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

   *Broad market indices are one of 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**
   - 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**
   - 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**
   - 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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**Chart Watch**

- 5. WTI over $60/B for the first time since mid-Sept
- 7. Heavy diffs wider as IMO 2020 approaches
- 12. OPEC+ agrees to further cuts for early 2020
- 22. AECO is strong on high demand and low storage
- 31. Freeport LNG ramp up drives record US exports

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Please see **Advisories and Disclaimers** at the end of the publication for important cautionary advisory and disclaimer language.
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

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

OPEC's production levels relative to its sustainable and spare capacity influences global crude prices. Note: scale has been expanded. 
Source: Petroleum Intelligence Weekly

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

Long contracts take the position that WTI oil price will increase, while short contracts expect a decline. 
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
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

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

Source: Baker Hughes

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.
23 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

24 US Natural Gas Futures
Nymex (Henry Hub) 2020 to 2021

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

25 Long and Short Contracts – Henry Hub
Managed Money - Futures

Long contracts take the position that Henry Hub gas price will increase, while short contracts expect a decline.
Source: U.S. Commodity Futures Trading Commission

26 Canadian Natural Gas Futures
AECO Hub (Bloomberg Estimate) 2020 to 2021

AECO forward prices mimic Henry Hub futures minus a differential.
Source: Bloomberg

27 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

28 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
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

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 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: CAODC

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

<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>$/BOE</td>
<td>$$/B</td>
<td>$$/GJ</td>
<td>Conv. Liquids</td>
<td>Bitumen + Synthetic</td>
<td>Natural Gas</td>
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<td>69.58</td>
<td>5.15</td>
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