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DataWatch is celebrating its first anniversary with the launch of its own website, http://www.datawatch.ze.com. We are looking back and reminiscing about the markets and changes in data sources and data reports. Emerging markets, European financial turmoil and growing importance of natural gas and crude oil have remained the primary focus throughout the year.

Editorial

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Argus Launches International Coking Coal Report
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Shale Gas: More Complications for Price Forecast Developers. Part Three - The Demand Side of the Equation

Continued discussion on shale gas expansion is centered on factors affecting demand for growing natural gas stocks. Power generation, environmental regulations, manufacturing, and automotive vehicles, all play a part in the rise of U.S. natural gas production.

Upcoming Events
It is our first anniversary and I would like to extend my thanks to all who helped make this project a reality. It would not have had a chance
to become the success it has without its contributors and dedicated production team. And if a successful first year isn’t enough, we have
another reason to celebrate; this month, we are also launching our website, www.datawatch.ze.com. Join our LinkedIn group, ZE
DataWatch, and read our tweets at https://twitter.com/zedatawatch to stay connected with us.

When we started DataWatch a year ago, I expected that there would be some sort of a trend that indicated a correlation between industry,
market, political and economic events and products released by private data providers and public data sources. What I did not expect was
that the connection would be so strong and consistent.

The last year has been a journey through twists and turns of events in the global and domestic arena. We suffered through a European
crisis, watched new marketplaces emerge in Asia and Latin America, navigated the hurdles of having environmental regulations approved
or dismissed, and witnessed a shift in focus to fossil fuels.

ICE and CME have remained the main players in the fossil fuel fields. New types of swaps, futures, and options have been added to the
suite of derivatives built for these products. One reason for this heightened activity is a growing demand for fossil fuels in Asian and
European markets. New derivatives and price assessments on gasoil, jet kerosene and other petroleum products were developed in
response to market movements in Japan, China, India, Indonesia and Singapore. Asian and European thirst for natural gas is reflected in
new LNG products (indexes, swaps) launched by CME, Tradition and ICIS. Argus and Platts kept adding new series of European and
Asian LNG price assessments, and revised existing assessments by increasing the number of ports and increasing the cargo sizes that
follow the global trend of growing volumes of LNG trades. Meanwhile, LNG is becoming a separate commodity.

Changing dynamics in the crude oil markets brought in another major increase in data sets. Two major crude oil benchmarks, WTI and
Brent, underwent a change from their typical behavior. Brent prices started to climb and WTI moved in the opposite direction. There were
several reasons explaining this trend. On one hand, the Middle East turmoil, the European financial crisis and declining production in the
North Sea, pushed Brent prices up. On the other hand, a quite unexpected rise of North American oil production supported by rising
production of Alberta oil sands, along with increasing production in North Dakota, Saskatchewan, and Montana, kept sending more crude
into the pipeline, suppressing WTI prices. The spread between the two markers continued to widen and the global spotlight was focused
on European crude derivatives, with more of them being cleared by major exchanges. The Dow Jones UBS Commodity Index, whose
crude oil component used to incorporate only the WTI contract, opened one-third of its weighting to Brent. WTI is not the world’s most
important oil benchmark any more, and until the historic balance again sees WTI leading the pack, Brent contracts will continue to attract
marketplace interest, fueling high volumes of trades. Exchanges and private data providers introduced new Brent futures, swaps, options,
spreads, new assessments and swaps contracts built on Brent assessment. A new kid on the block is Alberta oil; the growing share of
Canadian grade prompted the introduction of new derivatives and assessments by Argus and CME for Western Canadian crude, whose
importance is growing internationally.

Europe has drawn attention because of its local energy concerns, but more so because of its extended financial and political turmoil.
Meanwhile, data providers are turning lemons into lemonade by increasing their derivative offerings that are designed to hedge against
exposure to European risks: NYSE, Eurex, Xetra are among those that introduced interest rate futures in European currencies and other
products mitigating local risks.

As the old world is fighting the economic distress and pulling together resources, new players are enjoying current opportunities that are
opening to them. We are observing the dawn of new marketplaces. Closure of the Canadian Wheat Board by the Canadian government
and the ban of the Board’s monopoly of handling western trade led to the emergence of a new market, with ICE immediately introducing
derivatives for Western Canadian wheat and barley. Two of the world’s most tightly closed economies announced the creation of open
markets: an electricity market will be established in Japan and energy trading will be launched in the Middle East. China announced its
decision to introduce crude oil-based securities.

Asian market makers get connected with each other and expand beyond their borders. Hong Kong Exchanges and Clearing Ltd (HKEx)
announced its intent to build a joint venture with Chinese Shanghai and Shenzhen bourses. Finally, HKEx, the world’s largest exchange
by market capitalization, acquired LME by outbidding ICE, thus placing it in the tight company of large players, CME and ICE. The general
observation is that developing Asian markets are moving closer to crossing the mark that separates them from established developed
marketplaces.

Fueled by fast growing economies and new marketplaces, clearing and trading houses and data providers spread their reach by offering
products with underlying assets located in those parts of the world. Just a few examples are ICE clearing Latin American sovereign credit
default swaps; S&P Indices targeting the largest infrastructure companies in Latin America; and, Dow Jones Indexes adding BRIC 50
Volatility Risk Control index targeting leading stocks in Russia, Brazil and offshore China.

Environmental concerns sustained their significance and environmental products remained popular with exchanges and data providers.
There were several developments in emission reduction programs, which affected derivatives. Within one year, we saw the birth and
demise of some NOx and SO2 contracts. As a direct reaction to the new EPA Cross State Air Pollution Rule (CSAPR), new NOx and SO2
emission allowance instruments were launched by GreenX and ICAP. However, a year later, these contracts were delisted as a result of a decision by the U.S. Court of Appeals for the District of Columbia to overturn the CSAPR rule. That was probably one of the shortest life cycles of financial derivatives.

At the same time, seemingly more volatile carbon markets remained stable throughout the year. California’s cap-and-trade scheme supported the creation of new derivatives built on California Carbon Allowance contracts; they are now offered by GreenX and ICE. EU carbon Emission Trading Scheme (ETS) continued to draw attention from not only European data providers, but also North American. Thus, GreenX expanded in-delivery months for EU emission options and futures as a response to the growing demand for these contracts. After the aviation sector was added to the compliance scheme of the EU carbon emission reduction program, GreenX and ICE launched aviation allowance contracts.

Probably the most aggressive move of the year in the environmental markets was the CME’s acquisition of GreenX, the second largest carbon exchange in the world, following the Chicago Climate Exchange, which is operated by ICE. The close competition between the two major rivals, CME and ICE, extended to environmental markets.

More expectations lie ahead in the carbon markets, which are still in an initial stage of development. China approved a pilot carbon trading scheme for seven provincial regions. Australia announced a CO2 emission trading program that will come into effect in 2015. In addition, Australia is planning to link its emission trading scheme with New Zealand and even the EU ETS, which will strengthen international carbon markets even further. Quebec ratified a carbon cap-and-trade program and intends to link its system with California in a single market. No doubt, in the years to come, we will see more changes and convergence in carbon marketplaces with new products and unification of those already existing.

Another type of environmental product is the Renewable Energy Certificate (REC) issued for compliance with regional Renewable Portfolio Standards. In the last year, there has not been any significant regulation or rule supporting growth in renewable generation; however, development of new products has been an extension of the hype that spiraled off several years ago. Renewable compliance markets are now covered by Platts through several assessments developed specifically for RECs in California, Connecticut, Maryland, Massachusetts, New Jersey, Ohio, Pennsylvania, and Texas; as well as assessments for solar markets and voluntary markets.

Ever increasing renewable electricity production has been getting more support from providers of forecasts targeting wind and solar generation, such as MDA EarthSat Weather, AccuWeather, WSI, PRT and IIR Energy. Electricity system operators, like CAISO, BPA and ERCOT, developed in-house forecasting tools to support operation of their grids when handling intermittency of power generation. FERC now features weather forecasts on its website as a separate market at http://ferc.gov/market-oversight/othr-mkts/weather.asp.

Renewable generation also continues driving refinement of time granularity for power scheduling. Utilities in the North American Pacific Northwest and California are now going ahead with 30-minute power scheduling projects. FERC revised the Open Access Transmission Tariff now requiring transmission providers to offer the option of transmission service at 15-minute scheduling and requiring intermittent resources to provide transmission owners with data to support generation production forecasting. Without doubt, in the future, we will see more granular schedules for power scheduling in the regions with the highest concentration of wind mills and solar panels.

