



## Price forecast Oil, gas & chemicals

March 31, 2020

|                                  |    |
|----------------------------------|----|
| Forecast commentary              | 2  |
| Canadian domestic price forecast | 8  |
| International price forecast     | 10 |
| Global trends                    | 11 |
| Canadian domestic price tables   | 13 |
| International price tables       | 16 |
| Price philosophy                 | 18 |
| Glossary                         | 19 |
| Contacts                         | 21 |



# Forecast commentary

## To forecast oil prices, we recommend using pencil

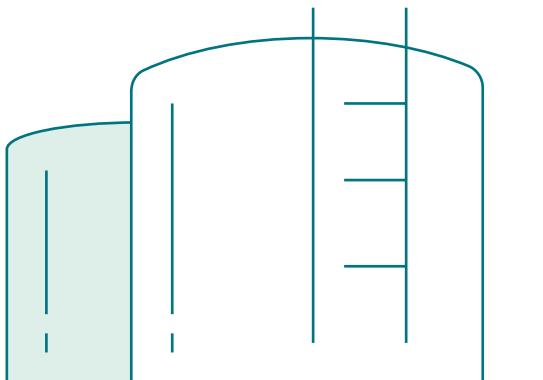
During this time of great uncertainty, we acknowledge the fact that preparing a price forecast during the “falling-knife” portion of the current market is uncomfortable. We appreciate, however, that our clients still need to consider scenarios in order to make business decisions. In this forecast, we present a view that speaks of a late-2020 economic recovery, but our team expects to revisit this view in the weeks and months ahead.

The spread of COVID-19 has weakened oil markets as governments around the world, working to contain the outbreak, see travel restrictions and quarantines as the best solution. The result has been slowing economies, with idle manufacturing, reduced fuel demand for transport, and decreased global transactions, which ultimately affects

world trade. “Our base case assumption is that COVID-19 will eventually be contained. We have assumed that happens in the summer and look for the economy to rebound in the fourth quarter of this year,” says Craig Alexander, Deloitte’s chief economist, in the firm’s March *economic outlook*. The overall effect on oil demand will depend on how successful nations are at combatting the virus and on the ensuing economic recovery from the pandemic.

Global oil markets are in a tailspin following the breakdown in talks between OPEC and Russia – which resulted in increased production from Saudi Arabia and other regions – and slowed oil-demand growth due to the COVID-19 pandemic. Oil prices crashed in mid-March, suffering their largest daily decreases since the 1991 Gulf War and falling to their lowest values in recent memory.

The spread of COVID-19 has weakened oil markets as governments around the world, working to contain the outbreak, see travel restrictions and quarantines as the best solution.



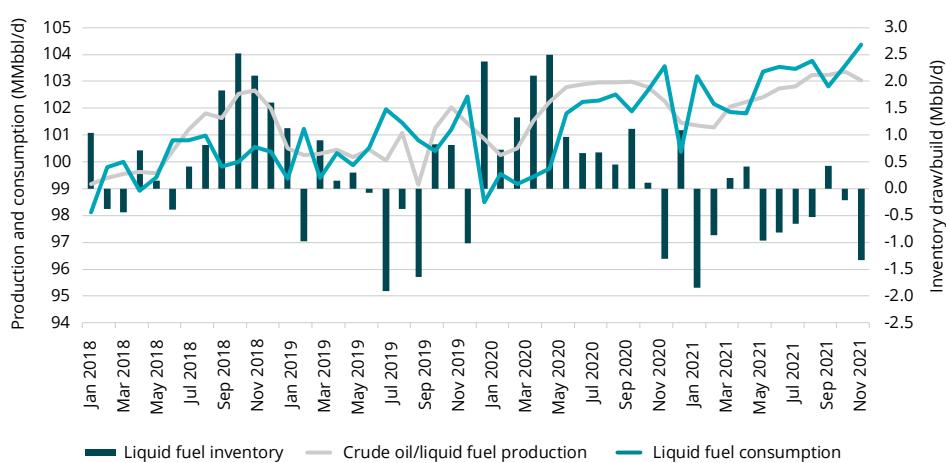
The proposed deal among OPEC+ participating members<sup>1</sup> had been expected to curb production by 3.6 MMbbl/d for the remainder of 2020, but disagreements over supply cuts between Russia and OPEC led to the dissolution of the deal and the end of a three-year supply limit by OPEC+ members. Saudi Arabia then announced plans to increase its production levels beginning in April and slash export oil prices. Russia also said it would increase production levels, with the United Arab Emirates following suit. These increases will flood supply markets and further imbalance global demand-and-supply dynamics. At the same time supply is increasing, global oil demand is forecast to contract for the remainder of 2020, leading to further weakening of the sector and increased price volatility.

OPEC's strategy of lifting production bans is somewhat counterintuitive, as increases to oil production during a time of contracted demand growth will not bode well for its members who cannot withstand plummeting

revenues. It is unknown how long the price war will wage and who will emerge the least damaged, but the failure of OPEC+ to continue production cuts could upend global market share as Saudi Arabia aims to outlast rival, higher-cost producing nations during the intended price war. Chinese and Middle Eastern refineries, for example, are shifting their crude supply to Saudi Arabia as increased production from the region and severely discounted prices allow for wider refining margins.

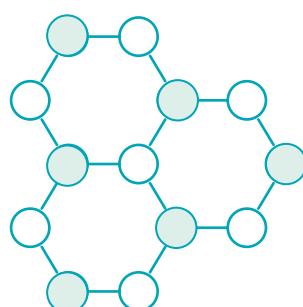
The US Energy Information Administration (EIA) predicts inventory builds for the remainder of 2020, with the largest increase forecast for Q2 2020 amid COVID-19 demand concerns and increased OPEC production starting in April. Although it is difficult to determine the overall long-term outcome that COVID-19 will have on crude oil markets, it is likely the inventory builds expected in the next quarter will take some time to deplete, and an oil price recovery will lag behind the COVID-19 recovery and price war dissipation.

