Market Dynamics: How Trend Analysis Can Support Investment Decisions (The Case of Wind Power Generators in the Pacific Northwest)

The Bonneville Power Administration (BPA) is facing a dilemma on how to integrate power produced by wind farms into power units dispatch list at times of low demand and high hydro levels. This headache could have been averted if a thorough analysis would have been conducted by wind developers before investing in this region.
### Editorial

Nadex applies for financial instruments reflecting a public sentiment on the U.S. 2012 Presidential elections outcome. NERC releases a report confirming the interdependence between natural gas and power sectors and recommends establishing better coordination between them. Quebec approves the first carbon cap-and-trade program in Canada.

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- The Western Interconnection Gets a New Online Platform
- CME Changes Names of Cinergy Hub MISO Contracts
- NYISO Delays Virtual Nodal Trading Until 2013
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- EEX Platform Extends to Data for Czech Republic
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- CME Introduces More NY ULSD Products
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### In Depth


The Bonneville Power Administration (BPA) is facing a dilemma on how to integrate power produced by wind farms into power units dispatch list at times of low demand and high hydro levels. This headache could have been averted if a thorough analysis would have been conducted by wind developers before investing in this region.
Editor’s letter

For most of this month, the prevailing news was about continuing trends of emission products, emerging markets, and the North American power markets. Probably, the only surprise that appeared was the attempt by Nadex to formalize bidding on the outcome of the 2012 federal elections in the U.S. The exchange applied to the Commodity Futures Trading Commission (CFTC) for the approval of options to be traded on its platform. Similar markets based on the U.S. election outcomes have been offered for unregulated offshore trading platforms. Provided Nadex’s request is granted by CFTC within the regular 90-day approval period, the U.S. public will get the first exchange-traded instrument reflecting an aggregated public sentiment on election outcome expectations. These products will be traded under federal oversight on popular markets that have existed in an unregulated environment in the U.S. and overseas for many years. If successful, the contracts will have a very high chance of becoming a rival alternative to public opinion polls.

A few announcements, even though not that exciting, but rather important for regional power markets, were logical resolutions of the long-term movement. With Duke Energy moving from MISO to PJM and dropping liquidity of Cinergy hub, all references to the Cinergy trading hub in MISO have been replaced with Indiana hub. CME is just one of many data providers and exchanges that are moving away from including Cinergy hub in their list of offerings and replacing it with Indiana hub data points. The change is unlikely to create much market disturbance as price patterns at both hubs have been following the same trend line with very small differentials.

A report studying interdependence of natural gas and electricity sectors in the U.S. was finally released by NERC. The need for the study was prompted by a growing need to develop a coordinated approach for the two industries. The most noticeable impact on both systems arises during unusual weather events. Thus, the cold snap during the 2011 winter in the Southwest caused power plant outages and gas production curtailments. The conclusion of the reports was easily predicted: yes, the operations of two systems have to be organized through improved communications, additional storage and transmission options. We have yet to see if this will bring more data points and some sort of aggregated data reports.

GHG reduction programs had a chance to celebrate another addition to the family: Quebec approved a carbon cap-and-trade program. As a member of the Western Climate Initiative (WCI), the Canadian province is the second entity to launch the allowance trading system. Following the state of California, which adopted its regulation on October 20, 2011, compliance in Quebec will commence on January 1, 2013. The next step will be linking systems of WCI members together in a comprehensive climate program. Creating a single market for Quebec and California implies using the same compliance instruments, including those traded on secondary markets. We are waiting for answers to how can this united market can be justified when it is so geographically remote? Does it mean that this model will become the precursor to the national market? On a side note, the U.S. Environmental Protection Agency (EPA) boasted the first direct reporting by emitters through the National GHG Reporting program.

A good deal of confusion came about from the U.S. SO2 and NOx emission reduction program. The newly approved Cross-State Air Pollution Rule (CSAPR) was suspended because it is viewed as having put too much pressure on the national economy that is in a rather fragile state. Shutting down the plants that can’t cope with the new regulation would cost hundreds of jobs and put more pressure on the economy. While it’s not exactly clear what the new rule will look like, GreenX delisted the CSAPR futures with the March 2012 delivery.

Emerging markets continue rising. Most reports talk about expansion of the products targeting emerging economies. One example is the launch of Platts two new assessments targeting crude oil deliveries from the Middle East to China and India. CBOE commences trading futures on emerging markets volatility index. Two announcements, however, deserve our special attention as both of them might lead to the formation of new marketplaces: electricity in Japan and energy in the Middle East. Both regions will have to deal with many obstacles in their endeavors given the history of closed economies. Creation of a centralized, efficient energy market in the Middle East will probably be more challenging, given high reliance on government subsidies and exclusive dominance by national energy companies.

Olga Gorstenko
APX-ENDEX Provides Free Access to Power UK Spot RPD Index

Effective January 1, 2012, APX-ENDEX provides free access to its Power UK continuous market Reference Price Data (RPD) index. The data includes the end-of-day results for two separate data sets consisting of half-hour blocks, half-hour, two hour and four hour blocks. The historical data is available for the past ten years.

This enhancement improves transparency by making these reference prices. APX-ENDEX Power UK continuous market allows the parties to balance preceding the cash-out mechanism for imbalances.

APX-ENDEX noted that the reduction of the clip size on the continuous market from 1.0 MW to 0.1 MW in November (see December 2011 ZE DataWatch) has lowered the barriers to entry, which was reflected in the trading results.

The Western Interconnection Gets a New Online Platform

The Joint Initiative, a consortium of western power entities, implemented a trading platform, WebExchange, which allows traders to see the energy market in real-time. The tool replaces decades of practice in making deals over the phone.

Power marketers now can buy, sell and transmit energy across several transmission systems in 30-minute increments. This ensures a smooth integration of wind energy in the Western Interconnection. As WebExchange can handle power transactions as short as one minute, it’s possible that smaller scheduling increments will come along at some later time.

WebExchange participants post offers when they want to sell energy, and bids when they want to buy. The system provides information about available transmission capacity and marks the cheapest available path, and allows posting if pricing is negotiable. All bids and offers are visible to every user.

The Bonneville Power Administration (BPA), the largest power market in the region, stated that the new platform could evolve into a regional balancing capacity market, giving BPA transmission customers access to non-federal balancing resources and potentially complementing a regional energy imbalance market.

CME Changes Names of Cinergy Hub MISO Contracts

With Duke Energy moving from MISO to PJM and dropping liquidity of Cinergy hub, all references to Cinergy trading hub in MISO have been replaced with Indiana hub. Data providers and exchanges are moving away from including Cinergy hub in their list of offerings and are replacing it with Indiana hub data points.