Olga Gorstenko
NASDA T Launches New Futur es, Expands Spark Spread, Curves and Extends SPAN file in Europe

On August 23, 2012, NASDAQ OMX announced the launch of new instruments and functionality in Genium INET, which will be upgraded to version 0220 during the weekend of November 24-26, 2012. The following changes will take place according to the time plan that will be published in the near future:

- German day futures will be launched, based on successful testing, with the number of tradable series varying between 3 and 9 depending on the trading day
- Estonian price area CFD products will be launched, covering two monthly, three quarterly and three yearly contracts. The products are referenced against the electricity spot price published by Nord Pool Spot
- Finnish and Swedish forward CFD curves are being extended to cover four monthly, four quarterly and four yearly contracts
- UK spark spreads are being enhanced to match combinations with underlying instruments
- SPAN file content will be affected by the introduction of the Estonian CFD as this will be considered as a new Risk Group. Specifically, the number of characters in the “Priority” Field from three to six in SPAN record type 11 will be increased. Zeroes will be used to fill the field. (Example priority = 1444): 1101340014440182030050010A012050011B with SPAN-file. IT notice 56/12 can be reviewed here for technical details

All of the aforementioned details will be posted in the member extranet and in the market model document (Appendix A and section 7.9).

BRIX Introduces Contracts with New Supply Periods

On September 3, 2012, BRIX made new periods for negotiation available to its participants. It will be possible to place bids and offers for electric power on the platform, for the balance of the year in course and also for a delivery term of up to five years.

This way BRIX increases the number of alternatives available for the supply period depending on the respective year-calendar:

Current Year-Calendar
The contracts with monthly, quarterly, half-yearly or annual supply periods for the year-calendar in course will continue to exist. Additionally, it will be possible to place bids for supply periods from one to eleven months, always ending in December.

Subsequent Calendars Years
For the calendar years coming after the calendar year in course, it will still be possible to negotiate contracts with monthly, quarterly, half-yearly or annual supply periods.

Multi-annual Contracts
For the calendar years coming after the calendar year in course, it will still be possible to negotiate contracts with monthly, quarterly, half-yearly or annual supply periods.

In Brazil, most contracts entered among the Free Market agents are for medium or long term. Now with the incorporation of new supply periods, the same transactional agility and efficiency exercised for short and medium term deals, will be extended to the long term operations carried out on the platform.

CME Delists Six Electricity Swap Futures

Effective August 26, 2012, the following electricity swap futures are delisted from CME Globex.

<table>
<thead>
<tr>
<th>CME Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B3</td>
<td>PJM Northern Illinois Hub 5 MW Peak Calendar-Month Real-Time LMP Swap Futures</td>
</tr>
<tr>
<td>H3N</td>
<td>Midwest ISO Indiana Hub (formerly Cinergy Hub) 5 MW Peak Calendar-Month Real-Time Swap Futures</td>
</tr>
<tr>
<td>K3X</td>
<td>NYISO Zone A 5 MW Peak Calendar-Month Day-Ahead LBMP Swap Futures</td>
</tr>
<tr>
<td>T3N</td>
<td>NYISO Zone G 5 MW Peak Calendar-Month Day-Ahead LBMP Swap Futures</td>
</tr>
<tr>
<td>U6N</td>
<td>Texas Eastern Zone M-3 Basis Swap (Platts IFERC) Futures</td>
</tr>
<tr>
<td>Z9</td>
<td>ISO New England Internal Hub 5 MW Peak Calendar-Month Day-Ahead LMP Swap Futures</td>
</tr>
</tbody>
</table>

Czech Republic’s Generation Data Integrated in Transparency Platform by EEX

Effective August 16, 2012, the Transparency in Energy Markets platform from the European Energy Exchange (EEX) has been expanded to include energy market data from the Czech Republic.

In an effort to meet REMIT (EU Regulation on Energy Market Integrity and Transparency) requirements and to be more transparent, ČEZ Group will provide information on installed and available capacity, volumes generated on the previous day, as well as scheduled and unscheduled non-availabilities of power from their power plants. EEX is developing the platform further so that it can add more information from other countries and be in sync with REMIT obligations.

Two PJM Swap Futures Moved from CME Globex to NYMEX

Starting September 9, 2012, the following electricity swap futures are removed from CME Globex and simultaneously listed for trading on the NYMEX trading floor.

<table>
<thead>
<tr>
<th>CME Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>L1</td>
<td>PJM Western Hub Peak Calendar-Month Real-Time LMP Swap Futures</td>
</tr>
<tr>
<td>4SN</td>
<td>PJM Western Hub 50 MW Peak Calendar-Month Real-Time LMP Swap Futures</td>
</tr>
</tbody>
</table>

The graph below demonstrates near-month contracts of these two PJM swap futures traded by CME:
CME Launches Coal cfr South China Swap Futures

Effective September 9, 2012, Coal (API 8) cfr South China (Argus/McCloskey) Swap Futures are available for trading on open outcry, pending receipt of required regulatory approvals. The initial contract month is October 2012. These contracts are listed with, and subject to, the rules and regulations of NYMEX.

<table>
<thead>
<tr>
<th>CME Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSi</td>
<td>Coal (API 8) cfr South China (Argus/McCloskey) Swap Futures</td>
</tr>
</tbody>
</table>

For contract specifications click here

CME Launches Coal cfr South China Swap Futures

CME Lists Daily Brent Crude Oil Options

On August 12, 2012, CME listed Daily Brent Crude Oil options for trading starting August 13, 2012. The underlying instrument is Brent Crude Oil Penultimate Financial future contract. The trading venues are Open Outcry and CME ClearPort. This contract is listed with, and subject to, the rules and regulations of NYMEX.

<table>
<thead>
<tr>
<th>CME Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ODB</td>
<td>Daily Brent Crude Oil Option</td>
</tr>
</tbody>
</table>

For ODB contract specifications click here

CME Lists More Natural Gas Products

In August, CME had two releases of natural gas contracts. For client systems the product launch involved the following changes:
- New values for tag 1151-SecurityGroup.
- Changing values for tag 55-Symbol and tag 969-MinPriceIncrement.
- New values for tag 762-SecuritySubType: Futures - Energy Strip (SA), Balanced Strip (SB), Unbalanced Strip (WS), Energy Inter-Commodity Strip (XS).

The products were made available in the following order:
- August 6, 2012
  - Gulf Intercommodity Spreads, for details click here
  - MidConWest Outrights, for details click here
  - MidCon and West Region Intercommodity Spreads, for details click here
- August 20, 2012
  - Northeast Fixed Index and Swing Outright, for details click here

Platts Launches Marine Gasoil Assessments for U.S. and Canada


The new assessments will be on both a delivered and an ex-wharf basis for the following ports: New York, Philadelphia, Montreal, Charleston, Norfolk, Houston, New Orleans, Los Angeles, San Francisco, Seattle, Portland and Vancouver. Additionally, Platts will launch an assessment on an ex-wharf basis only for Savannah. Ex-wharf assessments will be published on Platts Global Alert page 862 and delivered assessments on Platts Global Alert page 860.

Platts Suspends Marine Diesel Assessments

On January 2, 2013, Platts suspends its marine diesel assessments, due to a decrease in the available supply and trade of the fuel. Instead, Platts starts assessments of marine gasoil assessments for major ports in the US and Canada as described here.

*Graph created with ZEMA
Platts to Cease Gasoline Cargo FOB NWE Assessments

On August 24, 2012, Platts announced that the FOB NWE Premium Gasoline Non-Oxy and Regular Unleaded Non-Oxy assessments no longer reflect a liquidly traded grade in Northwest Europe, and will be discontinued by Platts on January 2, 2013.

Platts to Stop Assessing NWE T1 Spot Methanol

Effective August 3, 2012, Platts discontinued its daily Northwest European T1 methanol price published in $/mt CIF, as well as the European T1 methanol weekly and monthly averages. The assessments, which are published on the Platts Petrochemicals Alert service line, are being discontinued due to new industry practices and changing market conditions, as T1 methanol prices assessed in the Rotterdam are no longer a relevant price reference.

CME Globex Lists 149 Existing Natural Gas Futures Contracts

Effective September 30, 2012, for trade starting October 1, 2012, 149 existing natural gas futures contracts are listed for trade on CME Globex, continued to be available for trading on the NYMEX trading floor and cleared through CME ClearPort. The listing schedule on CME Globex for the basis and index contracts is thirty six consecutive contract months. The swing contracts are listed for the current month, as well as the following month.