## Global oil: supply and demand balance



Source: EIA Short Term Energy Outlook, dated March 11, 2020

<sup>1</sup> OPEC+ includes OPEC member countries plus Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, Russia, South Sudan and Sudan.



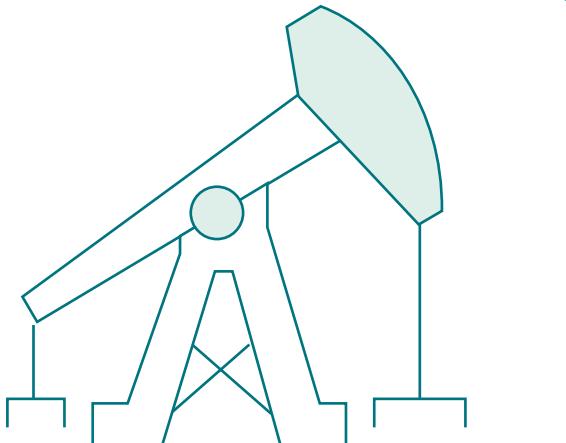
### Leaner times for Canada

Canadian oil producers will be affected substantially by this turn of events, with capital budget reductions and project deferrals announced since the beginning of March. Canadian operators have worked to reduce break-even oil prices for projects since the last price shock in 2014, but producers will now have to compete for market share against lower-cost operators. That said, they may be better positioned to withstand extended low oil prices than some of their over-leveraged Permian counterparts in the United States. Over the past few years, Canada's oil and gas industry experienced slower growth than the US industry due to transportation bottlenecks, which resulted in less debt and leaner operating metrics.

As access to external capital becomes more difficult during low-price environments,

global upstream investment is expected to be decimated if prices do not recover within the year. Unlike the last industry downturn, most operators are unlikely to be able to make low-hanging-fruit cost reductions, so a prolonged downturn will force them to make tough decisions to bring down costs and maximize cash flows. "Businesses and Canadians are facing at least a couple of tough quarters. The most vulnerable sectors are energy, mining, hospitality, tourism, and transportation," notes Deloitte's March economic outlook. Until prices recover and the demand-supply balance stabilizes, investment in the sector will remain low, with major project deferrals expected to be the norm. We expect producers to also make tough decisions to shut in production, as we see assets running at negative cash flow and storage starts becoming scarce.

Over the past few years, Canada's oil and gas industry experienced slower growth than the US industry due to transportation bottlenecks, which resulted in less debt and leaner operating metrics.



## Natural gas: a tough landscape in North America

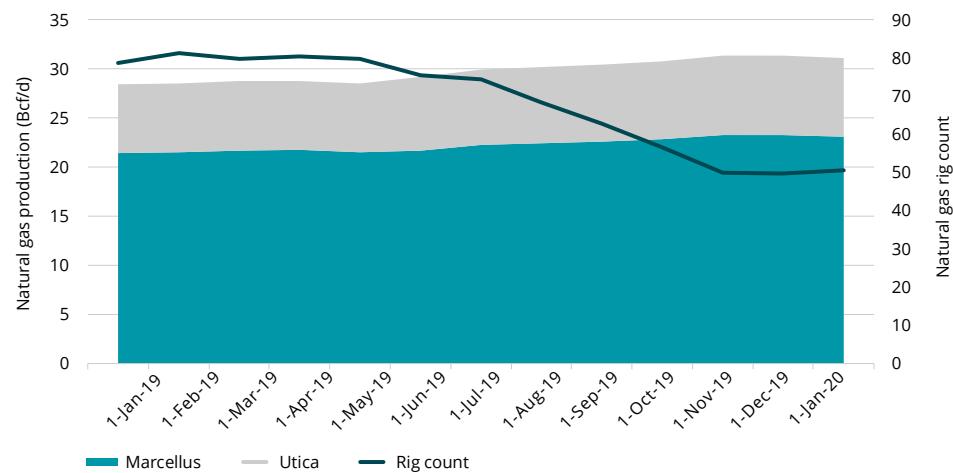
Natural gas prices remained volatile, with both Henry Hub and AECO prices falling by approximately 20 percent in Q1 2020 as winter heating season demand begins to wane as warmer temperatures arrive. Overseas, Asian LNG spot prices fell due to demand concerns stemming from COVID-19 and continued oversupply from US production.

Liquid natural gas exports from the United States grew to 7.1 Bcf/d in December 2019, flooding the LNG market and creating declines in spot price for LNG cargoes. The EIA estimates the United States will continue to increase export volumes in 2020 and 2021. Meanwhile, US shale gas production remained relatively flat through January 2020 as low prices continued to delay development in the Appalachia region, a major contributor to US natural gas production.

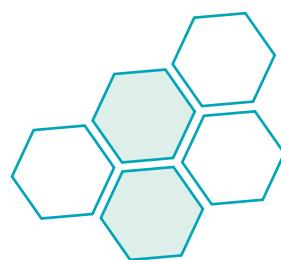
US natural gas production may see a decrease due to low WTI prices, since a large percentage of production comes from associated gas in the Permian Basin, which will see less investment. Further decreases in investment in the US oil and gas industry would result in slower production growth and reduced natural gas inventories, which would act to stabilize natural gas prices. We would expect the second half of 2020 to witness higher natural gas prices as production stems and storage levels decrease in the United States.

Canadian natural gas production has been relatively flat over Q1 2020. Rig counts increased at the beginning of the year from Q4 numbers due to winter drilling campaigns. The Canadian Energy Regulator is forecasting gas volumes to decrease for the remainder of the year, as has been the trend in recent years, due to low prices amid supply gluts.