CME announced that effective January 2, 2012, the exchange replaces the names of Cinergy hub contracts for Midwest ISO that are impacted by the trend:

<table>
<thead>
<tr>
<th>CME Code</th>
<th>Old Product Name</th>
<th>New Product Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>K2</td>
<td>Midwest Cinergy Hub 5 MW Off Peak Calendar-Month Day Ahead Swap Futures</td>
<td>Midwest ISO Indiana Hub (formerly Cinergy Hub) 5 MW Off Peak Calendar-Month Day Ahead Swap Futures</td>
</tr>
<tr>
<td>H4</td>
<td>Midwest Cinergy Hub 5 MW Off-Peak Calendar-Month Real-Time Swap Futures</td>
<td>Midwest ISO Indiana Hub (formerly Cinergy Hub) 5 MW Off-Peak Calendar-Month Real-Time Swap Futures</td>
</tr>
<tr>
<td>H5</td>
<td>Midwest Cinergy Hub 5 MW Peak Calendar-Month Day-Ahead Swap Futures</td>
<td>Midwest ISO Indiana Hub (formerly Cinergy Hub) 5 MW Peak Calendar-Month Day-Ahead Swap Futures</td>
</tr>
<tr>
<td>EM</td>
<td>Midwest Cinergy Hub Peak Calendar-Month LMP Swap Futures</td>
<td>Midwest ISO Indiana Hub (formerly Cinergy Hub) Peak Calendar-Month LMP Swap Futures</td>
</tr>
<tr>
<td>H3</td>
<td>Midwest Cinergy Hub 5 MW Peak Calendar-Month Real-Time Swap Futures</td>
<td>Midwest ISO Indiana Hub (formerly Cinergy Hub) 5 MW Peak Calendar-Month Real-Time Swap Futures</td>
</tr>
<tr>
<td>EJ</td>
<td>Midwest Cinergy Hub Off-Peak LMP Swap Futures</td>
<td>Midwest ISO Indiana Hub (formerly Cinergy Hub) Off-Peak LMP Swap Futures</td>
</tr>
<tr>
<td>CC</td>
<td>Midwest Cinergy Hub Calendar-Day Peak LMP Swap Futures</td>
<td>Midwest ISO Indiana Hub (formerly Cinergy Hub) Calendar-Day Peak LMP Swap Futures</td>
</tr>
<tr>
<td>OY</td>
<td>Midwest Cinergy Hub Peak Calendar-Month LMP Swap Option</td>
<td>Midwest ISO Indiana Hub (formerly Cinergy Hub) Peak Calendar-Month LMP Swap Option</td>
</tr>
<tr>
<td>OEM</td>
<td>Midwest Cinergy Hub Peak Option on Calendar Futures Strip</td>
<td>Midwest ISO Indiana Hub (formerly Cinergy Hub) Peak Option on Calendar Futures Strip</td>
</tr>
</tbody>
</table>

At the same time, the price difference between Cinergy and Indiana hubs is negligible as shown in the figure below, which makes the transition warranted.
NYISO Delays Virtual Nodal Trading Until 2013

Disaggregated virtual trading in NYISO that was originally expected to be implemented in the NYISO footprint in 2012 was delayed until 2013.

Currently, market participants can bid at the zonal level in New York. Nodal trading has been implemented in other markets, like MISO, PJM and ISO-NE. NYISO has been considering introducing a more granular level of power trading since 2010, but kept delaying its introduction. It is expected that the implementation will start with New York City. As the system proves to be stable, the nodal system will expand to the rest of NYISO.

NERC Confirms the Need for Power and Gas Coordination

NERC accepted the fact that the difference in structure between two sectors (the electric industry is functionally bundled while the natural gas industry is structurally unbundled) makes long-term planning and communication important to operating successfully in different regulatory frameworks.

However, the following strategies can help mitigate and manage potential risks to reliability:

• Natural gas storage solutions can diminish the interdependence issues with shale gas playing a significant role in it
• Gas pipeline expansion to accommodate growth of gas-fired generation and support of normal and emergency operations by creating alternate pipelines, providing access to multiple natural gas basins

In its report, the 2011 Special Reliability Assessment: A Primer of the Natural Gas and Electric Power Interdependency in the United States, the North American Electric Reliability Corporation (NERC) identified the increasing dependence on natural gas for power generation, which can amplify the bulk power system’s exposure to interruptions in natural gas supply and delivery.

EEX Platform Extends to Data for Czech Republic in 2012

EEX extends the platform Transparency in Energy Markets (www.transparency.eex.com) in its voluntary section to data from the Czech Republic. The first data publication is expected to occur in early 2012. Data coverage will stretch to 60% of the total installed power plant capacity in the Czech control area.

Transparency in Energy Markets is the platform for energy market data publishing market-relevant generation and consumption data. Currently, 40 German and Austrian companies submit data directly to the platform.

CEZ plans to report data according to the existing standards for installed capacities of power plants in the Czech Republic, available capacities, and generation volumes of the previous day. Information on planned and unscheduled outages for all of Czech Republic’s generating units will be published immediately by CEZ as soon as the information is available.

UK Electricity Market Reform Update Sets Capacity Market Mechanism

On December 15, 2011, the UK Department of Energy and Climate Change (DECC) published a Technical Update¹ to a White Paper 2011 on the future development of the UK electricity industry future.

Reforms to the UK’s electricity market will drive low carbon investment and boost energy security while keeping the costs for consumers down. As the UK faces an energy investment challenge with a fifth of generating capacity coming to the end of its life in the next ten years, electricity demand is projected to double. This will create difficulties in maintaining a 10-15% reserve margin.

The Technical Update is focused mostly on the capacity markets and sets out the Government’s decision to legislate for a capacity mechanism in the form of a Capacity Market administered by the system operator, National Grid. According to the new mechanism, the government will set the amount of capacity to be contracted at auction, and all existing and future generators will be invited to bid. Auctions will be held four years ahead of time to allow time for new plants to be built. DECC is yet to decide how the capacity of plants yet to be built is to be treated in the auction compared to existing capacity. Wind turbines are also being considered for inclusion in the auctions; however, conditions of their participation are yet to be determined.

Capacity contracts awarded at the auction will be tradable on a secondary market.

The capacity mechanism and other parts of the electricity market reform will be presented by DECC to parliament in May 2012. It hopes to have secondary legislation with further details implemented in 2013, and aims to publish its first so-called delivery plan, which will set out how much capacity the UK needs that year.

¹For PDF version of Technical Update, click here

Japan to Deregulate Power Market

A government-appointed panel of experts recommended deregulation of electrical power production and distribution to outside competition.

