing Use of Renewable Energy Sources is having a significant impact on prices in their markets. In fact, almost twice as many European respondents (vs those from North America), on a percentage basis, believe renewables are having the greatest impact. This difference is likely in response to the sometimes detrimental influence subsidized renewables have had in many European markets, such as Germany, where the forced retirements of nuclear plants have resulted in significant market disruption.

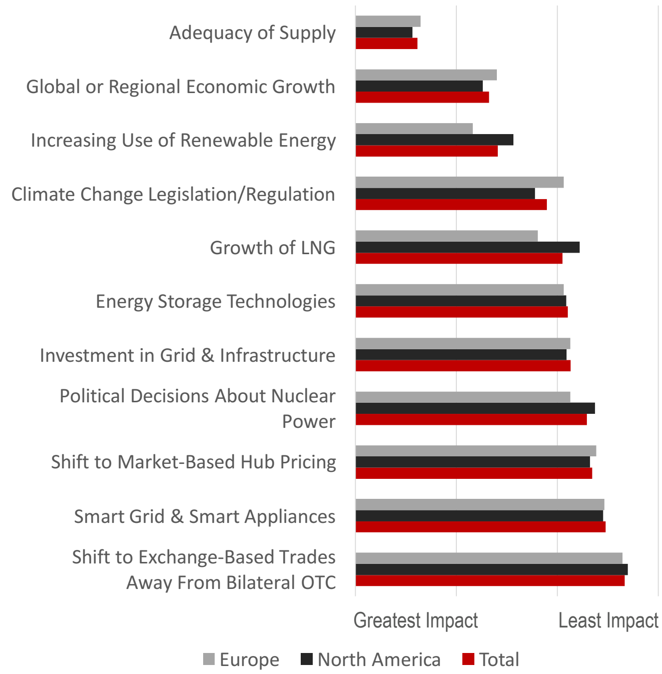
Lack of Market Growth was the third ranked concern for North Americans, and ranked near bottom with Europeans. With the collapse in energy prices and increasing dependence on natural gas for power generation, North American gas and power markets have shown little growth in trading volumes over the last several years.



Q: What factors will impact on FUTURE Energy Commodity Prices?

Though both North American and European respondents believe Adequacy of Supply and Global or Regional Economic Growth (driving increased demand) will be significant factors in future energy prices, Europeans also believe Increasing Use of Renewables will have a larger effect on those prices than do the North American respondents. This is likely due to the price impacts that the mass introduction of renewables have already had in specific European markets such as Germany, a market in which negative pricing has become common.

European respondents believe Growth of LNG will have a much larger impact than do those in North America, not surprising given European natural gas production (North Sea) has been in decline and it is anticipated that the continent will depend increasingly on LNG imports for future gas supplies. Somewhat surprising is that the Shift to Exchange-Based Trading is ranked so low by both regions.



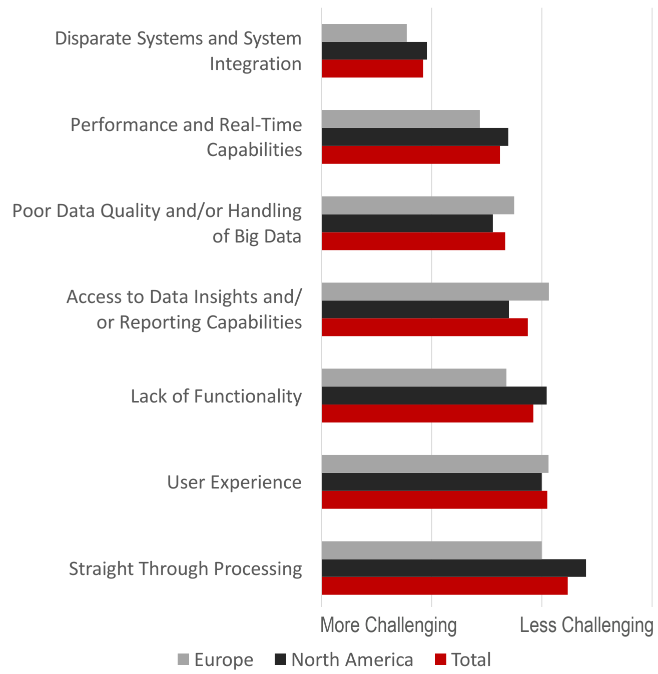
ETRM System Capabilities and Challenges

Q: Please rate the common challenges for ETRM Software in the current commodity price environment.