## US shale gas production: Appalachia region



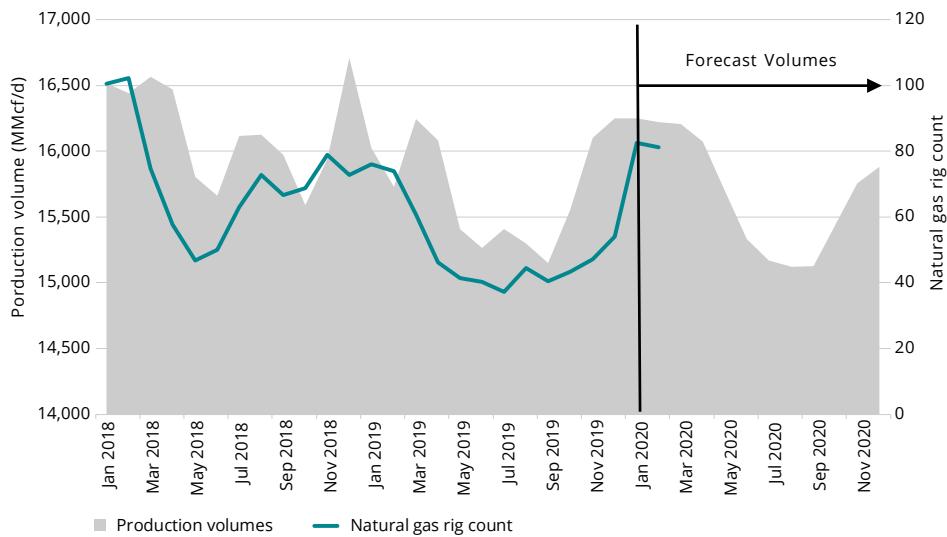
Source: EIA



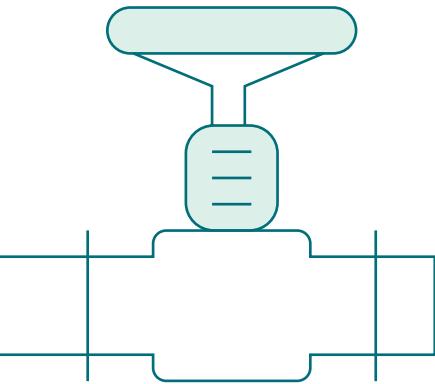
Over the past few years, some Canadian natural gas producers have successfully transitioned their drilling activities to higher liquid content areas, resulting in increased revenues during low gas price environments. However, natural gas liquid prices are expected to decrease in the coming months as oil prices decline, and condensate, which typically trends closer to crude oil prices, will experience severe decreases. The change in liquids pricing will affect natural gas producers and most likely limit additional drilling until prices recover.

All in all, the oil and gas industry is expected to have an even more volatile stretch than usual over the coming months. Pull out a pencil to make projections.

### Canadian natural gas production



Source: Baker Hughes, Canadian Energy Regulator





# Canadian domestic price forecast

## Crude oil price and market demand forecast

### Edmonton par (real \$)



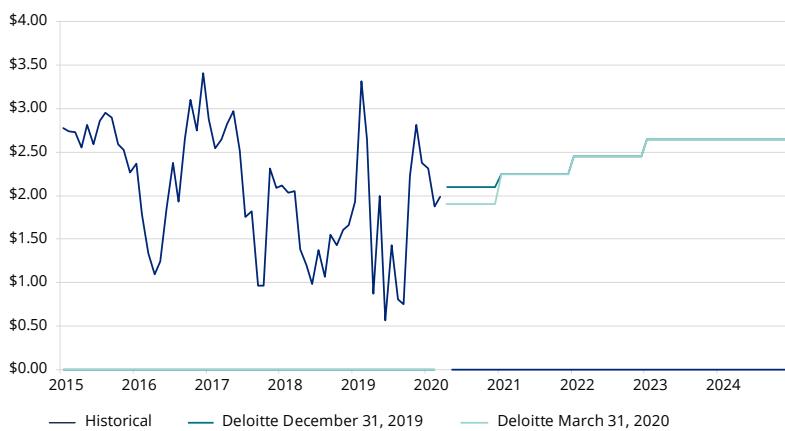
### Forecast comments

- Edmonton Par is forecast as a differential to WTI. This differential is based on Canadian Light Sweet Oil Index Futures which began trading in January 2014.
- The Edmonton crude oil price is used as the basis for the remaining Canadian crude reference points. Offsets are based on five-year historical averages with recent years weighted more heavily in the determination.