Platts Expands NYMEX Crude Assessment to Include the Fourth Month

Effective September 4, 2012, Platts launched a new assessment for fourth month NYMEX crude futures at 3:15pm ET, to be published on Platts Global Alert pages 701 and 703, Crude Oil Marketwire, Oilgram Price Report and North American Crude Wire. This adds to Platts current assessments of three months of NYMEX light, sweet crude futures at 3:15 p.m. ET

Platts Adds New Price Locations for North American Natural Gas

Two new price locations, Texas M-2, receipts and Millennium Pipeline, receipts are added by Platts for daily and monthly bid week North American spot-price surveys. The effective trade date for the two new daily postings is September 28, for flow date October 1. The new monthly bid week postings are effective with the late-September bid week for October delivery.


For locations specifications click here

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Dodd - Frank

ZE EMA Solution

C/ETRM Integration  |  Limit Monitoring
Record Keeping  |  Position Reporting  |  Regulatory Compliance

ZE has joined forces with Willis Group Consulting (WGC) to offer a comprehensive Dodd-Frank Solution that meets the compliance needs of the energy, commodities and financial industries. This solution facilitates the Extract - Transform - Load (ETL) process for organizations with data retention and reporting requirements mandated under the Dodd-Frank Act. Together, ZE’s award winning ZEMA technology and WGC’s deep industry and regulations knowledge deliver a comprehensive Dodd-Frank reporting and data management solution.

Find out more
ICE Lists Calendar Spread Options for Sugar, Cotton, Coffee and Cocoa

Effective August 20, 2012, Calendar Spread Options (CSOs) on Sugar No. 11, Cotton “C”, Cotton No. 2 and Cocoa futures contracts, as well as their monthly options, are listed and being traded on the ICE electronic trading platform.

CSOs offer buyers the right to exercise a purchased option in a related futures spread position. The buyer of a call CSO who chooses to exercise the option will receive a long position in the front futures month and a short position in the back futures month of the spread pair. The buyer of a put CSO who chooses to exercise the option will receive a short position in the front futures month of the spread pair and a long position in the back futures month of the spread pair.

User-Defined-Spread (UDS) capability will not be supported for CSO contracts at the time they are first listed on the platform; this capability will be added at a later date. Block trading will continue to be supported for CSO contracts, including block trades in UDS instruments.

CME Launches U.S. Midwest Scrap Futures

Effective September 10, 2012, the U.S. Midwest #1 Busheling Ferrous Scrap American Metal Market’s (AMM) futures launched by CME Group are available for trading on CME Globex. The contract is the first ferrous scrap futures contract available to the U.S. steel industry participants and is listed by, and subject to, the regulations of NYMEX. It is also the first product based on AMM’s price assessment services as a part of the agreement between the two companies to develop risk management products for the steel industry.

Ferrous metals market is the second largest commodity market by volume after crude oil. More than sixty percent of the steel produced in the U.S. is based on scrap. The offering of U.S. Midwest Scrap AMM futures increases CME Group’s suite of ferrous products, and offers a better risk management tool to help customers manage price volatility across the steel value chain through CME’s Virtual Steel Mill, created specifically for managing price risk. The contract is settled against the new AMM’s U.S. Midwest Ferrous Scrap Index and is cleared through CME ClearPort beginning with the October 2012 contract month.

NCDEX Launches Futures in Yellow Soybean Meal

Effective August 22, 2012, National Commodity & Derivatives Exchange Limited (NCDEX) launched futures contracts expiring in October 2012, November 2012 and December 2012 in Yellow Soybean Meal—Domestic (SBMEALIDR). The contracts will be subject to rules, bylaws and regulations of the Exchange and circulars issued by the Exchange.

For SBMEALIDR contracts specifications click here

ICE Delists Western Barley Contract

Effective August 9, 2012, all Western Barley futures and options contracts, as well as the associated rules and annexures, are delisted. There has been no trade activity of these contracts since April 23, 2012.

The Barley contract with ticker BW (launched on January 23, 2012) will remain listed for trade.

CME Expands Silver Options Listing

Effective September 9, 2012, the listing cycle for Silver options is expanded to include the nearest six contract months (cycle and non-cycle). Currently, the listing cycle includes only the nearest two maturities of the non-cycle months (January, February, April, June, August, October and November) along with the nearest five maturities of the cycle months (March, May, July, September, and December). The changes are available for customer testing in New Release since August 27, 2012. The contracts are listed with, and subject to, the rules and regulations of COMEX.

The Silver option contracts traded on CME are shown in the graph below.
**Weather Underground Launches New Sailing & Boating Weather Service**

On August 21, 2012, Weather Underground launched a new Sailing & Boating weather page on wunderground.com that provides boaters with detailed, local weather information alongside specialist marine data from their partner ActiveCaptain.

Weather Underground’s wave graphs separate out swell and wind waves that prepare sailors effectively for conditions out on the water. The service is aided by over 16,000 personal weather stations across the US that report current speed and direction readings, and generate the most localized and reliable coastal weather forecasts.

ActiveCaptain provides specialized, local marine information that is plotted on an interactive map. Featured data points include nearest anchorage, marine hazards, local knowledge and nearest marinas. Weather Underground’s animated radar and satellite data are also available as additional layers on the map. Currently, the service provides data for the entire US coast and a limited amount of data for the Caribbean.

**NOAA Website Provides Access to Historical Hurricane Tracks**

On August 13, 2012, NOAA Coastal Services Center announced the development of the Historical Hurricane Tracks website in partnership with NOAA’s National Hurricane Center and the National Climatic Data Center. The website comprises over 150 years of Atlantic hurricane tracking data, as well as global hurricane data from as far back as 1842. By inputting their zip code, site visitors can access historical data and be informed about their potential exposure so that they may be better prepared if a hurricane strikes. Visitors can search by place name, storm name and year, or by longitude and latitude points, and generate a storm-tracking map with relevant information. Tropical cyclone data and coastal hurricane strike data in 2011 is also available. Another feature of the website is the provision of population changes for US coastal counties from 1900 to 2000 and the new infrastructure at risk from hurricanes. You can view the website here: [http://www.csc.noaa.gov/hurricanes](http://www.csc.noaa.gov/hurricanes)

**Argus Launches California Low-Carbon Fuel Assessment**

On August 1, 2012, Argus published the first issue of its newly launched market price assessment for California Low-Carbon Fuel Standard (LCFS) credits in response to increased trading and interest in the North American renewables market. The California Air Resources Board will reward low-carbon transport fuel producers in California with LCFS credits if they can reduce their transport fuel’s carbon intensity below their annual target. LCFS credits aim to reduce the carbon intensity of California’s transport fuel by 10% by 2020 and are part of an initiative to reduce greenhouse gas emissions beginning in 2013. Argus Air Daily, Argus US Products and Argus US Ethanol will publish the data weekly. Argus provides extensive coverage of an expanding emissions market and their prices are used globally as a reference for North American emissions market activity and indexation.

**California Air Resource Board Holds Trial Auction**

On August 30, 2012, a trial auction for the purchase and sale of carbon permits was held by the California Air Resource Board (the Board) to allow the Board and market participants a chance to become familiar with the electronic trading platform for North America’s first full-scale carbon market. The first real auction is announced for November 14, 2012.

The cap-and-trade program is part of California’s implementation of the AB 32 climate change law, which aims to reduce carbon pollution levels in the state to the 1990 level by the year 2020. The first phase of the program covers electric generation facilities, electric utilities, large industrial facilities and those importing power from out of California.

If the cap and trade scheme is a success, it will likely influence other Western Climate Initiative (WCI) members to adopt a similar scheme. The WCI is a joint initiative between California and the Canadian provinces of British Columbia, Manitoba, Ontario and Quebec to reduce greenhouse gases.

**NYMEX Delists CSAPR Environmental Futures**

On August 27, 2012, CME delisted four Cross-State Air Pollution Rule (CSAPR) environmental futures contracts from CME Globex and CME ClearPort. As a result, the contracts listed below are no longer available for trading and clearing.

<table>
<thead>
<tr>
<th>CME Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG1</td>
<td>PR TR SO2 Group 1 Allowance Futures</td>
</tr>
<tr>
<td>SG2</td>
<td>PR TR SO2 Group 2 Allowance Futures</td>
</tr>
<tr>
<td>NG4</td>
<td>PR TR NOX Annual Allowance Futures</td>
</tr>
<tr>
<td>NG5</td>
<td>PR TR NOX Dioxide Season Allowance Futures</td>
</tr>
</tbody>
</table>

This action was taken as a result of the decision to vacate the U.S. Environmental Protection Agency (EPA) Cross-State Air Pollution Rule issued by the U.S. Court of Appeals for the District of Columbia on August 21, 2012. The court vacated the rule in its entirety, finding it conflicted with the Clean Air Act.