The recommendation resulted from Japan’s recent major review of the industry that is expected to assist with dealing with chronic power shortages since the March 2011 nuclear disaster. The panel called for the following changes:

• Equal access to transmission networks to promote new entries in the power production business
• More flexible pricing structures to allow utilities to charge higher rates whenever there is increased demand
• Freeing up the market for power supply to the household sector
• Encouraging existing regional monopolies to compete in each other’s markets

The Japanese government will craft a bill to liberalize the market currently dominated by a few regional monopolies.
CME Launches More Brent Products


<table>
<thead>
<tr>
<th>CME Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL</td>
<td>Crude Oil vs. NYMEX Brent 25-Day (Platts) Intercommodity Spread</td>
</tr>
<tr>
<td>BZ</td>
<td>Brent Crude Oil Last Day Financial vs. NYMEX Brent 25-Day (Platts) Intercommodity Spread</td>
</tr>
<tr>
<td>NBZ</td>
<td>RBOB Gasoline vs. NYMEX Brent 25-Day (Platts) Crack Spread</td>
</tr>
</tbody>
</table>

CME Expands a Set of Offerings of NY ULSD Products

On January 22, 2012, NYMEX started listing NY ultra low sulfur diesel financial futures and corresponding American-style and European-style option contracts for electronic trading on CME Globex for clearing through CME ClearPort. 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>ULS</td>
<td>NY ULSD Financial Futures</td>
</tr>
<tr>
<td>ULO</td>
<td>NY ULSD Option</td>
</tr>
<tr>
<td>ULE</td>
<td>NY ULSD European Option</td>
</tr>
</tbody>
</table>

Platts Proposes Persian Gulf-WCI Dirty Tanker Assessments

On December 23, 2011, Platts announced that it would appraise 265K mt crude carrier rates from the Persian Gulf to West Coast India. This cargo is set to pass the following ports in the Persian Gulf: Ras Tanura in Saudi Arabia, Mina Al Ahmadi in Kuwait and Kharg Island in Iran; the discharge ports will be Sikka, Vadinar and Mundra ports in Gujarat, India.

The assessments for the cargo will be published on March 1, 2012, in Platts Dirt Tankwire and Platts Global.

Although speculation about war in the Gulf and threats to shut down the Strait of Hormuz by the Iranian armed forces have increased the risk to operate in the region and make this route less attractive, there are no other viable alternatives to transfer energy and commodities to India from the region. Needless to say, managing such risk requires a lot of data from subject matter experts and regional analysts.

CME Launches Crude Oil Financial and RBOB Gasoline Financial Futures

Effective January 22, 2012, Crude Oil Financial and RBOB Gasoline Financial futures are listed for trading on CME Globex in addition to the existing similar contract shown in the figure below. These contacts are listed with NYMEX.

<table>
<thead>
<tr>
<th>CME Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WS</td>
<td>Crude Oil Financial</td>
</tr>
<tr>
<td>RT</td>
<td>RBOB Gasoline Financial</td>
</tr>
</tbody>
</table>

CME Introduces Butterfly Spreads for DME Oman Crude Oil Options

Effective January 22, 2011, six butterfly spreads are listed on CME Globex for the DME Oman Crude Oil futures (OQD), additionally to the existing DME Oman Crude Oil contracts shown in figure below. This contract is listed with, and subject to, the rules and regulations of the Dubai Mercantile Exchange.
Butterfly spreads consist of three instruments within the same product group with equally distributed maturity months. Buy 1 butterfly = buy 1 of the closer maturity leg, sell 2 of the next maturity leg, and buy 1 of the furthest maturity leg (+1:-2:+1 ratio).

For more information please click here

Platts Proposes Red Sea-China Suezmax Tanker Assessment

On December 23, 2011, Platts reported that it would assess 135K mt Suezmax tanker freight rates from Red Sea to China. This route crosses the Bashayer offshore oil terminal in Sudan and Yanbu in Saudi Arabia, which values will be normalized to a Bashayer basis.

On March 1, 2012, Platts Dirty Tankerwire and Platts Global will publish the assessments describing discharge into the Chinese ports of Dalian and Ningbo. Being the leader in emerging markets, China is thirsty for oil and other resources to keep up with its current economic expansion. This route could play a pivotal role in supplying resources to China if proven economically efficient. Starting this March, established companies in the region, along with new comers, will be watching the rates closely when the data becomes available.

CME Delists Singapore 6.5 Fuel Oil Crack Spreads

On December 16, 2011, the following futures contracts were delisted from the NYMEX trading floor and CME ClearPort:

<table>
<thead>
<tr>
<th>CME Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSD</td>
<td>Singapore Fuel Oil 180 cst (Platts) 6.5 Dubai Crack Spread Swap Futures</td>
</tr>
<tr>
<td>SSB</td>
<td>Singapore Fuel Oil 180 cst (Platts) 6.5 Dubai Crack Spread BALMO Swap Futures</td>
</tr>
</tbody>
</table>

ICE Delists 2016 and Later Brent Crude Options and Reduces Contract Months of Brent Crude Futures

After the launch of ICE Brent NX (New Expiry) Crude Futures and Options, ICE made the following changes to the previously traded Brent contracts in order to align the expiration dates of two streams of the products effective December 19, 2011:

• All ICE Brent Crude Option (American style) contracts beyond December 2015 are delisted for trade and are no longer available for trading
• No additional contracts for ICE Brent Crude Futures are listed for trade beyond the June and December contract months currently available in 2017, 2018 and 2019 maturities

Existing ICE Brent Crude Futures contract months continue to trade as normal. Additional forward maturities in intervening 2017 months, in addition to those of June and December contract months, are available in ICE Brent Crude NX equivalent months.

APX-ENDEX Changes APX Gas NL Indices

APX-ENDEX changed the methodology and process to calculate the spot gas indices on its Gas NL (TTF) market effective January 16, 2012.

The new indices reflect the changes to the market model and balancing regime in the Netherlands. The changes to the products are as follows:

• The APX Gas TTF WDBM Within-Day Index is renamed the APX TTF Within-Day Index. The index is a volume-weighted average price of all orders which are executed and delivered on the same gas day.
• The APX Gas TTF DAM All-Day Index is renamed the APX TTF Day-Ahead Index and consists of two indices: the APX TTF Next-Day Index for next-day delivery on weekdays and APX TTF Weekend Index for delivery on Saturday and Sunday. Both are volume-weighted average prices of all orders which are executed for delivery on the next gas day.

CME Expands Contract Month Listing for Gulf Coast ULSD (Platts) and NYMEX Heating Oil-Based Futures

On January 8, 2012, CME expanded the listing of oil contracts months listed with, and subject to, the rules and regulations of NYMEX.

The following Gulf Coast Ultra Low Sulfur Diesel contracts are extended to the balance of the current year plus the next three consecutive calendar years:

<table>
<thead>
<tr>
<th>CME Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LY</td>
<td>Gulf Coast ULSD (Platts) Swap futures</td>
</tr>
<tr>
<td>GY</td>
<td>Gulf Coast ULSD (Platts) Crack Spread Swap futures</td>
</tr>
</tbody>
</table>

The listing schedule for the following NYMEX heating oil-based contracts will be expanded to set March 2013 as the last listed contract month.

