March 12, 2018

ARC Energy Charts

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Chart Watch

1. Oil demand exceeded supply by 0.9 MMB/d in Q4
2. US crude stocks gained just 2.4 MMB
3. Sabine Pass LNG sent its 1st shipment to India
4. The US gas storage deficit contracted to 300 Bcf
5. Industry paid $44.2 MM at the March 7 land sale

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<table>
<thead>
<tr>
<th>Spot WTI Crude</th>
<th>Edmonton Light</th>
<th>Spot Henry Hub</th>
<th>Spot AECO</th>
<th>Spot AECO Basis</th>
<th>Currency</th>
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</thead>
<tbody>
<tr>
<td>62.04 ↑</td>
<td>58.55 ↑</td>
<td>2.71 ↑</td>
<td>1.86 ↓</td>
<td>1.18 ↑</td>
<td>0.7806 ↑</td>
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</tbody>
</table>

1. **Broad Equity Markets Year-to-Date**
   Daily Index Values; Rolling 12-Month History

2. **Performance of Oil and Gas Equities Year-to-Date**
   Daily Index Values; Rolling 12-Month History

3. **Oil & Gas Service Equities Year-to-Date**
   Daily Index Values; Rolling 12-Month History

4. **Canadian Currency Exchange**
   Daily Close Values; Rolling 24-Month History

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1. **Broad Equity Markets Year-to-Date**
   - Indexed to 12 Months Ago
   - Shanghai Composite
   - S&P/TSX Composite
   - Dow Jones

The DJIA recovered 3.3% last week as concerns around tariffs abated slightly.

2. **Performance of Oil and Gas Equities Year-to-Date**
   - Indexed to 12 Months Ago
   - ARC Junior E&P Index
   - S&P 500 E&P
   - S&P/TSX E&P Index

Performance of Canadian and US oil & gas equities are compared against each other.

3. **Oil & Gas Service Equities Year-to-Date**
   - Indexed to 12 Months Ago
   - Philadelphia Service Index
   - PSAC Canadian Index

The performance of Canadian oil and gas service equities are plotted in tandem with the corresponding US index.

4. **Canadian Currency Exchange**
   - Indexed to 12 Months Ago
   - $US/$Cdn

Much of Canada’s oil and gas production is sold in US dollars. As such, the exchange rate significantly impacts corporate revenues and profits.

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North American crude oil prices can sometimes disconnect from global prices depending on regional supply and demand dynamics.

Source: Bloomberg

Canadian heavy crude oil differentials are becoming less volatile with growing access to new markets via pipeline and rail.

Source: Bloomberg

The advancement of drilling and completion methods boosted US crude oil production, prior to the downturn in prices.

Source: Bloomberg, U.S. Energy Information Administration
Most of Canada’s oil production comes from Alberta; split between oil sands and conventional production.
Source: Alberta Energy Regulator

OPEC’s production levels relative to its sustainable and spare capacity influences global crude prices.
Source: Petroleum Intelligence Weekly

Negative numbers indicate a global crude shortfall, while positive numbers indicate an oversupply.
Source: International Energy Agency

This represents the relative bullishness of money managers on the price of oil in the United States.
Source: Bloomberg, U.S. Commodity Futures Trading Commission

Crude oil imports from Canada are taking market share from overseas imports.
Source: U.S. Energy Information Administration

The US exports more refined products than crude oil. If when tight oil growth resumes, most export growth should come from crude oil exports.
Source: U.S. Energy Information Administration
US crude oil stock levels can affect crude oil prices. Stock levels for the current year are represented by the blue line. 
Source: U.S. Energy Information Administration

Refinery utilization rates change the supply of refined products, impacting price. Utilization for the current year is blue. 
Source: U.S. Energy Information Administration

US crude oil drilling by major play provides insight into the composition of US oil supply and growth trends. 
Source: Baker Hughes

Global oil stock levels can affect crude oil prices. *Includes U.S. (~90%), Canada, Mexico and Chile. 
Source: International Energy Agency

Gasoline consumption accounts for almost half of all oil use in the US. 
Gasoline consumption for the current year is represented by the blue line. 
Source: U.S. Energy Information Administration

Natural gas liquids have become critical contributors to producer’s cash flow. 
Prices are influenced by the price of oil as well as local supply and demand. 
Source: Bloomberg, ARC Financial Corp.
Near-month prices at AECO track Henry Hub prices, the exchange rate and the cost of transportation. Local factors can also affect price.