**CME Delists Six Emissions Futures and Options Contracts**

Effective August 20, 2012, CME’s GreenX delisted the September 2012 contract month for its EUA, CER and ERU contracts. The Daily EUA contracts will remain delisted through contract day September 28, 2012. These actions result from transfer of listing of all GreenX products over to the NYMEX completed on August 27, 2012, and do not affect trading in any other futures or options products listed on CME Group.

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**Australia and EU Agree to Integrate Carbon Trading Scheme**

On August 28, 2012, the Australia and European Commission announced an agreement on linking two emissions trading systems. A full two-way link between the two cap-and-trade systems will start no later than July 1, 2018. Under this arrangement businesses will be able to use carbon units from the Australian emissions trading scheme or the EU Emissions Trading System (EU ETS) for compliance under either system. In order to facilitate the linking, the Australian government will make two changes to the design of the Australian carbon price:

- The price floor will not be implemented.
- A new sub-limit will apply to the use of eligible Kyoto units.

From July 1, 2015, an interim link will be established to enable Australian businesses to use EU allowances, to help meet liabilities under the Australian emission trading scheme. This will provide Australian market participants with access to a larger market for cost-effective emission reductions, while providing European market participants with enhanced business opportunities. The European Commission and Australia will work to agree registry arrangements for the interim link by mid-2013.

**California Suspends Cap-and-Trade Provision for Electricity Imports**

On August 16, 2012, the California Air Resources Board (CARB) announced an 18 month suspension of the carbon trading rule as it applies to imports of electricity to the state. The suspension will give time to develop an additional rule to define the types of conduct or transactions that would trigger a finding of resource shuffling.

Earlier in August, Mary Nichols, the CARB Chair, received the Federal Energy Regulatory Commission’s (FERC) support for design and implementation of the state’s cap-and-trade program, to be carried out in a way that would not disrupt supplies to California or other western states. Philip Moeller, the FERC commissioner, pointed out that California depends on imports for nearly 25% of its consumed power, and recommended to keep close attention to a potential of “resource shuffling” under California’s cap and trade program.

CARB will work with other state energy agencies to monitor the emissions associated with imports of electricity into California, and to ensure that emission reductions in the electricity sector as a result of California’s cap and trade program are not offset by increases in emissions elsewhere.

**ICE Announces Deliverability of Phase 2 EUAA**

On August 15, 2012, ICE announced that, according to the EU Emissions Trading Scheme rules, a Phase 2 EUA futures cannot be used to meet the compliance requirements beyond the end of Phase 2, April 2013.

Phase 2 EUAAs will be acceptable for delivery up to and including the ICE ECX EUAA April 2013 futures contract. And, Phase 3 EUAAs will only be acceptable for delivery in the ECX EUAA Futures Contract for the December 2013 and subsequent contract months in Phase 3.
CBOE Launches S&P 500 Index Range Options

Effective August 28, 2012, CBOE launched trading in a new type of S&P 500 Index options contract, known as CBOE S&P 500 Range options (ticker is SRO). CBOE Range options are designed to provide investors with a lower-risk, lower-cost way to trade S&P 500 Index options. SR0s pay an exercise settlement amount if the settlement value of the underlying index at expiration selected by the investor falls within a specified "range length." Range options give investors an overview on S&P 500 Index prices to gain exposure to the market while requiring less price precision. The range length for SR0s will be set at 70 S&P 500 Index points.

Effective September 10, 2012, NYSE launched mini MSCI Canada futures, mini MSCI World Index futures, and mini MSCI Emerging Markets Latin America Index futures for trading.

The MSCI Canada Index is a free-float-adjusted market capitalization index that measures the equity market performance of Canada. Each futures contract is for $50.00 times the MSCI Canada Index value.

The MSCI Emerging Markets Latin America Index is a free-float-adjusted market capitalization index that is designed to measure the equity market performance of Latin American emerging markets. Each futures contract is for $20.00 times the MSCI Emerging Markets Latin America Index value.

Both Index Futures shall be traded in March, June, September and December delivery months. NYSE Liffe US has selected The Options Clearing Corporation as its clearing service provider.

Effective August 22, 2012, five new equity index ETFs from db X-trackers were launched on Xetra. This results in more than 1,000 ETFs available for trade. The new equity index ETFs on countries from the region of South and Southeast Asia allow investors to participate in the performance of companies from Bangladesh, Pakistan, the Philippines and Singapore. The reference indices are part of the MSCI index family and weight the individual companies according to their free float and market capitalisation. The indices are calculated in US dollars. Additionally, the db x-trackers equity index ETF on MSCI Japan Monthly Euro Hedged Index gives an opportunity to investors to track the performance of mid and large caps from Japan. These are hedged against exchange rate fluctuations between the euro and the US dollar. Including the new ETFs from db X-trackers, Xetra now offers 1,004 index funds.

On August 17, 2012, two new exchange-listed equity index funds, enabling investors to participate in the performance of enterprises based in Brazil, were launched in Deutsche Börse’s XTF segment by UBS Global Asset Management. The ETFs were launched on the MSCI Brazil Index, which covers large and mid-cap companies. The asset class differentiates the UBS ETFs; “I” is targeted towards institutional investors, “A” covers private clients.

On August 2, 2012, Eurex listed VSTOXX Mini Futures for U.S. based customers that gives them an opportunity to take position in Commodity Futures Trading Commission (CFTC)-certified European volatility through this mini futures contract listed on the Eurex Exchange for the first time.

In 2012, the average daily volume totaled approximately 13,000 contracts in July and 11,500 year-to-date. Open interest stands at approximately 161,000 contracts, close to its all-time high, while total 2012 to-date volume is more than 1.7 million contracts. VSTOXX Mini Futures allow market participants to hedge their European exposure with this volatility derivatives contract.

Michael Peters, a member of the Eurex Executive Board, said, “The high level of correlation between VSTOXX Mini Futures and other volatility index futures will now also allow our U.S. based members and investors to tap into spread trading strategies, complementing the well-established field of spread trading in equity index and fixed income futures between U.S. and European underlyings.”

On August 16, 2012, ICE and Cetip S.A. (Latin America’s largest private fixed income depository) launched a Brazilian fixed income trading platform, called Cetip | Trader. The platform allows traders to perform a number of operations, such as electronic trading, voice confirmation, straight through processing and real-time and historical data, combined with great transparency, price formation and workflow automation for Brazil’s fixed income markets.

There are five core functionalities, provided by ICE:
- Electronic buy and sell orders that settle bilaterally
- Confirmation of voice trades through Cetip | Voice
- Request for Quote (RFO), which allows secure pricing requests to multiple dealers
- Limit Order Volume Clearing (LOVC); a unique feature that provides price formation during an auction process
- Volume Clearing (VC), which helps participants increase trade volume after a level is defined by the market

Moreover, the platform enables straight through processing, allocations processing and depository registration through a version of ICE Link enriched to support the Brazilian bond market.
BrokerTec and MTS to Develop Euro Repo Index Series

On August 20, 2012, BrokerTec announced its plans to launch a daily repo index series for the sovereign bond markets of Germany, France, Italy, Spain, Austria, Netherlands, Belgium and Finland in the fourth quarter of this year. The index calculation and design has been established following significant market interest and demand and is supported by a group of repo dealers representing several major financial institutions. Repo transactions are used for borrowing and lending on a secured basis, and for financing and covering bond positions. Overall daily volumes in eurozone sovereign repos typically exceed €300 billion (single count). Some experts believe developing an index that provides a cost of funding reference for sovereign bonds has considerable interest and demand in various sectors of the markets. Stefano Bellani, head of repo financing in EMEA at JP Morgan, said, "This new index will be backed by traded volume, executed on electronic trading platforms and cleared via central counterparties rather than based on indicative quotes and this could potentially become a benchmark for secured funding rates across Europe."

CME Group Aims to Create an Exchange in the UK

On August 20, 2012, CME Group announced its intent to create a London-based derivatives exchange, which will initially begin trading foreign exchange futures products. They are in the process of applying to the United Kingdom’s Financial Services Authority (FSA) and currently pending approval as a Recognized Investment Exchange, CME Europe Ltd, planning to launch mid-2013.

The UK-based exchange will be using CME Globex as the electronic trading platform, while CME Clearing Europe Ltd. (launched in May, 2011), will become the central counterparty clearing service.

The move is a natural step for CME Group, which has been expanding its business over the recent years as it experiences increasing demand from its European clients. "We continue to see an increase in business coming from our diverse set of customers in Europe, with more than 20 percent of our volume now originating from the region," said CME Group Executive Chairman and President Terry Duffy. "Having an exchange in London that can leverage the central counterparty model of CME Clearing Europe will allow us to align ourselves even more closely with our regional customers in both listed futures and over-the-counter markets, and provide additional opportunities to our expanding non-U.S. customer base."