<table>
<thead>
<tr>
<th>CME Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP</td>
<td>Heating Oil Calendar Swap Futures</td>
</tr>
<tr>
<td>HK</td>
<td>Heating Oil Crack Spread Swap Futures</td>
</tr>
<tr>
<td>RH</td>
<td>RBOB Gasoline vs. Heating Oil Swap Futures</td>
</tr>
<tr>
<td>LT</td>
<td>Gulf Coast ULSD (Platts) Up-Down Spread Swap Futures</td>
</tr>
<tr>
<td>ME</td>
<td>Gulf Coast Jet (Platts) vs. Heating Oil Swap Futures</td>
</tr>
<tr>
<td>HA</td>
<td>Heating Oil Arb: NYMEX Heating Oil vs. ICE Gasoil Futures</td>
</tr>
<tr>
<td>UT</td>
<td>Gulf Coast No. 2 (Platts) Up-Down Calendar Swap Futures</td>
</tr>
<tr>
<td>US</td>
<td>Gulf Coast ULSD (Argus) Up-Down Swap Futures</td>
</tr>
<tr>
<td>JU</td>
<td>NY Jet Fuel (Platts) vs. Heating Oil Swap Futures</td>
</tr>
<tr>
<td>JU</td>
<td>Gulf Coast Jet (Argus) Up-Down Swap Futures</td>
</tr>
<tr>
<td>JS</td>
<td>Los Angeles Jet (OPIS) Spread Swap Futures</td>
</tr>
<tr>
<td>KL</td>
<td>Los Angeles CARB Diesel (OPIS) Spread Swap Futures</td>
</tr>
<tr>
<td>A6</td>
<td>Group Three ULSD (Platts) vs. Heating Oil Spread Swap Futures</td>
</tr>
</tbody>
</table>
On December 5th, 2011, Oman’s oil minister Mohammed bin Hamed al-Rumhi, in a speech at the World Petroleum Congress, called for the creation of an energy market in the Middle East and highlighted the absence of such a market as one of the biggest challenges the region faces. He said: “This [the Middle East] is one of the few regions in the world where we do not have an energy market, although we have a huge source of energy.” The aim is to have a regional energy market where innovation and transparency would yield market efficiency. Although this call might trigger a new movement for creation of a centralized energy market in the region, there are big obstacles in the way of making the market really efficient, such as government subsidies and national energy companies. Nevertheless, this move will result in a lot of market activities, if it goes through. Only time will tell whether the Middle East is ready for a free Energy Market or not, but we should all be watching this closely.
ICE Launches Wheat and Barley Futures and Options

ICE Futures Canada commenced trading milling wheat, durum wheat and barley contracts on January 23, 2012.

<table>
<thead>
<tr>
<th>ICE Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WA</td>
<td>Milling Wheat futures and options</td>
</tr>
<tr>
<td>DW</td>
<td>Durum Wheat futures and options</td>
</tr>
<tr>
<td>BW</td>
<td>Barley futures and options</td>
</tr>
</tbody>
</table>

The contract months that will be listed for trading are:

- Futures: October 2012 to October 2014
- Options: October 2012 to October 2013 regular months, plus the August 2012, September 2012 and November 2012 serial months

For WA contracts specifications click here
For DW contracts specifications click here
For BW contracts specifications click here
EPA Reports GHG Emission Data Through the National Reporting Program

For the first time, comprehensive GHG data reported directly from large facilities and suppliers across the country is now easily accessible by the public through the Environmental Protection Agency (EPA) GHG Reporting Program.

To access EPA’s GHG Reporting Program Data and Data Publication Tool, click here

EPA’s online data tool allows you to view and sort GHG data for the calendar year 2010 from over 6,700 facilities that can be sorted out by facility, location, industrial sector, and the type of GHG emitted.

Mandated by the FY2008 Consolidated Appropriations Act, EPA launched the GHG Reporting Program in October 2009. Most reporting entities submitted data for calendar year 2010. However, an additional 12 source categories will begin reporting their 2011 data this year.

CME Launches Snowfall Index Futures

Effective February 12, 2012, CME starts listing new monthly and seasonal strip Snowfall Index futures. Snowfall Index futures are geared to the amount of snowfall recorded in a given month in a designated location as follows:

<table>
<thead>
<tr>
<th>CME Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK</td>
<td>Newark International Airport Monthly</td>
</tr>
<tr>
<td>SKX</td>
<td>Newark International Airport Nov Strip</td>
</tr>
<tr>
<td>SKZ</td>
<td>Newark International Airport Dec Strip</td>
</tr>
<tr>
<td>SKF</td>
<td>Newark International Airport Jan Strip</td>
</tr>
<tr>
<td>SKG</td>
<td>Newark International Airport Feb Strip</td>
</tr>
<tr>
<td>SKH</td>
<td>Newark International Airport Mar Strip</td>
</tr>
<tr>
<td>SZ</td>
<td>Baltimore-Washington International Airport Monthly</td>
</tr>
<tr>
<td>SZX</td>
<td>Baltimore-Washington International Airport Nov Strip</td>
</tr>
<tr>
<td>SZ2</td>
<td>Baltimore-Washington International Airport Dec Strip</td>
</tr>
<tr>
<td>SZF</td>
<td>Baltimore-Washington International Airport Jan Strip</td>
</tr>
<tr>
<td>SZG</td>
<td>Baltimore-Washington International Airport Feb Strip</td>
</tr>
<tr>
<td>SZ2</td>
<td>Baltimore-Washington International Airport Mar Strip</td>
</tr>
<tr>
<td>ST</td>
<td>Columbus Port-Columbus International Airport Monthly</td>
</tr>
<tr>
<td>STX</td>
<td>Columbus Port-Columbus International Airport Nov Strip</td>
</tr>
<tr>
<td>STZ</td>
<td>Columbus Port-Columbus International Airport Strip</td>
</tr>
<tr>
<td>STF</td>
<td>Columbus Port-Columbus International Airport Jan Strip</td>
</tr>
<tr>
<td>STG</td>
<td>Columbus Port-Columbus International Airport Strip</td>
</tr>
<tr>
<td>STH</td>
<td>Columbus Port-Columbus International Airport Strip</td>
</tr>
<tr>
<td>SC</td>
<td>Colorado Springs Municipal Airport Monthly</td>
</tr>
<tr>
<td>SCX</td>
<td>Colorado Springs Municipal Airport Nov Strip</td>
</tr>
<tr>
<td>SCZ</td>
<td>Colorado Springs Municipal Airport Dec Strip</td>
</tr>
<tr>
<td>SCF</td>
<td>Colorado Springs Municipal Airport Jan Strip</td>
</tr>
<tr>
<td>SCG</td>
<td>Colorado Springs Municipal Airport Feb Strip</td>
</tr>
<tr>
<td>SC8</td>
<td>Colorado Springs Municipal Airport Mar Strip</td>
</tr>
</tbody>
</table>

Snowfall Index futures help protect revenues and manage risks related to snowfall.

The new index futures are a valuable addition to the already traded weather products, like those shown in the following example.

*Graph created with ZEMA

Platts to Discontinue CAIR Assessments March 1, 2012

On December 8, 2011, Platts announced that it will discontinue its daily assessments for sulfur dioxide (SO2) and nitrogen oxides (NOX) emission allowances created under EPA’s Clean Air Interstate Rule (CAIR), effective March 1, 2012. EPA has passed a new regulation to replace CAIR called Cross-State Air Pollution Rule (CSAPR) that was originally scheduled to be in effect January 1, 2012.