It is relatively common for multiple ETRM/CTRM solutions to be utilized by a single company, with separate applications providing coverage for specific commodities. Additionally, ETRM/CTRM systems operate at the center of an ecosystem of data feeds, market interfaces, reporting tools and various other applications that either send data to the CTRM/ETRM system, or consume data from it.

Both Europeans and North Americans view Disparate Systems/Integration as being the most challenging issue in the current environment.

Europeans ranked Real-Time Capabilities/Performance as their second greatest challenge; North Americans ranked it below Data Quality/Big Data. The European view is likely influenced by the emergence and growth of the real-time power markets across the continent. The US markets, having transitioned to real-time power markets almost two decades



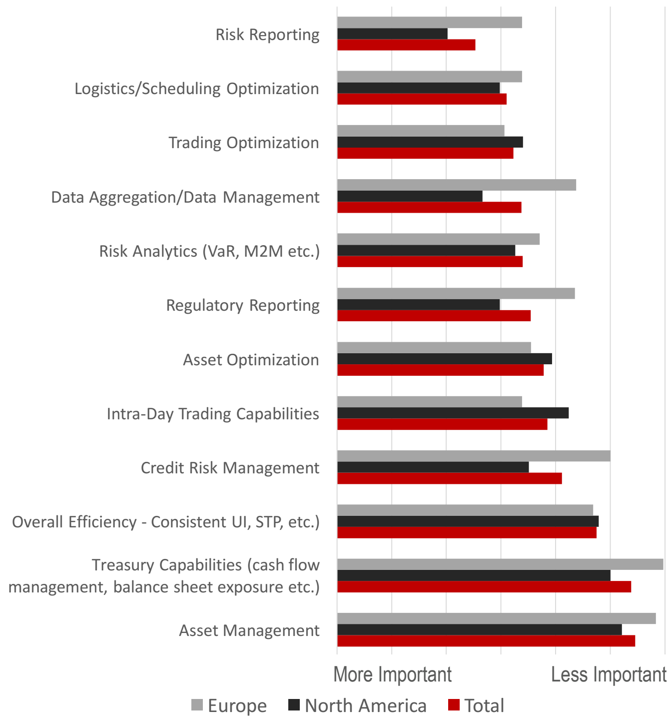
ago, are less likely to view this issue as being as a significant challenge to their current systems.

Europeans ranked Lack of Functionality as their third greatest challenge, much higher than the North Americans, who placed it next to last. Again, this may be related to the emerging power markets in the European region and the general relative immaturity of that market as compared to North America. While many of the regional European markets are similar in their construction and operation, there is as yet no single operational or business model for the continent and as such, operating in multiple markets in Europe does require certain specific functional capabilities for each.

Q: Please rate ETRM capabilities in terms of Importance given in the current commodity price environment.

North American respondents clearly ranked Risk Reporting as the most important capability given the current market conditions. Europeans noted Risk Reporting below Trading Optimization, and of approximately the same importance as Logistics/Scheduling Optimization, Intraday Capabilities, and Asset Optimization. Again, the European respondents appear to be expressing experiences and concerns related to the emerging power markets across the continent. As the North American power markets are more mature and generally operate utilizing similar models, the issues faced by European power market participants are less of a focus in North America.

Both geographies ranked Treasury and Asset Management surprisingly low, particularly in light of the balance sheet and cash management issues faced by many participants in this low commodity price market. One possible explanation for this ranking is that many are utilizing systems other than ETRM/CTRM to manage these exposures.



