ARC Energy Charts

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Spot WTI Crude $US/B
Edmonton Light $US/B
Spot Henry Hub $US/MMBtu
Spot AECO $Cdn/GJ
Spot AECO Basis $US/MMBtu
Currency $US/$Cdn

<table>
<thead>
<tr>
<th>Date</th>
<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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<tbody>
<tr>
<td>Apr-18</td>
<td>64.94 ↑</td>
<td>60.54 ↑</td>
<td>2.81 ↑</td>
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1. **Broad Equity Markets Year-to-Date**
   Daily Index Values; Rolling 12-Month History
   Indexed to 12 Months Ago
   - Shanghai Composite
   - S&P/TSX Composite
   - Dow Jones

   Equities fell sharply on Monday (not pictured) due to elevated trade tensions and a tech selloff.

   Broad market indices are one the many vital signs measuring the health of the economy. Energy demand is a function of economic health.
   Source: Bloomberg, ARC Financial Corp.

2. **Performance of Oil and Gas Equities Year-to-Date**
   Daily Index Values; Rolling 12-Month History
   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.
   Source: Bloomberg, ARC Financial Corp.

3. **Oil & Gas Service Equities Year-to-Date**
   Daily Index Values; Rolling 12-Month History
   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.
   Source: Bloomberg, Petroleum Services Association of Canada

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

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5  WTI Crude Oil Price and Differential to Brent
Near-Month WTI and Brent Differential; Rolling 12-Month History

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

Source: Bloomberg

6  US Crude Oil Futures
West Texas Intermediate (WTI) 2018 to 2020

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

Source: Bloomberg

7  Canadian Heavy Oil Price Differential to WTI
Western Canadian Select (WCS) Differential; Rolling 12-Month History

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

Source: Bloomberg

8  Canadian Light Crude Oil Price Differential to WTI
WTI and Edmonton Light differential; Rolling 12-Month History

The differential should reflect the transportation cost from Alberta to Cushing. Greater discounts can result from infrastructure or refinery outages.

Source: Bloomberg

9  Canadian Rail Shipments of Petroleum Products
Weekly; 2015 to Present

As pipeline capacity becomes more constricted, shipments of petroleum products (especially crude oil) are expected to rise.

Source: Canadian National Railway, Canadian Pacific Railway

10  Total US Oil Production
Monthly; 2010 to Present

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

Baker Hughes Horizontal Oil Rig Counts

Historical Tracks and Current Year Levels

US Weekly Refinery Utilization Rates (%)

Historical Tracks and Current Year Levels

RD Weekly Refinery Utilization Rates (%)

Historical Tracks and Current Year Levels

US Motor Gasoline Consumption

Historical Tracks and Current Year Levels

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

Daily NGL Prices as a % of Edmonton Light

Propane & Butane Spot Prices at Edmonton, AB

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

AECO is under pressure as we leave winter heating season.

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*

**Ratio of Long to Short Contracts – Henry Hub**

Managed Money – Futures and Options

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*

**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 Natural Gas Futures**

Nymex (Henry Hub) 2018 to 2020

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) 2018 to 2020

AECO forward prices mimic Henry Hub futures plus a differential

*Source: Bloomberg*

**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

Gas exports from the WCSB have held steady despite the...typical seasonal decline at this time of year.Exports in Mar avg'd 10.2 Bcf/d vs the 5-yr avg of 9.0 Bcf/d.

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

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

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

We are approaching the end of withdrawal season.

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

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

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

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

Total US demand fluctuates between 60 Bcf/d in the summer and over 100 Bcf/d in the winter. Weather is the most important driver of consumption.

Source: Bentek

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*

### Western 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*

### 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*

### 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*

### 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*
Canadian Industry Metrics: Historical Data and Forecast

Canadian Industry Statistics:

<table>
<thead>
<tr>
<th>Price</th>
<th>Production Volume</th>
<th>Capital Inflow</th>
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<td>Conv.</td>
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