| Year              | WTI Cushing,<br>OK (40 API) | WTI Cushing,<br>OK (40 API) | Edmonton City<br>Gate (40 API) | Edmonton City<br>Gate (40 API) | WCS Hardisty<br>(20.5 API) | Heavy Oil<br>Hardisty<br>(12 API) | Cost<br>Inflation | CAD to USD<br>Exchange |
|-------------------|-----------------------------|-----------------------------|--------------------------------|--------------------------------|----------------------------|-----------------------------------|-------------------|------------------------|
|                   | US\$/bbl                    | US\$/bbl                    | C\$/bbl                        | C\$/bbl                        | C\$/bbl                    | C\$/bbl                           |                   |                        |
|                   | Real                        | Current                     | Real                           | Current                        | Current                    | Current                           | Rate              | Rate                   |
| <b>Historical</b> |                             |                             |                                |                                |                            |                                   |                   |                        |
| <b>2017</b>       | \$53.96                     | \$50.88                     | \$65.62                        | \$61.88                        | \$50.53                    | \$45.01                           | 1.6%              | 0.771                  |
| <b>2018</b>       | \$67.76                     | \$64.94                     | \$72.10                        | \$69.10                        | \$49.68                    | \$45.34                           | 2.3%              | 0.772                  |
| <b>2019</b>       | \$58.11                     | \$56.98                     | \$70.39                        | \$69.02                        | \$58.75                    | \$55.11                           | 1.9%              | 0.754                  |
| <b>2020</b>       |                             |                             |                                |                                |                            |                                   |                   |                        |
| <b>3 Mths H</b>   | \$46.69                     | \$46.69                     | \$52.53                        | \$52.53                        | \$37.30                    | \$29.73                           | 2.2%              | 0.746                  |
| <b>9 Mths F</b>   | \$32.50                     | \$32.50                     | \$31.25                        | \$31.25                        | \$22.90                    | \$18.90                           | 0.0%              | 0.720                  |
| <b>Avg.</b>       | \$36.05                     | \$36.05                     | \$36.57                        | \$36.57                        | \$26.50                    | \$21.61                           | -                 | 0.727                  |
| <b>Forecast</b>   |                             |                             |                                |                                |                            |                                   |                   |                        |
| <b>2020</b>       | \$32.50                     | \$32.50                     | \$31.25                        | \$31.25                        | \$22.90                    | \$18.90                           | 0.0%              | 0.720                  |
| <b>2021</b>       | \$42.50                     | \$43.35                     | \$47.30                        | \$48.25                        | \$35.15                    | \$30.05                           | 2.0%              | 0.740                  |
| <b>2022</b>       | \$50.00                     | \$52.00                     | \$58.45                        | \$60.80                        | \$44.60                    | \$39.40                           | 2.0%              | 0.770                  |
| <b>2023</b>       | \$60.00                     | \$63.65                     | \$68.75                        | \$72.95                        | \$57.05                    | \$51.75                           | 2.0%              | 0.800                  |
| <b>2024</b>       | \$60.00                     | \$64.95                     | \$68.75                        | \$74.40                        | \$58.20                    | \$52.75                           | 2.0%              | 0.800                  |
| <b>2025</b>       | \$60.00                     | \$66.25                     | \$68.75                        | \$75.90                        | \$59.35                    | \$53.80                           | 2.0%              | 0.800                  |
| <b>2026</b>       | \$60.00                     | \$67.55                     | \$68.75                        | \$77.40                        | \$60.55                    | \$54.90                           | 2.0%              | 0.800                  |
| <b>2027</b>       | \$60.00                     | \$68.90                     | \$68.75                        | \$78.95                        | \$61.75                    | \$56.00                           | 2.0%              | 0.800                  |

## Natural gas price and market demand forecast

### AECO natural gas (real \$)



### Forecast comments

- The AECO natural gas price is forecast based on historical differentials to Henry Hub and future contracts traded on the NGX based in Calgary.

| Year              | AB Ref.<br>Avg. Price | AB AECO<br>Avg. Price | AB AECO<br>Avg. Price | BC Direct<br>Station 2 Sales | NYMEX<br>Henry Hub | NYMEX<br>Henry Hub |
|-------------------|-----------------------|-----------------------|-----------------------|------------------------------|--------------------|--------------------|
|                   | C\$/Mcf               | C\$/Mcf               | C\$/Mcf               | C\$/Mcf                      | US\$/Mcf           | US\$/Mcf           |
|                   | Current               | Real                  | Current               | Current                      | Real               | Current            |
| <b>Historical</b> |                       |                       |                       |                              |                    |                    |
| <b>2017</b>       | \$2.13                | \$2.32                | \$2.19                | \$1.56                       | \$3.17             | \$2.99             |
| <b>2018</b>       | \$1.36                | \$1.61                | \$1.54                | \$1.26                       | \$3.30             | \$3.17             |
| <b>2019</b>       | \$1.48                | \$1.85                | \$1.81                | \$1.02                       | \$2.62             | \$2.57             |
| <b>2020</b>       |                       |                       |                       |                              |                    |                    |
| <b>3 Mths H</b>   | \$1.92                | \$2.06                | \$2.06                | \$1.98                       | \$1.92             | \$1.92             |
| <b>9 Mths F</b>   | \$1.65                | \$1.90                | \$1.90                | \$1.70                       | \$2.00             | \$2.00             |
| <b>Avg.</b>       | \$1.72                | \$1.94                | \$1.94                | \$1.77                       | \$1.98             | \$1.98             |
| <b>Forecast</b>   |                       |                       |                       |                              |                    |                    |
| <b>2020</b>       | \$1.65                | \$1.90                | \$1.90                | \$1.70                       | \$2.00             | \$2.00             |
| <b>2021</b>       | \$2.05                | \$2.25                | \$2.30                | \$2.10                       | \$2.35             | \$2.40             |
| <b>2022</b>       | \$2.30                | \$2.45                | \$2.55                | \$2.35                       | \$2.70             | \$2.80             |
| <b>2023</b>       | \$2.55                | \$2.65                | \$2.80                | \$2.60                       | \$2.90             | \$3.10             |
| <b>2024</b>       | \$2.60                | \$2.65                | \$2.85                | \$2.65                       | \$2.90             | \$3.15             |
| <b>2025</b>       | \$2.65                | \$2.65                | \$2.95                | \$2.70                       | \$2.90             | \$3.20             |
| <b>2026</b>       | \$2.70                | \$2.65                | \$3.00                | \$2.75                       | \$2.90             | \$3.25             |
| <b>2027</b>       | \$2.75                | \$2.65                | \$3.05                | \$2.80                       | \$2.90             | \$3.35             |