CSAPR is set to limit SO2 and NOX emissions from power plants in 27 states, along with many power producers; namely Luminant, Westar Energy and American Electric Power Co. EPA had been sued for not providing states and utilities enough time to meet the limits; consequently, the U.S. Court of Appeals, District of Columbia Circuit issued an Order on December 30, 2011, to suspend the EPA’s CSAPR program until further notice.

Nevertheless, there is no guarantee that the court will prevail in changing the rule. For now, the Court is scheduled to hold hearings in April 2012. Until there is a final verdict passed by the Court, it does not seem wise to start spending the budget for compliance or make any business changes.

GreenX Delists the March 2012 Expiration for Cross-State Air Pollution Rule (CSAPR) Futures

GreenX announced delisting of the March 2012 expiration months for two CSAPR SO2 and two NOX futures contracts, effective January 6, 2012.

The decision was prompted by the U.S. Court of Appeals, District of Columbia Circuit’s Order issued on December 30, 2011, to suspend the EPA’s CSAPR program until further notice.

The contracts are listed with, and subject to, the rules and regulations of GreenX.
GreenX Adds In Delivery Month European Union Allowance (EUA) Futures

GreenX announced addition of five contract months for the In Delivery Month EUA futures contract (EAF) through December 2020, effective January 22, 2012 for trade starting January 23, 2012.

The contracts with the following maturities are listed on GreenX, traded on CME Globex and cleared through CME Clearing:

- December 2016
- December 2017
- December 2018
- December 2019
- December 2020

Quebec Approves Carbon Cap-and-Trade Program

On December 14, 2012, the Government of Quebec adopted the regulation setting the cap-and-trade system for GHG emission allowances based on the rules established by the Western Climate Initiative (WCI). Quebec is the first Canadian entity to adopt this mechanism within the framework of the WCI mandate following California, which adopted its regulation on October 20, 2011.

The implementation of the system began on January 1, 2012. During 2012, emitters and participants will have time to familiarize themselves with the system and to make any adjustments to meet their obligations.

Similar to California, the Quebec program compliance starts on January 1, 2013 for power plants and industrial sources. Starting in 2015, companies involved in importing or distributing natural gas and fuels that are used in the transportation and building sectors will also be subject to the rule.

The next step will be linking systems of WCI members together in the establishment of a comprehensive climate program. Creating a single market for Quebec and California implies using the same compliance instruments, including those traded on secondary markets.
CBOE Futures Exchange to Launch Security Futures in Emerging Markets Volatility Index

CBOE Futures Exchange, LLC (CFE) launched security futures on the CBOE Emerging Markets ETF Volatility Index (VXEEM) on January 9, 2012.

The VXEEM Index reflects the implied volatility of the iShares MSCI Emerging Markets Index exchange-traded fund (ETF) (EEM). In addition to hedging emerging markets volatility exposure or making direct plays on emerging markets volatility, VXEEM security futures — in conjunction with other volatility products — will allow market participants to trade cross-index or cross-asset volatility. Barclays Capital will be a Lead Market Maker for VXEEM security futures.

In addition to VXEEM security futures, on December 22, 2011, CFE filed with the Commodity Futures Trading Commission to list security futures on the following volatility indexes:

<table>
<thead>
<tr>
<th>CBOE Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVX</td>
<td>Crude Oil ETF Volatility Index (USO)</td>
</tr>
<tr>
<td>VXFIX</td>
<td>China ETF Volatility Index (FXI)</td>
</tr>
<tr>
<td>VXEWZ</td>
<td>Brazil ETF Volatility Index (EWZ)</td>
</tr>
<tr>
<td>VXGDX</td>
<td>Gold Miners ETF Volatility Index (GDX)</td>
</tr>
<tr>
<td>VXXLE</td>
<td>Energy Sector ETF Volatility Index (XLE)</td>
</tr>
</tbody>
</table>

CBOE currently publishes data on more than two dozen different volatility-related benchmarks.

CME Launched S&P Real-Time Indexes

Effective January 3, 2012, CME began disseminating the new indexes with transmission every 15 seconds:

<table>
<thead>
<tr>
<th>CME Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPUKHDAD</td>
<td>S&amp;P UK High Yield Dividend Aristocrats Index</td>
</tr>
<tr>
<td>SPEUHDAD</td>
<td>S&amp;P Euro High Yield Dividend Aristocrats Index</td>
</tr>
<tr>
<td>SGMDZAMU</td>
<td>Societe Generale ZAMU US Index</td>
</tr>
<tr>
<td>SP5M15T</td>
<td>S&amp;P 500 Monthly Risk Control 15% USD Total Return</td>
</tr>
<tr>
<td>SP6M18T</td>
<td>S&amp;P 600 Monthly Risk Control 18% USD Total Return</td>
</tr>
<tr>
<td>SP15M15T</td>
<td>S&amp;P 1500 Monthly Risk Control 15% USD Total Return</td>
</tr>
<tr>
<td>SPLAM18N</td>
<td>S&amp;P LAC 40 Monthly Risk Control 18% USD Net Total Return</td>
</tr>
<tr>
<td>SPEL75EP</td>
<td>S&amp;P Euro 75 EUR</td>
</tr>
<tr>
<td>SPEL75EN</td>
<td>S&amp;P Euro 75 EUR (NET TR)</td>
</tr>
</tbody>
</table>

Two examples of S&P Indexes already traded on CME are shown in the following graph.

NYSE Liffe U.S. to Launch DTCC GCF Repo IndexTM Futures

On January 4, 2012, NYSE Liffe U.S., the U.S. futures exchange of NYSE Euronext, announced the launch in early 2012 of futures contracts based on The Depository Trust and Clearing Corporation’s proprietary DTCC GCF Repo IndexTM. The DTCC GCF (General Collateral Finance) Repo IndexTM was created to enhance transparency and liquidity in the GCF Repo® market. It tracks the average interest rate paid each day for the most traded general collateral repos involving U.S. Treasury securities, Agency securities and Agency Mortgage-Backed securities.

Futures based on the DTCC GCF Repo IndexTM will allow better hedge interest rate exposure and are expected to develop into a new short-term interest rate benchmark representing fully-collateralized transactions in the underlying cash Treasury, Agency securities and Agency MBS markets.

The DTCC GCF Repo IndexTM is the financial services industry’s first index to list average daily interest rates for General Collateral Finance repurchase agreements or the GCF Repo® market, which clear at DTCC’s Fixed Income Clearing Corporation (FICC). With index values published daily on the DTCC website, this index provides a transparent view of the repo trading activity settled as part of the clearing process for all U.S. government securities trades. Repos are typically a form of short-term secured loan that involves the sale of a security and the subsequent repurchase of the same security. This data is utilized by bank financing desks, interest rate swap traders, and industry regulators.