"Our application to establish an exchange in Europe fits within our strategy to grow organically and is an important next step to meet the growing regional demand from our customers," said CME Group Chief Executive Officer Phupinder Gill. "Launching with a suite of FX products allows us to leverage our 40 years of experience in FX futures for customers in the region who access the futures market during the London business day, but we also plan to look at expanding into additional asset classes."
Turkey to Launch Transparency Database for Energy Markets

On August 29, 2012, the Turkish Ministry for Energy and Natural Resources announced plans to launch a new integrated database that will promote transparency in the Turkish electricity and natural gas sectors. The database will collect and analyze information on macroeconomics, transmission of electricity and real-time generation based on models provided by the Energy Information Administration (EIA). Development of the database will include data on gas flows, and the aim is to produce bulletins (PDF format) with this information as early as Q1 2013. The database enables Turkey to comply with EU initiatives, such as REMIT (Regulation on Energy Market Integrity and Transparency), that aim to establish greater transparency in energy markets by increasing data and trade reporting.

ICAP to Create Global Broking Division

On August 16, 2012, ICAP plc announced the creation of a single global voice broking division to reflect the changing nature of its business and serve customers more effectively from September 1, 2012. This involved an internal reorganization that mirrors the way ICAP’s Electronic and Post Trade divisions are already being run on a global basis and will enable the group to execute a global strategy for voice and hybrid broking services. This division was renamed Global Broking (previously called Voice) to better reflect ICAP’s improved broking interface for markets as well as its significant and growing electronic component.

Chi-X Canada to Introduce New ATS

On August 17, 2012, Chi-X Canada announced plans to launch CX2 ATS, a second marketplace, in the first quarter of 2013, pending regulatory approval. By providing greater transparency and the means to reduce execution costs, CX2 will offer a unique and different market model with innovative solutions that seek to enhance functionality.

ICE to Transition Cleared Energy Swaps to Futures

On July 30, 2012, ICE announced that all cleared OTC products listed on ICE’s OTC energy market will be transitioned to futures products in January 2013. These products will continue to be listed and traded on the ICE platform and cleared at ICE Clear Europe, and block trades will continue to be available, subject to applicable requirements.

The transition from OTC swaps to futures is subject to approvals from the Commodity Futures Trading Commission and Financial Services Authority.

Back to Summary
FERC Announces a Digital Government Strategy

On August 30, 2012, FERC announced its plan to improve delivery of government information and services to the general public and the US government workforce. In response to a presidential memorandum on ways to identify how to use technologies efficiently and effectively to improve customer experience, the FERC CIO released a strategy titled Digital Government: Building a 21st Century Platform to Better Serve the American People. This strategy provides a platform that fundamentally shifts how government connects with, and provides services to, the American people. While ensuring security and privacy, the new strategy focuses on building information-centric systems and tools, utilizing shared platforms to improve information dissemination across government, and delivering customer-centric, highly effective services.

The Digital Government Strategy aims to allow for access to high-quality digital government information and services anywhere, anytime, and on any device. FERC has published an online survey http://www.surveymonkey.com/s/D63VVWD and is currently seeking input on strategy as to what type of information is perceived as more relevant to be in the public domain.

SMX Proposes Negotiated Trade Facility

On August 2, 2012, The Singapore Mercantile Exchange (SMX) announced its plan to introduce the Negotiated Trade Facility (NTF) by the end of the year, subject to regulatory approval. NTF is supposed to allow Exchange participants to report details of a large trade that has been privately negotiated outside of the Exchange’s trading system, and which meets the Exchange’s prescribed minimum thresholds.

The Exchange intends to set the minimum order quantity for a Negotiated Trade at thirty (30) lots of any contract or a value of USD 1 million, whichever is lower. The aim of this new feature is to offer members a platform for large negotiated bulk deals under the safety of the exchange platform. SMX should be able to clear the negotiated deals seamlessly and efficiently with this new feature.

All Negotiated Trades must be reported by a Member of the Exchange. Members must report all Negotiated Trades to the Exchange as close to real-time as possible, but no later than 15 minutes from the trade negotiation. Negotiated Trades reported through the facility will not form part of the normal order book, but information on the trades will be made available to market participants through the Exchange’s website.

Miami Option Exchange Details Plan To Become 11th U.S. Venue

On August 16, 2012, the Miami International Securities Exchange, LLC (MIAX) announced that it is preparing for the launch of its Options Trading Platform. MIAX, which will be a fully-electronic options exchange, has filed a Form 1 application with the Security and Exchange Commission (SEC) on April 26, 2012, to become a national securities exchange for trading options and is planning to commence operations in October, subject to SEC approval. MIAX planned industry mock trading testing on the following dates:

- Saturday 9, 8, 12 from 9:00 a.m. to 1:00 p.m. ET
- Saturday 9, 15, 12 from 9:00 a.m. to 1:00 p.m. ET
- Saturday 9, 22, 12 from 9:00 a.m. to 1:00 p.m. ET

Open firm participation through each of MIAX’s technical interfaces:
- MIAX Express Interface (MEI) for Market Maker quoting
- FIX Order Interface (FOI) for orders
- Top of Market (ToM) market data feed
- Clearing Trade Drop (CTD) for trade drops

The surge in electronic trading since 2000 has spurred more competition among older exchanges and startups seeking to draw trades through different pricing and rules for matching orders. MIAX will compete for volume in the growing options market with the ten established exchanges, including three run by Nasdaq OMX Group Inc., and two each from NYSE Euronext and CBOE Holdings Inc. in Chicago.
New England, New York and California power prices declined during the last month, driven by decreased cooling demand. Electricity prices in PJM stayed at the same level with almost unchanged electricity demand.

With steady fundamentals, electricity forwards did not change much during the last month. The long-term trend remained on the same level as the previous month.

Compared with the previous month, temperatures seasonally declined on the East and West Coasts.

CSAPR NOx and SO2 emissions allowances futures prices dropped dramatically toward the end of August after the U.S. District Court of Appeals vacated CSAPR. During the last month NOx and SO2 emissions allowances futures prices remained low.
Natural gas prices did not change much when compared with the previous month because of stable demand, high natural gas storage level and low hurricane activity. Production in the Gulf of Mexico was restored quickly after the closures in the beginning of September that occurred because of Hurricane Isaac. Some price variation continued to be held aloft by hot weather and a handful of pipeline constraints.

Benchmark Brent crude prices rose to nearly $110/Bbl and WTI prices moved above $95/Bbl a barrel during the last month due in part to, expectations that the Federal Reserve and the European Central Bank will provide further stimulus in the next few months, and increased tensions in the Middle East. Meanwhile, the rise of crude oil prices risks undercutting the intended stimulus effect. Moreover, increased oil prices stoke fear that surging energy costs could harm fragile economic growth. However, further oil price escalation is unlikely as global oil demand is expected to be muted over the next year because of a comfortable supply and high inventory levels, according to the International Energy Agency.
Argus Launches International Coking Coal Report

Global energy and commodity price reporting service Argus today launched a dedicated coking coal service. The new daily report, Argus Coking Coal International, covers Europe, Asia-Pacific and the Americas and offers prices for key export and consuming markets, and freight rates for the main trading routes.

Coking coal demand and international trade are growing rapidly, fuelled by industrial expansion in China and India in particular. A swaps market is beginning to emerge around the Australian export market, as coking coal producers, trading firms and steel manufacturers seek risk management tools.

Australia is a key exporter to steel mills in Asia-Pacific, Europe and South America. The main Asian demand centres are India, China and Japan. Argus assesses delivered prices to China, as well as covering the domestic market in dollars and yuan, because there can be key differences between prices at the ports and local levels, even after accounting for freight costs.

The fob Hampton Roads assessments (for high and low-volatile matter) represent another key export centre, on the US east coast. Colombia is an increasingly important exporter for Latin America and Argus launches the world’s first published index for Colombian coking coal export prices with the report. The report assesses the price of mid-volatile coal at export terminals along the Caribbean coast.

“We are glad to add coking coal to our range of energy and fertilizer reports. We have worked closely with the industry to develop a service that can meet the growing need for benchmark and risk management services,” Argus Media chairman and chief executive Adrian Binks said.

Request more information about Argus international coking coal coverage.

Or contact:

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Argus Launches North American Fertilizer Service

Houston, August 24, 2012

Global energy and commodity price reporting agency Argus has launched a new weekly fertilizer service, Argus FMB North American Fertilizer, focusing on the dynamic and evolving North American fertilizer markets. Through this service, Argus offers the most extensive fertilizer market price data of any publisher.