# International price forecast

## Crude oil price and market demand forecast

| Year            | Av. WTI Spot | Brent Spot (38.3 API with 0.37% sulphur content) | Gulf Coast ASC | Avg. OPEC Basket | Nigerian Bonny Light (33.4 API FOB) | Mexico Maya (21.8 API FOB) | Russia Urals (31.7 API FOB) |
|-----------------|--------------|--|----------------|------------------|-------------------------------------|----------------------------|-----------------------------|
|                 | US\$/bbl     | US\$/bbl   | US\$/bbl       | US\$/bbl         | US\$/bbl                            | US\$/bbl                   | US\$/bbl                    |
|                 | Real         | Real   | Real           | Real             | Real                                | Real                       | Real                        |
| <b>Forecast</b> |              |  |                |                  |                                     |                            |                             |
| <b>2020</b>     | \$32.50      | \$36.50  | \$31.50        | \$33.50          | \$37.75                             | \$29.50                    | \$34.50                     |
| <b>2021</b>     | \$42.50      | \$46.50  | \$41.50        | \$44.50          | \$47.75                             | \$39.50                    | \$45.50                     |
| <b>2022</b>     | \$50.00      | \$54.00  | \$49.00        | \$52.00          | \$55.25                             | \$47.00                    | \$53.50                     |
| <b>2023</b>     | \$60.00      | \$64.00  | \$59.00        | \$62.00          | \$65.25                             | \$57.00                    | \$63.50                     |
| <b>2024</b>     | \$60.00      | \$64.00  | \$59.00        | \$62.00          | \$65.25                             | \$57.00                    | \$63.50                     |
| <b>2025</b>     | \$60.00      | \$64.00  | \$59.00        | \$62.00          | \$65.25                             | \$57.00                    | \$63.50                     |
| <b>2026</b>     | \$60.00      | \$64.00  | \$59.00        | \$62.00          | \$65.25                             | \$57.00                    | \$63.50                     |
| <b>2027</b>     | \$60.00      | \$64.00  | \$59.00        | \$62.00          | \$65.25                             | \$57.00                    | \$63.50                     |

- International crude quality reference points for OPEC Basket, Venezuelan, Nigerian, UAE, Mexican, Chinese, Russian, and Indonesian crudes are now based on Brent in US dollars. For the purposes of this forecast Brent is receiving a premium to WTI on the world markets.
- Current forecasts for other Crude Oil reference points are based on historical trends to the WTI price.
- Brent, United Kingdom crude is based on 38.3°API with 0.37% Sulphur content. Brent blend is a light sweet North Sea crude oil that serves as an international benchmark grade.
- United States Gulf Coast Argus Sour Crude Index (ASCI) is a blend of offshore Gulf Coast oil from Mars, Poseidon, and Southern Green Canyon.
- OPEC Basket represents the current grouping of crude oil prices from the OPEC member countries.
- Russia Urals 31.7°API is the FOB delivered price to the Mediterranean destinations.

## Natural gas price and market demand forecast

| Year            | USD to GBP Exchange | USD to EUR Exchange | NYMEX Henry Hub | Permian Waha | San Juan Ignacio | Rocky Mountain Opal | UK NBP   | India Domestic Gas |
|-----------------|---------------------|---------------------|-----------------|--------------|------------------|---------------------|----------|--------------------|
|                 | Rate                | Rate                | US\$/Mcf        | US\$/Mcf     | US\$/Mcf         | US\$/Mcf            | US\$/Mcf | US\$/Mcf           |
|                 | Real                | Real                | Real            | Real         | Real             | Real                | Real     | Real               |
| <b>Forecast</b> |                     |                     |                 |              |                  |                     |          |                    |
| <b>2020</b>     | 1.30                | 1.13                | \$2.00          | \$0.75       | \$1.50           | \$1.75              | \$3.00   | \$2.30             |
| <b>2021</b>     | 1.30                | 1.13                | \$2.35          | \$1.35       | \$1.85           | \$2.10              | \$4.10   | \$1.75             |
| <b>2022</b>     | 1.30                | 1.13                | \$2.70          | \$1.95       | \$2.20           | \$2.45              | \$4.95   | \$2.30             |
| <b>2023</b>     | 1.30                | 1.13                | \$2.90          | \$2.15       | \$2.40           | \$2.65              | \$5.15   | \$2.75             |
| <b>2024</b>     | 1.30                | 1.13                | \$2.90          | \$2.15       | \$2.40           | \$2.65              | \$5.15   | \$2.90             |
| <b>2025</b>     | 1.30                | 1.13                | \$2.90          | \$2.15       | \$2.40           | \$2.65              | \$5.15   | \$2.90             |
| <b>2026</b>     | 1.30                | 1.13                | \$2.90          | \$2.15       | \$2.40           | \$2.65              | \$5.15   | \$2.90             |
| <b>2027</b>     | 1.30                | 1.13                | \$2.90          | \$2.15       | \$2.40           | \$2.65              | \$5.15   | \$2.90             |