Q: Please rate the Feature/Functions of your current ETRM system(s) when trading in the current price environment.

North American respondents felt Valuation capabilities were the greatest strength of their current systems, while Europeans ranked that capability below several others. Europeans ranked Efficient Deal Entry and Effective Portfolio Management as the key strengths of their systems.

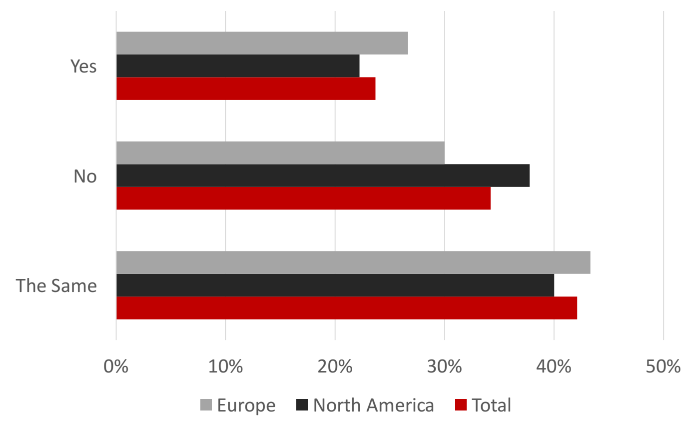
There was also significant regional disagreement regarding Market Risk, Contract Modeling and Accounting capabilities, with the European participants ranking those capabilities significantly lower than the North Americans.

A potential explanation is that many of the systems used in the European market area had initially been developed for the US markets and at their core reflect the business processes common to that region. When used in a European market context, many of these systems may require additional development or work-arounds to be fully functional for some of the markets, commodities and business practices in the region.

Q: Do you believe your energy trading software helps you respond to new business opportunities as they arise in this market under these current market conditions?

Only 24% of respondents felt their ETRM software helps respond to new business opportunities under current conditions, with little difference between North America and Europe. Around a third stated that their software does not help them respond to new business opportunities.

This result should not be unexpected given the varying capabilities of the many vendor-supplied solutions in use across both markets. For example, some available solutions provide a wealth of data visualization capabilities that may provide rapid identification of price arbitrage opportunities, or provide capabilities to model and analyze physical supply chain optionality (or least-cost pathing for transportation). However, these solutions do tend to be more costly and complex to implement and are most commonly deployed at larger energy trading firms. Solutions that compete for mid-sized and small market players are generally less costly (both in terms of licensing/support and implementation) and may not provide capabilities that identify and respond to these types of opportunities.



In rapidly changing markets where participants are under cost pressures, a perceived inability for their ETRM solutions to grow and evolve with their businesses and adapt to new opportunities is problematic and may eventually lead to replacement of those solutions. On the other hand, those same cost pressures may force participants into workarounds (via spreadsheets for example) until market conditions improve.

Market Risks

Q: Given the current market conditions, please rate the following risks in terms of the level of concern for your company.

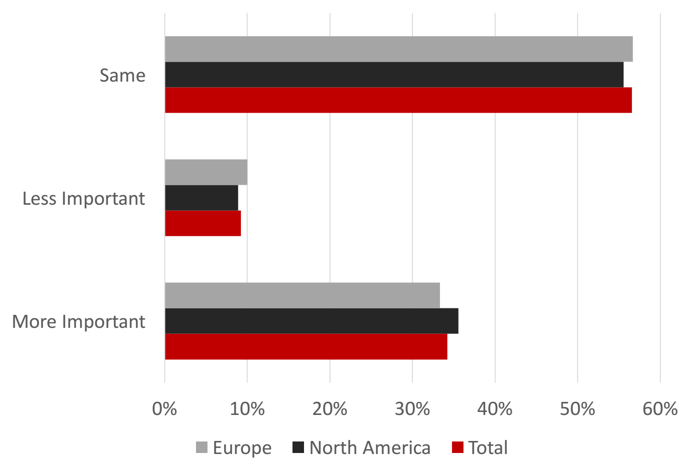
Though North American respondents felt strongly that Credit Risk was the greatest risk given the current market conditions, Europeans viewed credit with much less concern. This divergence of opinion may be a result of the high number of bankruptcies in the up-stream energy markets in the US, particularly producers who, in some cases, have had affiliated natural gas, oil and NGL trading businesses. On the other hand, credit issues have also been largely responsible for the majority of European trading firm bankruptcies too and it is somewhat surprising that it is ranked so low.