CME Discontinues S&P Real-Time Indexes

On January 6, 2012, CME discontinued the following S&P Indexes:

<table>
<thead>
<tr>
<th>CME Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DWSHPRTR</td>
<td>DWS/Harvest 5-year Plan Beneficiaries Index (TR)</td>
</tr>
<tr>
<td>DWSHUITR</td>
<td>DWS/Urbanization &amp; Infrastructure Index (TR)</td>
</tr>
<tr>
<td>DWSHSTRTR</td>
<td>DWS/Harvest Sector Rotator Index (TR)</td>
</tr>
<tr>
<td>DWSHFLTR</td>
<td>DWS/Harvest Future Leaders Index (TR)</td>
</tr>
<tr>
<td>DWSGBXTR</td>
<td>DWS BRIIX Index (TR)</td>
</tr>
<tr>
<td>IQSMHK</td>
<td>IQ Hong Kong Small Cap Index</td>
</tr>
<tr>
<td>IQSMPRM</td>
<td>IQ Global Precious Metals Small Cap Index</td>
</tr>
</tbody>
</table>

*Graph created with ZEMA
**CBOE Stock Exchange Acquired National Stock Exchange**

CBOE Stock Exchange (CBSX) announced the completion of acquisition of National Stock Exchange (NSX) on December 30, 2011. The acquisition, approved by the Securities and Exchange Commission, allows CBSX to expand its footprint in the securities exchange space by wholly owning and operating a second separate exchange.

Both exchanges will continue to operate separately under their current names.

NSX, an all-electronic exchange previously owned by a consortium of nationally known broker-dealers, offers trading in all US exchange-listed equities on its NSX BLADE® trading platform.

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**U.S. Department Of Justice Clears NYSE Euronext Merger With Deutsche Börse**

On December 22, 2011, NYSE Euronext announced that the Antitrust Division of the U.S. Department of Justice has cleared the proposed combination between NYSE Euronext and Deutsche Börse AG.

A consent decree allows the combination to proceed, while requiring the sale of the International Securities Exchange’s (ISE) minority stake in the Direct Edge Holdings, LLC. ISE is wholly owned by Eurex, the derivatives exchange of Deutsche Börse. ISE has held its 31.54% minority stake in Direct Edge since 2008, and according to the consent decree, the parties will have at least two years from the date of closing their combination to complete this sale.

Completion of the transaction is subject to approvals by the European Commission and other relevant national stock exchange supervisory authorities.

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**Nadex Applies for Political Events Contracts**


- Presidential Election: contracts will be listed for all major candidates of any party or independents as of January 1, 2012. The outcome will be determined by the winner of the election announced in Congress in January 2013.
- Majority Control of U.S. Senate: contracts will be offered for Democratic and Republican Party control of the Senate. The outcome will be determined by whether a party holds 51 or more seats on the first day of the new Congress in January 2013.
- Majority Control of U.S. House: contracts will be offered for Democratic and Republican Party control of the House of Representatives. The outcome will be determined by whether a party holds 218 or more seats on the first day of the new Congress in January 2013.

CFTC responded that the Nadex application is subject to 90-day review.
Argus Launches North American Electricity and Natural Gas Forward Curves

Global energy price reporting agency Argus has launched forward curve services for North American natural gas and electricity.

The new suite of services cover: North American Natural Gas Forward Curves, North American Electricity Forward Curves, Electricity/Natural Gas Correlation Curves and Electricity Forward Heat Rate Curves. Together, the new services provide a minimum of seven years forward monthly values for all major natural gas and electricity markets across North America.

Argus forward curves can be a useful tool for all energy trading functions, including the front, mid and back office. They can also be used to support investment decisions. Forward curves can be used in mark-to-market accounting as well as in numerous analytical applications such as value-at-risk, potential future exposure, regressions and scenario analyses.

Argus uses data from multiple market sources to produce curves for liquid locations and forward terms. Argus uses completed transactions and market bid-offer spreads to determine value at liquid points, and statistical techniques to determine value using time and locational spreads at illiquid ones.

Argus Media chairman and chief executive Adrian Binks said: “Argus’ new forward curves provide an authoritative and independent source of valuation for electricity and natural gas markets across North America. We believe these services will offer a definitive risk management tool to support investment and trading decisions.”

Argus forward curve methodologies are available online at: http://www.argusmedia.com/Methodology-and-Reference

Customer Oil Training - 2012 Dates Announced

Platts offers complimentary oil training sessions for customers, in a range of global locations. The objective of these sessions is to provide an interactive platform for Platts’ customers to understand Platts’ methodologies and the wide-ranging specification issues related to Platts’ assessments. At the same time, the training aims to provide an opportunity for customers to get answers to their specific questions on Platts’ assessment methodology.

What you will learn from attending a Platts oil training session:

- the importance of benchmarks for setting prices, monitoring risk vs. performance of oil
- the importance of the Market-on-Close (MOC) principle in Platts’ oil price discovery process
- why and how Platts’ prices affect the oil value chain
- the diverse ways benchmark prices are applied across the supply chain

For more information on Platts oil training sessions and how to register please visit http://www.platts.com/Conference and filter by ’Training.’ You will also find details here of all other Platts events – including conferences and forums covering a wide range of commodity markets and topics.

IIR Energy Extends its PowerCast Services to Europe

IIR Energy is pleased to offer an extension of our US PowerCast service to all European market participants. IIR Energy PowerCast Europe has comprehensive information on the European Electric Power Generation sector that gives market participants complete understanding of the past, current, and future generation supply by providing real-time research on plant and unit status information. Along with continuous updates and web based analytical software, users are able to quantify the supply change from unit outages, new capacity and additions to the European generation fleet.

Currently, IIR Energy is tracking over 36,000 MW of offline capacity in 25 of the 50 European countries. IIR Energy actively monitors 785,000+ MW in Coal, Fuel Oil, Natural and other gases, Nuclear, and Renewable including wind power generating units.

For more information about IIR Energy’s PowerCast Europe data offering please contact irteam@iirenergy.com or find us at www.iirenergy.com.
MDA Earthsat Weather Launches Wind Services Targeting Power Markets in North America and Australia

MDA Earthsat Weather has continued to improve its weather forecast and data offerings across the energy, agriculture and weather markets, as our products and capabilities constantly evolve. We remain an industry leader when it comes to forecast accuracy, as well as reliability, with one of our professional meteorologists always available 24/7/365. Beyond our basic weather packages, we have recently rolled out two significant offerings:

Wind Services
- Wind forecasting continues to rapidly grow across electricity, environmental, and weather markets. In accordance with that growth, our wind hindcasts and forecasts are now made specifically for the ERCOT, MISO, BPA, IESO, PJM, CAISO, and AESO regions. More regions will be released in the future with customizations also available for any region of interest. These products offer a significant improvement over the publically available products issued by ISOs with mean absolute errors for the day-ahead forecast typically below 10% of installed capacity. Errors can range as low as 5% in areas of flatter terrain to just above 10% in areas where mountain winds make the forecast especially challenging.