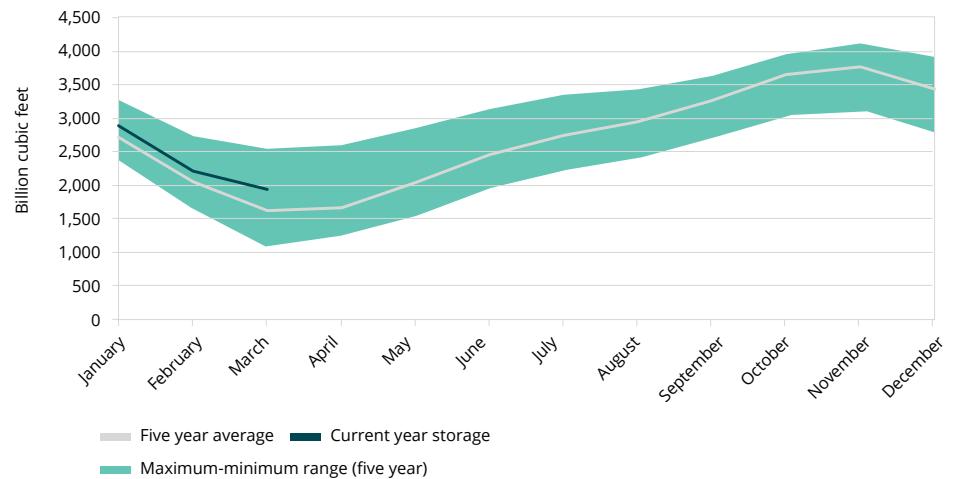
# Global trends

## Storage

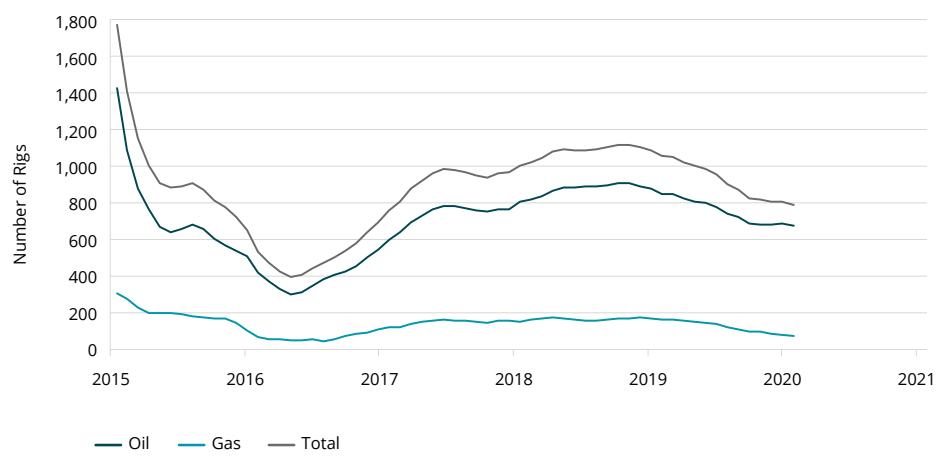
### United States

- Natural gas storage in the United States has begun to trend above the five year average as production continues to grow faster than demand.

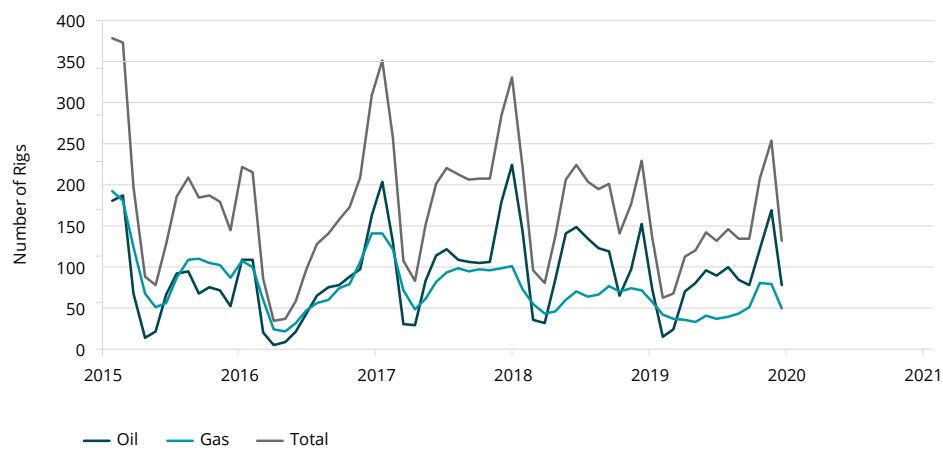
US natural gas storage



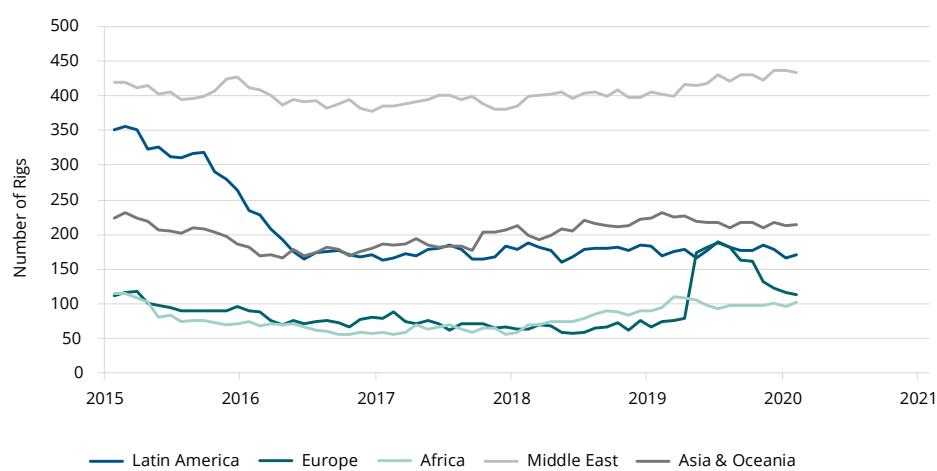
### US rig counts



### Canada rig counts



### International rig counts



## Rigs

### United States

- Oil rig counts are expected to fall dramatically in the second quarter of Q2 as low oil prices force companies to cut their capital expenditures. Gas rig counts should see less of a change, as natural gas prices have not felt the same downward pressure as oil prices.

### Canada

- After a stronger winter drilling season than in 2019, rig counts have begun to drop due to spring breakup. They are expected to drop further as companies cut their capital budgets in the coming quarter.

### International

- International rig counts continue to remain steady in most regions. The European count saw a large increase in 2019 due to the addition of Ukraine data, but has since seen a substantial drop. Middle Eastern rig counts will likely remain steady in the coming quarter as Saudi Arabia and other OPEC nations aim to grow their production rates in spite of an oversupplied market.