Europeans cited Market Liquidity Risk as their great concern, a risk ranked near the bottom for North Americans. This high ranking for market liquidity in Europe is likely a result of the continuing deregulation in many of the markets in the region. As cross border trading increases, reliable and predictable price formation will be dependent on an adequate number of traders (and trades) participating.

Market Data

Q: Under the current market conditions, is market data (price, ISO/TSO, etc.) more or less important than in a higher priced market?

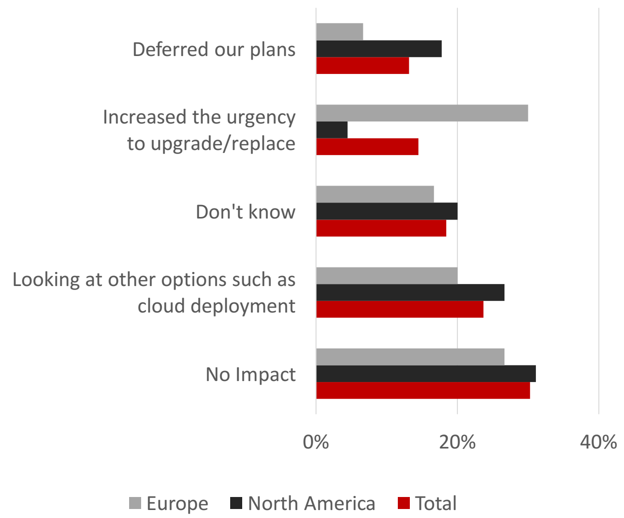
There were no significant differences between North American and European respondents in terms of views of market data in a low price market environment. While the majority of respondents indicated they believed there was no significant difference in importance when prices were low, those that believed there was such a difference noted that market data grew in importance in a low price market, possibly reflecting lower margins per trade and the need to conduct more trades in order to maintain revenues and profitability. Under such a scenario, these traders could be seeking additional information from new trading locations, and potentially monitoring more trading points for arbitrage opportunities.



ETRM Software - Procurement and the Cloud

Q: How do the current market conditions impact your ETRM procurement or replacement plans?

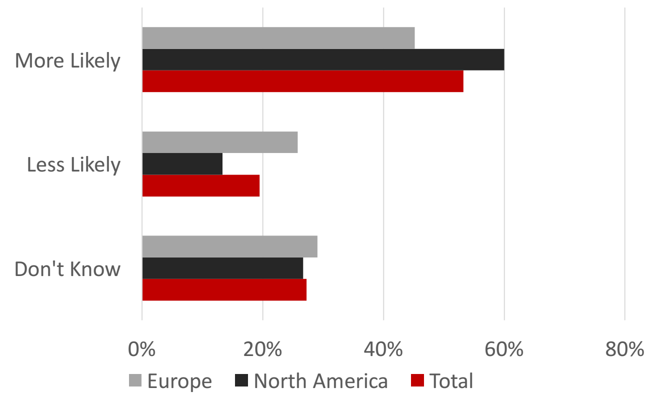
European respondents indicated a high level of increased urgency to upgrade in order to address current market conditions (30%). In the US, only 4% indicated an increased urgency vs. 18% that indicated they were deferring planned acquisitions. Again, the results from European participants likely reflect the quickly changing market and regulatory structures in power and gas markets, and the need to address those changes in order to operate profitably in the face of lower commodity prices (increased trading volumes, optimized strategies and assets, etc.).



Q: Are you more or less likely to consider hosted or cloud deployment for your ETRM system in order to reduce costs given the current market conditions?