Australian Hourly Weather Forecasts
- Due to the success of our new hourly forecasting system in North American and Europe, and the increasing importance, volatility, and sensitivity of the Australian power markets, we have expanded our offerings to Australia. Our hourly forecasts continue to be declared the most accurate in the day-ahead time frame by independent third-party vendors and clients. We currently offer hourly forecasts for 11 major Australian cities including Sydney, Brisbane, Melbourne, Cairns, Darwin, and Perth with customization to any of over 500 cities available. Beyond temperature, a variety of hourly forecast variables are available including dewpoint, wind, precipitation, and more.

ZEMA Data Coverage Update, Upcoming Events, New Website

New Data Reports
ZE continued to build new interfaces over the holiday period adding another 30 data interfaces to its library over the last 30 days. New feeds included Libor Rates, Crude Oil Pricing, Forward FX Rate, Forward Interest Rates, Trade Summaries, Weather, Meter Reads, System Ramping Nomogram Results and Hourly/Daily Power Price Indexes. Suppliers include Amerex, BRMS, CAISO, Trayport, Reuters, OPIS, and others. ZE continues to expand its data list based on client and market driven requirements. For more information, contact us.

Houston Lunch & Learn
As the leading Enterprise Data Management and Analysis solution provider, ZE is pleased to share our energy and commodities industry expertise with our fellow market participants. As such, we are offering a number of complimentary Lunch & Learn workshops in 2012. Our first event will be April 10-11 in Houston, Texas, and will focus on Forward Curve Development, ETRM Integration, ISO Settlement, Describing the Data Universe, User Case Studies and an Open Forum Discussion. The workshop agenda and registration details will be posted shortly on www.ze.com. Please continue to check back for event updates and new event postings.

Houston Schedule:
April 10
Time: 9:30am to 5:15pm
Venue: Houston Astros Convention Center
Evening Social: Houston Astros 50th Anniversary Game vs. the Atlanta Braves – 7:05pm at Champions Pavilion at Minute Maid Park

April 11
Morning Social: Golf Scramble
Time: 8:00am
Venue: Hermann Park Golf Course

New Website
For those who haven’t visited recently, the new ZE website (www.ze.com) has been launched. The website provides a comprehensive overview of ZE’s products and services including the award winning ZEMA Suite. On the website you’ll be able to see the events that ZE is attending, subscribe to ZE DataWatch, view ZEMA data coverage, download a brochure or sign up for a demonstration.
GreenX announced delisting of the March 2012 expiration months for two CSAPR SO2 and two NOX futures contracts, effective January 6, 2012. The decision was prompted by the U.S. Court of Appeals, District of Columbia Circuit’s Order issued on December 30, 2011, to suspend the EPA’s CSAPR program until further notice. The contracts are listed with, and subject to, the rules and regulations of GreenX.

Data Management for Energy and Commodities: Challenges for Enterprise Systems

Complimentary Lunch & Learn, April 10th, 2012, Houston, TX

Please mark your calendars on Tuesday, April 10th to join ZE PowerGroup and our partners for a complimentary Lunch & Learn focusing on Data Management for Energy and Commodities. This event will be held at the Champions Pavilion at Minute Maid Park from 9:30 a.m. to 5:15 p.m. This is an opportunity for you to meet and network with other industry experts and market participants as we discuss the challenges of data management and systems integration in competitive energy and commodity markets. Afterwards, join us for refreshments and the Houston Astros’ 50th Anniversary baseball game versus the Atlanta Braves.

For those interested in attending, we will also be hosting a golf scramble on April 11th at 8:00 a.m. at Hermann Park Golf Course.

Agenda highlights:
- Introduction to Data Management Challenges for Energy and Commodities
- Understanding the Data Universe – Panel Discussion
- Front to Back Office Data Flow
- Case Study 1 – Key Requirements of a Data Management System
- Forward Curve Development
- ETRM Integration
- ISO Settlement
- Data Management Structure
- Curve Construction and Automation
- Case Study 2 – Implementation of a Data Management System
- Q & A

To register follow the link, call 1-866-944-1469 (toll-free) or email Michelle Ambrosone

Sponsored by:
Market Dynamics: How Trend Analysis Can Support Investment Decisions (The Case of Wind Power Generators in the Pacific Northwest)

Those who follow power industry developments in the US Pacific Northwest could not have missed the collision between wind power generators and the Bonneville Power Administration (BPA). The conflict has been in the works for over a half year now. While most observers are wondering how it will be resolved and when the compromise, if any, will be achieved, we are trying to find an answer to another question: could it have been predicted and maybe even prevented in the first place?

Why Wind Power Generators Got Upset With BPA

Short version of the story

Last spring was characterized by high water runoff and low electricity demand in the region. BPA, managing local large hydro power dams, had to reduce generation. Complying with the Federal environmental law on saving salmonids, which die in highly oxygenized water caused by high water runoff, BPA had to reduce runoff by maintaining a certain level of power generation in hydro dams. To ensure that hydro dams were operating at a higher capacity, BPA had to curtail other types of power generators, including wind. Although the organization made sure that all power obligations of wind owners to their customers were met through delivery of hydropower generated by federal dams, renewable generators lost production tax and renewable energy credits.

Longer version of the story (if you are interested in details)

BPA is a federal agency and regional balancing entity with a somewhat contradictory mandate to control floods in the mighty Columbia River Basin, protect fish and wildlife under the Endangered Species Act, produce and market affordable electricity for the region, and ensure timely repayment of the treasury debt. BPA's hydro power stations are impressive in their number (thirty one) and capacity; the largest dam, Grand Coulee, of 6,809 MW in installed capacity, is the largest hydro plant in North America.

As BPA's resource mix is dominated by hydro generation, all issues associated with hydro supply are critical for the region. When demand drops, water that is not needed to produce power has to be spilled over hydro dam spillways. As the water thrusts into the pool at the base of the dam, the air bubbles get dissolved in the water. A high content of Total Dissolved Gas (TDG) causes serious trauma or even fatalities of salmonids, which are under protection of Federal law, and therefore have to be managed by BPA.

High water inflows are not a new phenomenon in the Pacific Northwest, and BPA has been managing the high TDG events by selling electricity generated at the hydro dams to other markets at low prices. BPA's approach has been working successfully for many years without creating any disturbance or discontentment: fish stayed alive and regional electricity rates remained at the lowest level on the national scale. Things started to change as electricity markets became deregulated. The first signs of concern emerged with a separation of generation and transmission services that were previously provided by one vertically integrated utility. Carrying responsibilities of the balancing authority and remaining the owner of the regional transmission system, BPA had to integrate into the grid larger and larger volumes of generation produced by non-utility generators.