# Canadian domestic price tables

| Year              | Crude Oil Pricing |                |                     |          | WTI at Cushing Oklahoma | WTI at Cushing Oklahoma | Edmonton City Gate | Edmonton City Gate | WCS 20.5 Deg. API Hardisty |
|-------------------|-------------------|----------------|---------------------|----------|-------------------------|-------------------------|--------------------|--------------------|----------------------------|
|                   | Price Inflation   | Cost Inflation | CAD to USD Exchange | US\$/bbl |                         |                         |                    |                    |                            |
|                   | Rate              | Rate           | Rate                | Real     | Current                 | Real                    | Current            | Current            | Current                    |
| <b>Historical</b> |                   |                |                     |          |                         |                         |                    |                    |                            |
| <b>2010</b>       | 1.8%              | 1.8%           | 0.971               | \$94.66  | \$79.40                 | \$92.76                 | \$77.80            | \$67.22            |                            |
| <b>2011</b>       | 2.9%              | 2.9%           | 1.012               | \$111.14 | \$94.88                 | \$111.90                | \$95.54            | \$77.12            |                            |
| <b>2012</b>       | 1.5%              | 1.5%           | 1.001               | \$107.02 | \$94.11                 | \$98.44                 | \$86.57            | \$73.10            |                            |
| <b>2013</b>       | 0.9%              | 0.9%           | 0.972               | \$109.64 | \$97.91                 | \$104.55                | \$93.36            | \$74.97            |                            |
| <b>2014</b>       | 1.9%              | 1.9%           | 0.906               | \$103.46 | \$93.26                 | \$104.27                | \$94.00            | \$81.06            |                            |
| <b>2015</b>       | 1.1%              | 1.1%           | 0.783               | \$52.98  | \$48.69                 | \$62.02                 | \$57.00            | \$44.80            |                            |
| <b>2016</b>       | 1.4%              | 1.4%           | 0.755               | \$46.43  | \$43.15                 | \$56.18                 | \$52.22            | \$38.90            |                            |
| <b>2017</b>       | 1.6%              | 1.6%           | 0.771               | \$53.96  | \$50.88                 | \$65.62                 | \$61.88            | \$50.53            |                            |
| <b>2018</b>       | 2.3%              | 2.3%           | 0.772               | \$67.76  | \$64.94                 | \$72.10                 | \$69.10            | \$49.68            |                            |
| <b>2019</b>       | 1.9%              | 1.9%           | 0.754               | \$58.11  | \$56.98                 | \$70.39                 | \$69.02            | \$58.75            |                            |
| <b>2020</b>       |                   |                |                     |          |                         |                         |                    |                    |                            |
| <b>3 Mths H</b>   | 2.2%              | 2.2%           | 0.746               | \$46.69  | \$46.69                 | \$52.53                 | \$52.53            | \$37.30            |                            |
| <b>9 Mths F</b>   | 0.0%              | 0.0%           | 0.720               | \$32.50  | \$32.50                 | \$31.25                 | \$31.25            | \$22.90            |                            |
| <b>Avg.</b>       | N/A               | N/A            | 0.727               | \$36.05  | \$36.05                 | \$36.57                 | \$36.57            | \$26.50            |                            |
| <b>Forecast</b>   |                   |                |                     |          |                         |                         |                    |                    |                            |
| <b>2020</b>       | 0.0%              | 0.0%           | 0.720               | \$32.50  | \$32.50                 | \$31.25                 | \$31.25            | \$22.90            |                            |
| <b>2021</b>       | 2.0%              | 2.0%           | 0.740               | \$42.50  | \$43.35                 | \$47.30                 | \$48.25            | \$35.15            |                            |
| <b>2022</b>       | 2.0%              | 2.0%           | 0.770               | \$50.00  | \$52.00                 | \$58.45                 | \$60.80            | \$44.60            |                            |
| <b>2023</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$63.65                 | \$68.75                 | \$72.95            | \$57.05            |                            |
| <b>2024</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$64.95                 | \$68.75                 | \$74.40            | \$58.20            |                            |
| <b>2025</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$66.25                 | \$68.75                 | \$75.90            | \$59.35            |                            |
| <b>2026</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$67.55                 | \$68.75                 | \$77.40            | \$60.55            |                            |
| <b>2027</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$68.90                 | \$68.75                 | \$78.95            | \$61.75            |                            |
| <b>2028</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$70.30                 | \$68.75                 | \$80.55            | \$63.00            |                            |
| <b>2029</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$71.70                 | \$68.75                 | \$82.15            | \$64.25            |                            |
| <b>2030</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$73.15                 | \$68.75                 | \$83.80            | \$65.50            |                            |
| <b>2031</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$74.60                 | \$68.75                 | \$85.50            | \$66.85            |                            |
| <b>2032</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$76.10                 | \$68.75                 | \$87.20            | \$68.15            |                            |
| <b>2033</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$77.60                 | \$68.75                 | \$88.95            | \$69.55            |                            |
| <b>2034</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$79.15                 | \$68.75                 | \$90.70            | \$70.90            |                            |
| <b>2035</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$80.75                 | \$68.75                 | \$92.55            | \$72.35            |                            |
| <b>2036</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$82.35                 | \$68.75                 | \$94.40            | \$73.80            |                            |
| <b>2037</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$84.00                 | \$68.75                 | \$96.25            | \$75.25            |                            |
| <b>2038</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$85.70                 | \$68.75                 | \$98.20            | \$76.75            |                            |
| <b>2039</b>       | 2.0%              | 2.0%           | 0.800               | \$60.00  | \$87.40                 | \$68.75                 | \$100.15           | \$78.30            |                            |
| <b>2039+</b>      | 2.0%              | 2.0%           | 0.800               | 0.0%     | 2.0%                    | 0.0%                    | 2.0%               | 2.0%               | 2.0%                       |

**Notes:**

- All prices are in Canadian dollars except WTI and NYMEX gas which are in US dollars.
- Edmonton city gate prices based on historical light oil par prices posted by the government of Alberta and Net Energy differential futures (40 Deg. API < 0.5% Sulphur).
- Real prices listed in 2020 dollars with no escalation considered.