Argus FMB North American Fertilizer’s expansive coverage includes 56 assessments for fertilizer commodities, including ammonia, nitrogen, phosphate, potash, sulfur and sulfuric acid. The service is the first to offer freight assessments for northbound spot freight from New Orleans to 17 points along the Mississippi, Ohio, Illinois, Arkansas and Ohio rivers.

The new service is a welcome addition to the industry and arrives at a crucial moment. A record drought in the US has cut expected crop yields by close to 15pc, catalyzing the ongoing “food vs fuel” debate. Congressional progress on the 2012 Farm Bill has been stymied. This bill is supposed to provide crop insurance, drought relief and includes energy mandates related to the agricultural sector so the delays come at an inopportune moment. The growing political debate over the use of crops will have a significant impact on the North American fertilizer industry and could affect planned capacity additions.

By capitalizing on the wider global Argus portfolio, Argus FMB North American Fertilizer brings readers unparalleled context to market movements. The report incorporates relevant related market data including analysis of natural gas, ethanol and biofuels as well as crops.


Argus already publishes assessments for the international fertilizer markets in Argus FMB Ammonia, Argus FMB Nitrogen, Argus FMB Potash, Argus FMB Phosphates and Argus FMB Sulphur. The North American fertilizer report will draw on this expertise by highlighting key international events of significance to North America.

Request more information on Argus FMB North American Fertilizer

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ZEMA Adds More Data Sources

ZE is constantly expanding its data coverage. ZEMA’s flexible structure facilitates the collection of any electronically stored data from any source and at any frequency. A number of data reports have been added to ZEMA since the DataWatch August 2012 issue. They are:

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Shale Gas: More Complications for Price Forecast Developers.

Part III: The Demand Side of the Equation

By Olga Gorstenko

An unprecedented natural gas production revolution in the U.S. offers many benefits and at the same time poses many questions. We are presenting a series of articles that discuss how shale gas expansion adds to the uncertainty of natural gas price projections.

In our May 2012 DataWatch issue, we started the discussion by addressing factors affecting the unconventional gas supply. The export potential of natural gas in a liquefied form (liquefied natural gas - LNG) out of the U.S. to worldwide markets, as well as LNG price and trade dynamics, were covered in the In-Depth article in the July 2012 DataWatch release.

In this issue, we examine aspects that can impact the demand side of U.S. natural gas expansion, and ultimately add uncertainty to natural gas price projections.

Natural gas has traditionally served the needs of three major types of customers: manufacturers, power generators, and residents using gas for heating and cooking. The transportation industry now considers expanding the use of natural gas for power automotive vehicles; this creates another avenue for natural gas application.

Among all uses, those by residential customers are most predictable. Heating needs are affected largely by seasonal changes in weather and good weather forecasts make it easy to adjust gas supply; hence, the impact of heating on demand for natural gas can be foreseen with more certainty, especially in the long term. Meanwhile, increased use of natural gas by the power industry and manufacturers is driven primarily by economics: the price of gas. The price is not the only factor affecting decisions on expanding its use: power utilities have to consider environmental regulations and other power resources in their generation portfolio, and manufacturers ponder over sustainability of expanding production capacity.

Manufacturing

Manufacturers rely heavily on fossil fuels to be used as fuel or feedstock. Currently, low natural gas prices are good news for steelmakers, producers of chemicals, plastics, and fertilizers. In most processes, natural gas can be used interchangeably with oil or coal. When plants can switch between these fuels, at a time of low prices, natural gas becomes a fuel of choice displacing other fossils.

Steelmakers use gas as fuel primarily to fire blast and non-blast furnaces. Switching from coal to natural gas can result in production cost saving of 1-2%. Steel plants have already started replacing coal with natural gas to keep furnaces running. As the last several years have marked a rather dark time for steelmakers, such a turn of events is creating a good incentive, not only to use natural gas as a fuel to improve current financial statements, but also to expand production capacities for longer term benefits.

Natural gas is used as a base feedstock by the chemical industry: more than 80% of chemicals are derived from it. Some fertilizers, such as ammonia-based products, attribute 90% of production cost to natural gas. As a feedstock, natural gas can be switched with crude oil. Users are indifferent to the source of these two fuels when crude is at parity with the price of natural gas in heating equivalent, which happens when the ratio between two prices is maintained at around 7:1. With oil prices floating around $100/Bbl and natural gas not even reaching $4/MMBtu over an extended period of time, no deep financial analysis is needed to see that such a price relation makes natural gas an undisputed favourite.

Increasing profits make manufacturers rise above the simple joy from healthy financial statements; nowadays, consideration is being given to expanding production capacities. Lower natural gas prices have been motivating manufacturers to reconsider what became a tendency of closing operations or moving to countries with lower production and labour costs.

Only several years ago, factories, especially in the chemical and fertilizer sectors, joined an exodus to Latin America and Asia. About 40% of fertilizer production capacity in the U.S. closed down in the first decade of 2000. Now, it seems like we might find ourselves on the brink of a reverse migration as some investors have started demonstrating interest in building more domestic industrial capacity.

- An ammonia facility of 366,000 tons/year of LSB Industries reopened in Pryor, Oklahoma, in 2009. Two more units with projected capacity of 60,000 tons/year at Pryor are under regulatory review.
- Orascom Construction reopened a 250,000 tons/year ammonia plant in Beaumont, Texas.
- A 525,000 tons/year plant in Geismar, Louisiana, by PCS Corporation, is being considered for restarting. The corporation is also reviewing expansion of plants in Lima, Ohio, and Augusta, Georgia.
- CF Industries has revived parts of its Donaldsonville, Louisiana, complex capable of producing more than three million tons of ammonia per year. The company also announced investing up to $60 million to complete an expansion of this facility and $1.5 billion over the next four years to grow its projects in ammonia and other products.
- Methanex Corp. announced plans to move its methanol plant from Chile to Louisiana.
- Santana Textiles LLC decided to build a denim plant in Texas instead of its originally planned destination, Mexico.

Encouraged by government support of shale gas expansion, manufacturers are looking forward to sustained growth in their profit margins. Meanwhile, not everybody in the manufacturing community is on the same playing field. Many remain doubtful that the current trend of low natural gas prices is sustainable. Manufacturers are facing a dilemma: should they capitalize on the current natural gas oversupply and revitalize the abandoned plants in the U.S. (and in many cases move plants back home from international locations), or should they...
Shale Gas: More Complications for Price Forecast Developers.
Part III: The Demand Side of the Equation

remain on the cautious side and retain what has been very stable, at least from the perspective of costs. Their decision will be based on expectations of whether current low gas prices will be sustained over an extended period of time, and what factors might tilt the current shortage of domestic demand and push prices up.

Disagreement among industrials comes as no surprise - the same events often evoke dissimilar views by different parties, leading to a variety of conclusions and courses of action. Thus, some believe that a pending increase in gas exports will lead to growth in the domestic price, as a result of equalization with prices in foreign markets (discussed in more details in the July 2012 In-Depth article). Such an increase will diminish benefits for U.S. manufacturers. Those who are certain of this course of events call for government to set restrictions on natural gas exports. Others believe that government interference in the open market can be detrimental, not only from the perspective of creating a case of government meddling with free market forces, but also because a reduction in overseas LNG deliveries will affect expense accounts in their financial statements and make gas producers unhappy, which will lead to potential cuts in gas production and consequently domestic price increase.

The current state of the market is very favourable to those with gas as a major cost affecting their income statements; however, for longer term investments, the quality of natural gas price projections is of paramount importance. Multiple uncertainties make it very difficult to arrive at a definite conclusion. A lack of clarity creates a looped logic; investment decisions are based on expectations about future natural gas prices, which in their turn are affected by demand being a direct derivative of these decisions.

Power Generation

The power sector is affected by natural gas prices more than any other sector. While being a major influence on the industry as a whole, the impact of prices differs for different types of generators. No doubt, generators that run on natural gas are the first in line to learn the difference. A rather large number of this type of generator, compared to other types of generators, have been built since the end of the 90’s as a result of deregulation, the relative ease of construction, and of a fast track approval process. Since then, a somewhat excessive number of these generators have been used mostly to serve peak hours and to balance real-time fluctuations in demand for electricity and support generators with less flexible operation, especially renewables.

Intermittency of wind and solar powered generators requires a support of fast-responding power producing units to maintain stability of the power grid and reliability of transmitted electricity. Natural gas-fired units present the best solution. A consistently growing base of renewable generation indirectly brings more and more these generators online and this number will only increase as requirements of regional renewable portfolio standards get tighter.

