**ARC Energy Charts**

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**Chart Watch**

1. WTI fell to the lowest since 2002
2. WCS fell to the lowest level on record
3. Crude by rail hit a record high in January
4. The US oil rig count started to fall last week
5. Canadian rigs are falling with spring break up

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<td>17.63 ↓</td>
<td>1.76 ↓</td>
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<td>0.38 ↑</td>
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**1 Broad Equity Markets Year-to-Date**

Indexed to 12 Months Ago

- Shanghai Composite
- S&P/TSX Composite
- Dow Jones

**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

**3 Oil & Gas Service Equities Year-to-Date**

Indexed to 12 Months Ago

- Philadelphia Service Index
- PSAC Canadian Index

**4 Canadian Currency Exchange**

Indexed to 12 Months Ago

- $US/$Cdn

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

Source: Bloomberg, ARC Financial Corp.

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

Source: Bloomberg, Petroleum Services Association of Canada

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

Source: Bloomberg

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

The differential should reflect quality differences and transportation costs. Greater discounts can result from infrastructure or refinery outages. Source: Bloomberg

After hitting a record high in Jan, weekly data shows that... 

Rail is expected to grow as the pipelines have hit the limit for moving additional barrels of crude oil, and supply is still growing. Source: National Energy Board

The advancement of drilling and completion methods is increasing US crude oil production. 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*

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

Crude oil imports from Canada are taking market share from overseas imports.  
*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 oil rig counts fell by 19 last week. The rig count is expected to fall dramatically in the coming weeks and months as companies slash capital programs.

Source: Baker Hughes

The US oil rig count fell by 19 last week. The rig count is expected to fall dramatically in the coming weeks and months as companies slash capital programs.

Source: Baker Hughes

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 North American Natural Gas Prices**

Daily Prices; Rolling 12-Month History

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*

**US Natural Gas Futures**

Nymex (Henry Hub) 2020 to 2022

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

*Source: Bloomberg*

**Canadian Natural Gas Futures**

AECO Hub (Bloomberg Estimate) 2020 to 2022

AECO forward prices mimic Henry Hub futures minus a differential.

*Source: Bloomberg*

**Global Natural Gas Prices**

Japanese LNG, UK NBP, Henry Hub; Average Monthly Prices

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

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

**US Coal and Natural Gas Power Generation Cost**

Converted to a $/MWh Equivalent

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
**US Weekly Heating Degree Days**
Source: NOAA

Weekly natural gas demand is directly tied to the weather. The current year is in dark blue.

**Total US Dry Natural Gas Production**
Historical Tracks and Current Year Levels

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

**Daily Western Canadian Production**
Estimated Using Major Pipeline Receipts

This includes receipts on the TCPL, Alliance, WestCoast and TransGas pipelines.

**Weekly US Natural Gas Storage Net Change**
Weekly Injection or (Withdrawals); 2009 to Current

Weekly gas storage reports provide a snapshot of supply and demand. Current year changes are represented by the blue line.

**Total Working Natural Gas in US Storage**
Historical Tracks and Current Year Levels

The EIA reports changes in US natural gas inventories held in underground storage facilities on a weekly basis.

Source: National Oceanic and Atmospheric Administration

Source: Bentek

Source: Various Pipeline Companies

Source: U.S. Energy Information Administration

Source: U.S. Energy Information Administration
Alberta natural gas demand has grown steadily in recent years, largely driven by new oil sands demand and power generation projects. Source: TransCanada Pipelines

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

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
Canadian Industry Statistics: Historical Data and Forecast

### Canadian Industry Metrics

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<tr>
<th>Year</th>
<th>Average Price</th>
<th>Conv. Liquids</th>
<th>Oil &amp; Gas Prices</th>
<th>Capital Inflow</th>
<th>Reinvestment</th>
<th>Drilling</th>
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<td>$C/B</td>
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<td>MBOE/d</td>
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