More than half of all respondents indicated they would be more likely to consider cloud delivery given the assumption that cloud solutions can provide a lower cost of acquisition and in some cases, a lower TCO.

In North America, where cloud has had less take-up than in Europe, 60% indicated they would be more likely to adopt cloud to reduce costs, potentially indicating that the US market is becoming more familiar and more comfortable with the cloud value proposition.

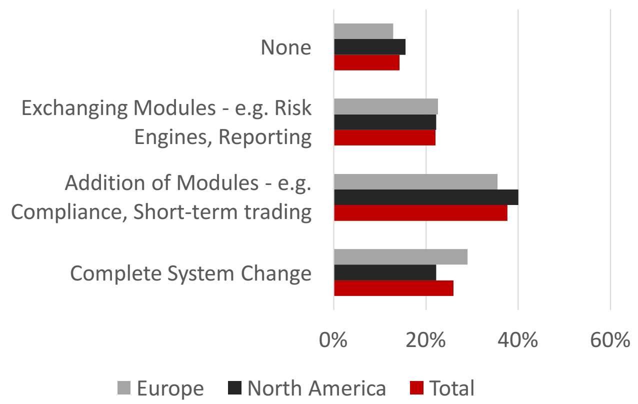


"Energy firms are looking to improve efficiency and agility by integrating, streamlining and optimizing their systems and processes. This is driving more firms to explore cloud platforms and managed services that will enable them to simplify their operational infrastructures with standard, configurable solutions and ultimately reduce their total cost of IT ownership by eliminating the amount of equipment and resources necessary to maintain an enterprise-scale ETRM solution."

Dr. Markus Seiser
COO, FIS' energy business

Q: What changes does your ETRM/IT landscape require to be a fit for the future (5+ years out)?

Only about a quarter of respondents indicated they would require a complete system change within the next 5 years, though the number in Europe was somewhat higher than in North America. However, around 40% of the respondents indicated they would require additional capabilities that would be met through additional modules. In all, less than 15% of the respondents believed their current capabilities were sufficient to meet their needs in 5 plus years.



SUMMARY

Certainly, one has to be careful over analyzing survey data, however the results of this survey do appear to confirm many of the trends that ComTech has noted elsewhere, including the rise of the ETRM/CTRM in the Cloud, for example. Essentially, traders see the shifting trends in a lower commodity price environment and many find their existing systems will either need to be replaced or enhanced in order to cope with the changes in markets, to pursue new trade opportunities, and to keep up with structural changes in the markets. Issues like integration have long been a source of frustration for users and despite increasing standardization between markets, local functionality requirements - especially in Europe - continue to plague users.

The difference between North American and European energy market maturity and structure clearly stands out in the results. Under guidance from the EU and enhanced by the German decision on nuclear energy generation, European markets have moved rapidly to embrace renewables. The rush to renewables has posed a number of challenges for these markets including,

1/ A significant impact on price formation as a result of subsidies for renewables to the point where wholesale power prices have been halved over the last several years and some locations have experienced sustained periods of negative prices,

2/ The rise of renewables, penalization of fossil fuel generation and changes in grid dynamics (including consumers acting at times as generators and the rise of the Smart Grid), has also impacted the structure of the industry with utilities hiving off stranded fossil fuel assets (burdens), a move to more short-term trading including intra-day and day ahead,

3/ The move to a single market has also changed industry dynamics virtually eliminating location spreads and making profitable trades harder to find. At the same time, infrastructure and data issues on the physical side particularly around capacity for example, have also created some new opportunities.