With low fuel cost, utilities are using more of the natural gas power plants in their generation portfolios and use them more frequently to serve not only as peakers but as baseload-serving units. Fuel cost is not the only driver of such an increase. Their capital costs are significantly lower than those of nuclear plants and the growing burden of environmental compliance can be a decisive factor when choosing between natural gas-fired generation and those run on coal.

Nuclear power is not a happy player. Some say that the impact shale gas has had on the nuclear industry is almost equivalent to that of the Fukushima incident. Less costly and less risky natural gas-fired power generation, as an alternative to nuclear technology, is offering power utilities better options. However, some believe that over the long-term, at least over the 50-year cycle of their life span, nuclear generators will prove to be more rational for utilities to have in their generation portfolios for two reasons. First, long-term cost expectations are more stable for nuclear units, given a sustained history of high fluctuation of gas prices. Second, even though it is polluting less than coal, natural gas still emits more pollutants than nuclear power.

Southern Co. and Scana Corp. took on this perspective in proceeding with the construction of new nuclear power plants. And, they propose expansion of existing facilities. Southern’s plan to add two new nuclear units at Power’s Plant Vogtle, near Waynesboro, Georgia, was approved by the Nuclear Regulatory Commission (NRC) on February 9, 2012. Scana proposed to build two units at the V.C. Summer nuclear station site near Jenkinson, South Carolina, which was granted by the NRC with Combined Construction and Operating Licenses on March 30, 2012. Both approvals pave the way for construction of nuclear power generation that has not seen any addition in the U.S. over the last 30 years.

The NRC is currently reviewing applications for nearly twenty nuclear units. Since the review process takes at least four years, utilities will not start construction any time soon. The permits, if granted by the commission, are viewed by utilities as options to be exercised in case natural gas economics change.

Coal power generators, after dominating the power generation base in the U.S. for decades, are facing very difficult times. Being cheap, abundant, and domestic, they once had an overwhelming advantage over other power generation resources. Environmental concerns and deteriorating air quality take precedence over low electricity prices and the many jobs created in mining and transportation.

According to the EPA, U.S. natural gas-fired generation produces half as much CO2, less than a third as much NOx, and 1% as much SO2 of the average air emissions from coal-fired generation. Coal generators are losing their competitiveness in their capacity to comply with environmental regulation requirements that are becoming more rigorous. This is rather unfortunate for the coal industry, especially given the fact that coal prices have remained stable over the last couple years, as shown in Figure 1, and are expected to maintain low levels in the future, as shown in the forward curves in Figure 2.

The current state of the market is very favourable to those with gas as a major cost affecting their income statements; however, for longer term investments, the quality of natural gas price projections is of paramount importance. Multiple uncertainties make it very difficult to arrive at a definite conclusion. A lack of clarity creates a looped logic; investment decisions are based on expectations about future natural gas prices, which in their turn are affected by demand being a direct derivative of these decisions.

Power Generation

The power sector is affected by natural gas prices more than any other sector. While being a major influence on the industry as a whole, the impact of prices differs for different types of generators. No doubt, generators that run on natural gas are the first in line to learn the difference. A rather large number of this type of generator, compared to other types of generators, have been built since the end of the 90’s as a result of deregulation, the relative ease of construction, and of a fast track approval process. Since then, a somewhat excessive number of these generators have been used mostly to serve peak hours and to balance real-time fluctuations in demand for electricity and support generators with less flexible operation, especially renewables.

Inte...
The EPA has put in a significant amount of effort to reduce damage to the environment from burning fossil-fuel-run power generation, especially those fueled by coal. The Cross-State Air Pollution Rule (CSAPR) requiring reduction of NOx emission by 54% and SO2 by 73% from 2005 levels, finalized by EPA in July 2011, has been gone through a series of challenges in courts and requests to delay compliance deadlines. Finally, coal-fueled power generators got a break in August 2012 when the U.S. Court of Appeals for the District of Columbia struck down CSAPR. However, knowing the EPA’s perseverance, we will likely see another version of the rule at some point in the future; but it is yet too early to guess when and with what breadth.

On March 27, 2012, EPA proposed a Carbon Pollution Standard for New Power Plants that will apply to fossil-fuel-fired boilers, integrated gasification combined cycle (IGCC) units and stationary combined cycle turbine units that are larger than 25 MW. According to this rule, new coal or petroleum coke-fired units should implement carbon capture and sequestration (CCS). The units can emit 1000 lbs of CO2 per MWh. A generator is permitted to emit more CO2 in the early years as it optimizes the controls over time. While the EPA continues reviewing the proposal, the industry is concerned about whether the pending rule will actually be implemented. With natural gas prices sinking to the lowest level in ten years, there is little incentive for utilities to even consider new plants with the costs weighted down by CCS, especially when the existing plants, coal or gas-fired, are exempt from the requirements.

Even with delayed implementation, compliance requirements are becoming stricter, and upgrades to emission controls so to be in compliance can be prohibitively costly. In wake of mounting costs of environmental compliance, some plants have chosen to shut down their operations.

According to a FERC report, the suite of EPA regulations on electric utility generators could shut down up to 81,000 MW of coal-fired power generation.

The American Electric Power Co., the nation’s largest producer of power from coal, is closing 5 of its 21 coal-powered generators. Dominion Virginia Power announced that it would convert the oldest coal-fired plant, Bremo Power Station, to run on natural gas by 2013. The company has already closed one merchant coal power plant, is planning to retire three old coal plants by 2015 and is converting three small stations to biomass by 2014. Black Hills Power will suspend operations of two coal stations in Colorado and South Dakota by the end of 2012, and another by 2014. To account for the lost capacity, the company is building a natural gas-fired station in Wyoming that will come online in 2014. The companies cited the cost of retrofitting equipment for environmental compliance as the main reason for retirement and conversion.

FirstEnergy Corp. is planning to reduce the number of hours when its coal power station in Ohio, Sammis, is online. After retrofitting the plant with pollution controls for almost $2 billion, the operator cannot compete with the gas-fired units in cost of production.

In the Northwest, low natural gas prices are coupled with the cost of environmental compliance and wholesale electricity prices that are heavily suppressed by government-subsidized wind-powered generation. This combination of factors leaves coal-power generation with almost no chance for survival. PPL Montana announced retirement of a Corette power plant in Montana by 2015, and PGE is closing the Boardman plant in Oregon by 2020. Also in 2020, TransAlta will start its staged retirement of Centralia in Washington state.

Carbon capture technologies as a solution to the coal generators emissions, even though supported by governmental initiatives, do not seem to be getting much traction.

Even with government funding, those few CCS projects targeting coal power generation that are in development in the U.S., are facing difficult times. Out of ten large-scale power plant CCS projects in the U.S., four have been cancelled. Because of the high price tag, ConocoPhillips did not proceed to the second phase of the $4.1 billion Sweeny Gasification Project in Texas, which was expected to support operations of the 680 MW power plant. Tenaska’s Taylorville Energy Center in Illinois, originally intended to cook coal into methane, capture CO2 through CCS and use the methane for 602 MW of power production, has proven to be prohibitively expensive (more than $3 billion), and has been reconsidering plans to abandon the CCS element and retain the gas-fuel technology only for a fraction of the originally estimated total cost. The coal portion of the project is being deferred until gas synthetically derived from coal becomes significantly cheaper than natural gas. The first version of FutureGen, a US government-sponsored project originally announced in 2003, was rejected in 2008 on the basis of high costs leading to the DoE retrieving funding. The $1.3 billion FutureGen 2.0 that was announced in 2010 and expected to start in 2015, is already being delayed until 2017.

The Government of Alberta allocated $2 billion to four large-scale CCS projects in 2008 and had one project, Pioneer, cancelled in 2012, which revised Alberta’s investment in CCS to $1.55 billion.

However, not all utilities are abandoning the coal ships. Quite frequently, power plants have been strategically placed near coal mining sources, which reduce risks associated with transportation and storage. Mine-mouth operation allows the plant to capitalize on the convenience of location and lower fuel costs. Those operators who decide to convert some of the coal units to burn natural gas instead of coal usually choose a reversible conversion, which allows them to switch back to coal when natural gas prices rise. As in the case of nuclear fuel, coal prices are stable throughout the life of supply contracts, which are typically long-term, while natural gas contracts are usually linked to the spot markets. Thus, PacifiCorp is converting its Naughton, Wyoming, coal-fired plant to be run on gas to lower its environmental compliance cost. A similar approach is being considered by the utility for Jim Bridges coal units. The conversion of just a part of the plant to gas-fuelled generator reduces fuel risk; in the case of natural gas price increases, coal might just enjoy a comeback.