**Source:** Bloomberg

This represents the relative bullishness of money managers on the price of natural gas in the United States.

**Source:** U.S. Commodity Futures Trading Commission

International natural gas prices strongly impact the economics of proposed LNG projects.

**Source:** Bloomberg, Japanese Ministry of Economy, Trade and Industry

Near-month prices at AECO track Henry Hub prices, the exchange rate and the cost of transportation. Local factors can also affect price.

**Source:** Bloomberg

Forward contract prices are plotted against months in the calendar year. Years are distinguished by color and symbol coding.

**Source:** Bloomberg

This graph illustrates when it may be economic to begin coal-gas switching in power generation. Average power plant efficiencies are assumed.

**Source:** Bloomberg
Closing Spot Prices at North American Natural Gas Hubs
Superimposed on Relative Physical Volumes Traded

North America has an integrated natural gas market. Prices are determined by regional supply and demand, and pipeline flows.

Source: Bloomberg

Pipeline Flows Out of Western Canada
Daily; Historical Tracks and Current Year Levels

The ability of gas producers to move gas out of the WCSB to eastern markets and the US is a major factor in local natural gas prices.

Source: Various Pipeline Companies

US Natural Gas Exports – Excluding Canada
Daily; Historical Tracks and Current Year Levels

Between exports to Mexico and LNG shipments, the US is growing as a natural gas exporter. Robust US supply growth has driven this trend.

Source: Bentek
Weekly natural gas demand is directly tied to the weather. The current year is in dark blue. Source: National Oceanic and Atmospheric Administration

US production started ramping up in late 2007 and continues to grow year over year. Source: Bentek

Weekly gas storage reports provide a snapshot of supply and demand. Current year changes are represented by the blue line. Source: U.S. Energy Information Administration

With a smaller than normal storage draw the deficit...contracted to 300 Bcf.

The last storage draw came in at 57 Bcf. This was a smaller storage draw than typical.

The latest NOAA 6 to 10 day forecast is for cooler...than normal temperatures in most of the United States.

This includes receipts on the TCPL, Alliance, WestCoast and TransGas pipelines. Source: Various Pipeline Companies

The EIA reports changes in US natural gas inventories held in underground storage facilities on a weekly basis. Source: U.S. Energy Information Administration
Alberta Natural Gas Demand
TransCanada Intra-AB Deliveries; Current Year and Historical Tracks

Alberta natural gas demand has grown steadily in recent years, largely driven by new oil sands projects coming on line.

Source: TransCanada Pipelines

Weekly Canadian Oil and Gas Drilling Activity
Baker Hughes Average Rig Counts; Rolling 24-Month History

Unlike US drilling activity, Canadian rigs are dispatched seasonally. Capital allocation by operators is driven by views of future oil and gas prices.

Source: Baker Hughes

Weekly Canadian Natural Gas Storage Levels
Weekly; Current Year and Historic Tracks

Canada’s natural gas storage level provides a good metric if the country is well stocked. Abnormally high or low storage can affect the basis.

Source: Bloomberg

Alberta Crown Land Sales – Excluding Oil Sands
Year-over-Year; Cumulative

Land prices are an important component of F&D costs. In Alberta, sales of petroleum and natural gas rights are held every two weeks.

Source: Alberta Department of Energy

US Gas Drilling Activity
Baker Hughes Horizontal Gas Rig Counts; 2014 to Present

Tracking US gas drilling by major play provides insight into the composition of US gas supply and growth trends.

Source: Baker Hughes

Canadian Cumulative Well Completions
Current Year vs Years Prior

Relative year-over-year drilling activity is highlighted in this chart. Cumulative well completions for the current year are shown in blue.

Source: Daily Oil Bulletin/JWN
Estimated Capital Flow in the Canadian Oil and Gas Economy for 2018

Industry Revenue, Cash Flow, Reinvestment, Drilling Activity and Production

Canadian Industry Statistics: Historical Data and Forecast

Canadian Industry Metrics

<table>
<thead>
<tr>
<th>Price</th>
<th>Production Volume</th>
<th>Capital Inflow</th>
<th>Reinvestment</th>
<th>Drilling</th>
<th>Well Split</th>
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<td>Total</td>
<td>After-tax</td>
<td>Conv. Oil</td>
<td>Wells</td>
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<td>Volume (MBOE/d)</td>
<td>Revenue (millions)</td>
<td>and Gas (millions)</td>
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