These, and other changes, in the European markets mean that European traders have a different point of view to North American traders at times. For Europeans, price formation and market liquidity are significantly impacted by the move to renewables, and other market structural changes, and this is readily apparent in the data. Furthermore, the rate of change is such (especially in an environment where there is much emphasis on new regulations) that,

1/ Europeans are more likely to need to do something to enhance their IT capabilities to cope either in the form of new solutions or greatly enhanced and modified existing solutions. In particular the need to perform intra-day trading and cross border trading (logistics) are driving this need,

2/ Europeans cope with a number of markets that exhibit differences in operation, data exchange and so on. While moves are underway to harmonize markets, they lack some of the breadth of functionality needed to cope,

3/ Against a backdrop of cut IT budgets and cost pressure, Europeans are also seeking ways to upgrade and keep costs down. This can include cloud deployment but it can also mean examining the overall architecture and deployment of systems more generally,

All of the ongoing changes in European markets are helping to drive pent up demand for new systems and solutions, and this is the good news to emerge from the result. However, there is a cautionary takeaway perhaps and that is that the solutions adopted in the future will need to be more flexible, more efficient and cheaper to procure, implement and maintain. Future solutions will also need to address the integration and cross-commodity issues that have plagued the industry and are evidently an issue to the respondents of the study.

For North American traders the issues are not necessary dissimilar (regulation, influx of renewables, etc); however, the evolution of the North American marketplace has been clearly different than that of the Europeans. With full market liberalization occurring in the US in the 1990's and relatively homogenous markets in both natural gas and power having emerged and matured, there are key differences relative to that market's reaction to current conditions.

In particular, the maturity of the gas and power markets has ensured well-established operational and commercial practices and rules. Though some regional differences are apparent, particularly in the power markets (ISOs/RTOs), these are essentially solved problems for market participants. Under current conditions, the primary concerns focus on ensuring efficient, profitable operations and less on potential market upsets or the need for new capabilities to address market or regulatory changes.

Additionally, the North America region is essentially self-sufficient in natural gas and power, and the markets for these commodities are structured to encourage efficient production and distribution of resources. As such, when prices fall, a significant portion of the market (the producers and affiliated traders) is immediately impacted and must respond to lower prices by reducing costs. Without emerging or critical functional deficiencies in their ETRM capabilities, they are more likely to defer spending on new or upgraded systems.

That being said, the North American markets are not static and are currently being impacted by new and emerging regulations, subsidization of renewable energy resources, and structural changes as new resources are exploited (shale production) and others abandoned (coal-fired generation). Though these changes may cause short to mid-term disruptions and pain for some market players, the constructs of the deregulated markets (liquidity, price visibility, established markets and exchanges, and common business rules and practices) do provide for efficient adaptation to change by most industry participants.

Finally, our respondents generally agree that low energy prices are a reflection of an oversupplied market. Unfortunately, forecasts of slow global economic growth are an indication that the current trend will continue for some time. Without increased demand to take up surplus capacity, this period of low energy commodity prices may be the new normal for several more years.

Market participants will, by necessity, continue to adapt to these lower energy prices through budget and/or strategy adjustments. Given the respondents' views on their current systems, possible replacement/enhancement rates and increasing appetite for the cloud to help reduce costs, the survey seems to suggest that a backlog of work and procurement is building; but, those new solutions need to be lower cost and more effective in delivery. The challenge is then with the vendors to deliver functionally-rich and adaptable solutions at the right price point and with a relatively fast and cost effective implementation.

ABOUT FIS

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FIS'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, FIS'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 or email us at ENGY.ContactUs@sungard.com

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ABOUT CAPCO

Capco, an FIS™ company, is a global management consultancy with a focus in financial services including banking and payments, capital markets, and wealth and asset management, plus a dedicated energy division. We combine innovative thinking with unrivalled industry knowledge to deliver business consulting, digital, technology and transformational services. Our collaborative and efficient approach helps clients reduce costs, manage risk and regulatory change while increasing revenues.

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ABOUT

Commodity Technology Advisory LLC

Commodity Technology Advisory is the leading analyst organization covering the ETRM and CTRM markets. We provide the invaluable insights into the issues and trends affecting the users and providers of the technologies that are crucial for success in the constantly evolving global commodities markets.

Patrick Reames and Gary Vasey head our team, whose combined 60-plus years in the energy and commodities markets, provides depth of understanding of the market and its issues that is unmatched and unrivaled by any analyst group.

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