Within the last few years, the introduction of Renewable Portfolio Standards (RPS) in Oregon, Washington, Montana and California has led to an overwhelming increase of wind generation in the region. The majority of BPA-located wind power resources have been developed with the purpose of being exported out of the region. This created an additional load on the transmission system, extra work for BPA as a transmission operator and balancing authority with almost no additional supply to serve local loads. The relationship between BPA and wind power generators fit the framework of the transmission contracts.

In the summer of 2010, high water inflows pushed TDG up and prompted BPA to implement emergency measures to reduce the impact on fish. These measures included curtailing production of nuclear and thermal plants in exchange for BPA replacing their delivery obligations with hydropower generated in Federal dams at zero cost to producers. No wind generators participated in the power replacement arrangement with BPA. The explanation of their reluctance is understandable: wind generators are eligible for income in addition to the payments received from power purchase agreements. Those sources are Federal Renewable Electricity Production Tax Credit (PTC) in the amount of $22 per MWh, and state Renewable Energy Credits (REC). Local performance-based incentives vary by state and reach to as much as $10 per MWh in the Okanogan County of Washington state. As credits are payable only when the electricity is actually generated, participation in the BPA hydropower replacement program would mean a loss of these extra proceeds, which more than doubles revenue.

In 2010, BPA managed to handle the situation without resorting to the wind generators' participation. The 2011 Winter left BPA with few options. Last winter, the snowpack was very deep and resulted in too much water in the Columbia River system. The situation was made worse by strong wind, especially in off-peak hours. On May 17, 2011, BPA resorting to a so-called environmental re-dispatch (ER) procedure, which meant taking the wind mills off the grid, and in exchange using hydropower to service the delivery obligations. By July 18, 2011, the last day of the ER, BPA had curtailed 97,557 MWh of produced power, which is 5.4% of the total scheduled wind generation.

How the Relationship Between BPA and Wind Generators Got Really Sour

Wind power producers did not let it slide. On June 13, 2011, several of them, namely Iberdrola Renewables Inc., PacifiCorp, NextEra Energy Resources, LLC, InvenergyWind North America LLC, and Horizon Wind Energy LLC filed a complaint with Federal Energy Regulatory Commission (FERC) against BPA for violation of the wholesale competition by unilaterally curtailing wind generators without compensation. The debate was centered around the legitimacy of the curtailment (whether the salmon smolts suffered bubble trauma during these events) and potential for the OATT to be revised to include the premise on compensation from lost PTC and REC revenues.

On July 29, 2011, two wind developers, Cannon Power Group (CPG) and EDP Renewables NA, challenged the BPA's ER procedure with another authority, the Ninth U.S. Circuit Court of Appeals.
Market Dynamics: How Trend Analysis Can Support Investment Decisions (The Case of Wind Power Generators in the Pacific Northwest)

FERC completed its proceedings and released an order on December 7, 2011, finding BPA’s ER procedure discriminatory and requiring filing of a new tariff compliant with the FERC’s OATT policy. In response, BPA, with support from public power utilities, contested the decision by appealing to the same Ninth U.S. Circuit Court of Appeals.

Now that public power entities are flooding members of Congress with letters of complaint about FERC’s decision and that it disregarded BPA’s obligations to serve low-cost power in the region, and comply with environmental regulations - among other things - there are a lot of question yet to be answered. These include:

- Is it true that FERC is attempting to extend its supervision over the transmission operations of BPA, which is legally a non-jurisdictional entity?
- Will the FERC decision harm BPA’s obligation to serve preferred customers with reliable, low-cost power?
- Is it statutorily appropriate to burden public utilities with the costs of renewable power credits?

Regardless of how the legal proceedings conclude, the solution to the conflict with the wind power producers lies ultimately with BPA. Some of the long-term options that are being considered by BPA include increasing north-south transmission capacity, which probably could be the best solution for all parties; however, it will carry the highest price tag. Another option is negotiating with BC Hydro, BPA’s counterpart across the northern border; this could mean additional use of the BC reservoir.

Who Could Foresee the Drama?

We are yet to see how the legal proceedings will unfold and how long of a journey the wind producers will take in their quest for lost monies. Both sides have good cases. Public utilities have solid grounds to be unhappy. On the other hand, as long as Congress keeps extending PTC, and different states continue subsidizing renewable power generation, wind power generators have every right to receive payments legally promised to them.

The question remains: could wind generators foresee that something like what is happening now would actually happen to them? Could they know that before making decisions on capital investments in the region?

The simple answer is yes., and without using a crystal ball. Instead, with historical market data and knowledge of the regional legal and regulatory regime requirements, a prediction would not be so hard to arrive at.

Power generation in the hydro-dependent Northwest region is seasonal, increasing dramatically during the spring snowmelt period and declining during the winter. This is illustrated in the graph below that shows Grand Coulee dam inflow and the very well defined seasonality of the hydro supply. Regional power demand is also seasonal, although its pattern is the opposite of inflow; demand peaks in winter and drops to the lowest levels in summer. The highest water flows occur during the lowest demand levels, thus offering not many local opportunities for power sales as shown in the following graph.

However, the balance between supply and demand in the Northwest was unlikely the primary interest of the wind power producers. Their decision to build wind farms in the region was to target not so much the local load centers but rather the lucrative California market with its great thirst for renewable power.

Transmission flows between the BPA area and adjacent regions usually increase in May-June. The BPA-California transmission line utilization during the snowmelt period always remains very high, close to maximum utilization, which makes it almost impossible for the balancing authority to deliver additional power to its southern neighbor.

The transmission pattern unfavorable to the generators located north of California is aggravated even more by the actual demand in California, which drops to the lowest levels during the snowmelt, as shown in the graph below:

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Data Source - USAC - Inflow*; WECC -NW Demand*  
Data Source - BPA*
Market Dynamics: How Trend Analysis Can Support Investment Decisions (The Case of Wind Power Generators in the Pacific Northwest)

A simple analysis of the transmission flows, hydrology patterns and federal legislation would have prepared wind power developers in the Pacific Northwest for the current events. Nonetheless, the fact remains that wind power expansion is not something to be curbed. Wind capacity has been growing steadily over the last four years and currently represents more than 3,000 MW, or 30% of the total generation being balanced by BPA. It is expected to double by 2013. The world largest land-based wind farm, Shepherds Flat Wind Farm with an installed capacity of 845 MW, is planned to be built in Oregon within the BPA system by 2012.

Even though the situation in the Pacific Northwest is unique, there is always a chance that it might be repeated elsewhere, given the right set of conditions. However, it can be prevented if a proper assessment is conducted of local market conditions.

We are just at the beginning of grander things yet to come as the power industry continues to add more and more renewables to the generation portfolio mix. The emerging power industry paradigm, driven heavily by political agendas, dictates a new set of rules. The expansion of renewable energy sources, mandated by legislature, requires that changes be made in many areas of power generation, transmission and distribution, including the way the renewables are handled by balancing entities. However, it cannot be a one way street; renewable generators should do the analysis before entering a region. Given that there are large volumes of data reported by different markets that are publicly available, it is feasible.

*Graph created with ZEMA*