Gas will remain the default fuel for power generation as long as gas prices remain low. However, cognizant of the history of natural gas price movements, many power producers remain sceptical that natural gas will sustain these levels over the long term. There is always a chance that it will spike making coal, even with all that burden of regulatory compliance, cheaper. On the other hand, if or when federal laws restricting emissions are passed, it will have an impact on all fossil fuel generators. Even though natural gas does not emit as much pollution as coal, it does hold second place after coal in volume of emissions. This will make nuclear technology, which emits almost nothing, more attractive than natural gas.

Another concern is dependence on a transportation infrastructure. A relatively rigid system of gas pipelines with very long lead times for construction and expansion does not allow for any flexibility in cases of transmission disruptions and restricted capacity when demand exceeds supply. These incidents are not just a theory; they have already occurred during winter cold snaps, and their frequency increases. These occurrences even prompted FERC to take on a new initiative and to develop a coordination policy for electricity and natural gas sectors to resolve transportation constraints at times of emergencies.

Similar to manufacturers, some power utilities are not confident about the longevity of the current trend in natural gas prices. Many are hesitant to make bold moves in investing in gas-fired generators on a larger scale. Some participants believe that in the long term, prices of other fuels, such as coal and nuclear, will remain lower than natural gas given the historic profile of these prices. Similar to manufacturing, this creates a causal loop logic in the supply/demand balance.

**Natural Gas Vehicles (NGV)**

Transportation is another area that the natural gas glut might affect. High oil prices, a natural gas production boom and government support make this fuel option very attractive and create a potential to change the landscape of the industry. Aside from being cheaper in heating equivalent at the current state of markets, gas emits about 25%-30% less CO2 than petroleum or diesel.

Natural gas can be used in several ways to power engines. Compressed natural gas (CNG) and LNG are a direct form of natural gas used as a fuel. Indirect approaches are also possible when gas is converted to liquid (GTL) for engines or power for electric vehicles. GTL requires heat and chemistry to convert gas into liquid, like diesel or kerosene.
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Most NGVs introduced to the market have been targeting industrial, construction and other heavy-duty applications. Ford has been manufacturing NGVs for the last three years. Chrysler just started manufacturing the CNG Ram 2500 heavy duty pickup. The vehicle has dual fuelling options, CNG, which is used as the primary fuel alternates automatically with gasoline. GM is planning to start releasing two pickups in late 2012, Chevrolet Silverado and GMC Sierra 2500 HD, both will run on CNG and petroleum. The only light NGV version is offered by Honda; its Civic has been produced over the last 14 years and sold primarily as a fleet car.

Many municipalities operate NGV bus fleets. Dallas-Fort worth airport has a fleet of maintenance vehicles run on gas. AT&T is planning to build the largest CNG vehicle fleet.

While the prospect of NGV seems promising and has support from environmentalists, this technology is incorporated in less than 1% of all vehicles. The application of natural gas as a transportation fuel is restricted (3% of produced natural gas is used by transportation), and there are many issues associated with a gas-fuelled vehicle.

The major stumbling blocks in the way of NGV expansion have to do with technological aspects, costs, and refuelling infrastructure. CNG has to be stored under pressure, which makes the fuel tank significantly larger than that used for gasoline. Vehicles have to be retrofitted to accommodate gas as a fuel and this is rather expensive. Vehicle retrofitting increases the cost by $20k in the case of Ram and in the Civic by $10k.

The fuelling infrastructure is limited as shown in Figure 3; that’s why the use of NGV has been mainly restricted to centralized fleets, such as trucks, buses and heavy duty vehicles. More than half of the CNG fuel stations are privately owned.

One of the solutions to resolve the refuelling conundrum is proposed by Clean Energy Fuels, an initiative by T. Boone Pickens, which promises to establish NG fuelling options at truck stops nation-wide. The hope that this sector will grow rests primarily on government incentives. A new tax incentive is being considered by the Obama administration to support the use of natural gas in commercial vehicles and to build up the re-fuelling infrastructure. If approved by Congress, it might just do the trick by lowering the cost of production and increasing demand. The State Natural Gas Act of 2012, currently being reviewed in the senate, promotes the use of natural gas as a transportation fuel, as well as public and private investment in natural gas vehicles and the associated transportation infrastructure. The proposed legislature covers the whole cycle of NGV, from the production of vehicles to their purchase and fuel costs. The act calls for $100 million in grants to build a refuelling infrastructure, and increase the existing $7,500 tax credit to $10,000 for NG-run automobiles and heavy-duty and medium vehicles through 2016.

As in most cases of government subsidies, there are unhappy and happy parties. No doubt, not all taxpayers are pleased with the prospect of supporting this initiative. Manufacturers, electricity and natural gas users are seen as losing parties in this arrangement, with money being directed towards expansion of only one sector, thus leading to a distorted increase in demand. This might just impact competitiveness and put a cost pressure on manufacturing and electricity industries.

Conclusion

Ever since the U.S. natural gas industry was opened to competition, high volatility of natural gas prices has remained steady. Unexpected natural gas price fluctuations have been caused mostly by weather, natural disasters, and transportation disruptions. At the same time, a closed system of pipelines with known capacities and demand projections that are developed and updated on an ongoing basis by government agencies have been leaving not much room for guesswork. Still, with not so many inputs, price forecasts have proven to be a difficult task; forward curves developed on exchange-traded futures have not been following spot prices accurately. Analysts, risk managers, and decision makers found it difficult to predict market movements.

Now we are facing even more challenging times. An increase in natural gas supplies, boosted by expansion of shale plays exploration, poses more questions and creates more uncertainty for those businesses and industries that rely on natural gas for their operations. In some cases uncertainty contributes to changes in supply of shale gas, and in other cases it affects demand for the growing volume of this fuel.

The U.S. government sees natural gas expansion from shale plays as a solution for achieving energy independence that it has sought for 40 years. However, government support alone will not determine the future of the natural gas supply, the need for more natural gas is affected by many factors. The major driver of accelerating demand is the degree to which it can be exported in a liquefied form, LNG. This venture, so attractive for gas producers, faces growing opposition from those who believe that exports will exhaust supplies sooner and push domestic prices up. Calls for imposing government control over volumes of LNG exports are getting louder in Congress. If government control is imposed, it will have a dampening effect on gas production.

Aside from potential restrictions imposed on gas supply, the global nature of LNG has its own constrains and concerns. Given that the primary target buyers in Asia are remote markets, U.S. natural gas will remain competitive globally if its production is cost efficient. Global prices, unpredictable political events and shifts in LNG trading patterns have to be examined closely to avoid over or under production, as well as to ensure that trade partnerships remain profitable. As well, the cost of production, which encompasses several components (delivery, liquefaction, shipping, storage and regasification), infrastructure and the rate at which LNG terminals
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are being constructed also affect the volume of LNG exports.

Another source of growing demand for natural gas is its use as an alternative fuel by the transportation industry.

The popularity of vehicles fueled by natural gas in its condensed or liquefied form is growing; however, costs for these vehicles remain high. Besides, the expansion of natural gas-fueled vehicles is restricted by a limited infrastructure of filling stations. An inherently high cost of retrofitting, as well as a lack filling infrastructure, can be offset by government subsidies. Moreover, the use of natural gas as a transportation fuel is primarily driven by the cost of petroleum, which currently remains high. But, will the oil stay expensive forever? Crude oil price projections, with multiple factors and shortage of publicly available information, are a topic for a separate analytical research.

Some manufacturers and power industry representatives are looking at cheap gas as a panacea; however, a long history of price volatility keeps many of them hesitant to expand production capacities fueled by natural gas.

Shale gas production itself faces constraints and uncertainties. Reserve estimations prepared by different parties, government and industry, differ dramatically and have been questioned and criticized by opposing sides. As uncertainty remains about actual reserves, the cost and rate of production can be affected by applied technologies and cost of compliance with regulations on fracturing.

To cap it all, environmental regulations, those in effect and in the making, as well as those being considered, will affect both sides of the equation. Depending on which are approved and implemented, the power generation mix, natural gas recovery, and use of natural gas as an alternative fuel can be altered dramatically and shifting input parameters into unknown territory.

It is not so easy to predict the expanse and direction of the future of natural gas use given the interrelationship of future price movements by market participants, investments in natural gas-supported sectors, and government subsidies for the industry. For now, these are the factors arising from shale gas expansion that have or might have an impact on natural gas prices.

Figure 4: Drivers Affecting Natural Gas Prices Arising from Shale Gas Expansion

About the Author

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Olga has over 15 years of experience in the energy, business and trade sectors. As a member of the ZE team, she has conducted qualitative and quantitative research and analysis, project evaluation and strategic planning for the energy and commodities industry. Her expertise focuses on regulatory support and market monitoring.

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