**Disclaimer** - No representation or warranty of any kind (whether expressed or implied) is given by Deloitte LLP as to the accuracy, completeness, currency or fitness for any purpose of this document. As such, this document does not constitute the giving of investment advice, nor a part of any advice on investment decisions. Accordingly, regardless of the form of action, whether in contract, tort or otherwise, and to the extent permitted by applicable law, Deloitte LLP accepts no liability of any kind and disclaims all responsibility for the consequences of any person acting or refraining from acting in reliance on this price forecast in whole or in part. **This price forecast is not for dissemination in the United States or for distribution to United States wire services.**

| Natural Gas Liquids Pricing<br>Edmonton Par Prices |         |         |         |                       | Natural Gas Pricing          |                         |                         |                          |                 |                 | Sulphur            |
|--|---------|---------|---------|-----------------------|------------------------------|-------------------------|-------------------------|--------------------------|-----------------|-----------------|--------------------|
| Year   | Ethane  | Propane | Butane  | Pentanes + Condensate | Alberta Reference Avg. Price | Alberta AECO Avg. Price | Alberta AECO Avg. Price | B.C. Direct Stn. 2 Sales | NYMEX Henry Hub | NYMEX Henry Hub | Alberta Plant Gate |
|  | C\$/bbl | C\$/bbl | C\$/bbl | C\$/bbl               | C\$/mcf                      | C\$/mcf                 | C\$/mcf                 | C\$/mcf                  | US\$/Mcf        | US\$/Mcf        | C\$/lt             |
|  | Current | Current | Current | Current               | Current                      | Real                    | Current                 | Current                  | Real            | Current         | Current            |
| <b>Historical</b>                                  |         |         |         |                       |                              |                         |                         |                          |                 |                 |                    |
| <b>2010</b>  | \$11.53 | \$45.19 | \$68.79 | \$84.02               | \$3.76                       | \$4.78                  | \$4.01                  | \$4.01                   | \$5.23          | \$4.39          | \$56.94            |
| <b>2011</b>  | \$10.30 | \$52.41 | \$86.98 | \$105.24              | \$3.46                       | \$4.25                  | \$3.63                  | \$3.34                   | \$4.69          | \$4.00          | \$101.60           |
| <b>2012</b>  | \$6.73  | \$30.80 | \$75.47 | \$99.67               | \$2.25                       | \$2.72                  | \$2.39                  | \$2.29                   | \$3.13          | \$2.75          | \$126.81           |
| <b>2013</b>  | \$8.68  | \$38.54 | \$77.44 | \$103.52              | \$2.98                       | \$3.55                  | \$3.17                  | \$3.11                   | \$4.18          | \$3.73          | \$62.17            |
| <b>2014</b>  | \$12.46 | \$42.93 | \$59.43 | \$101.47              | \$4.22                       | \$5.00                  | \$4.50                  | \$4.16                   | \$4.87          | \$4.39          | \$88.99            |
| <b>2015</b>  | \$7.49  | \$5.35  | \$33.70 | \$55.15               | \$2.56                       | \$2.93                  | \$2.69                  | \$1.81                   | \$2.86          | \$2.63          | \$107.45           |
| <b>2016</b>  | \$6.04  | \$8.71  | \$31.45 | \$52.43               | \$1.93                       | \$2.32                  | \$2.16                  | \$1.75                   | \$2.71          | \$2.52          | \$45.40            |
| <b>2017</b>  | \$6.11  | \$27.92 | \$40.98 | \$63.65               | \$2.13                       | \$2.32                  | \$2.19                  | \$1.56                   | \$3.17          | \$2.99          | \$41.85            |
| <b>2018</b>  | \$6.90  | \$29.76 | \$46.17 | \$75.74               | \$1.36                       | \$1.61                  | \$1.54                  | \$1.26                   | \$3.30          | \$3.17          | \$89.25            |
| <b>2019</b>  | \$5.00  | \$15.82 | \$21.40 | \$67.57               | \$1.48                       | \$1.85                  | \$1.81                  | \$1.02                   | \$2.62          | \$2.57          | \$37.54            |
| <b>2020</b>  |         |         |         |                       |                              |                         |                         |                          |                 |                 |                    |
| <b>3 Mths H</b>                                    | \$5.76  | \$11.96 | \$20.06 | \$62.77               | \$1.92                       | \$2.06                  | \$2.06                  | \$1.98                   | \$1.92          | \$1.92          | \$34.02            |
| <b>9 Mths F</b>                                    | \$5.30  | \$7.80  | \$10.95 | \$32.80               | \$1.65                       | \$1.90                  | \$1.90                  | \$1.70                   | \$2.00          | \$2.00          | \$30.00            |
| <b>Avg.</b>  | \$5.41  | \$8.84  | \$13.23 | \$40.29               | \$1.72                       | \$1.94                  | \$1.94                  | \$1.77                   | \$1.98          | \$1.98          | \$31.01            |
| <b>Forecast</b>                                    |         |         |         |                       |                              |                         |                         |                          |                 |                 |                    |
| <b>2020</b>  | \$5.30  | \$7.80  | \$10.95 | \$32.80               | \$1.65                       | \$1.90                  | \$1.90                  | \$1.70                   | \$2.00          | \$2.00          | \$30.00            |
| <b>2021</b>  | \$6.45  | \$16.90 | \$24.10 | \$48.25               | \$2.05                       | \$2.25                  | \$2.30                  | \$2.10                   | \$2.35          | \$2.40          | \$30.60            |
| <b>2022</b>  | \$7.15  | \$27.35 | \$39.55 | \$60.80               | \$2.30                       | \$2.45                  | \$2.55                  | \$2.35                   | \$2.70          | \$2.80          | \$31.20            |
| <b>2023</b>  | \$7.85  | \$32.85 | \$47.45 | \$72.95               | \$2.55                       | \$2.65                  | \$2.80                  | \$2.60                   | \$2.90          | \$3.10          | \$31.85            |
| <b>2024</b>  | \$8.00  | \$33.50 | \$48.40 | \$74.40               | \$2.60                       | \$2.65                  | \$2.85                  | \$2.65                   | \$2.90          | \$3.15          | \$32.45            |
| <b>2025</b>  | \$8.15  | \$34.15 | \$49.35 | \$75.90               | \$2.65                       | \$2.65                  | \$2.95                  | \$2.70                   | \$2.90          | \$3.20          | \$33.10            |
| <b>2026</b>  | \$8.35  | \$34.85 | \$50.35 | \$77.40               | \$2.70                       | \$2.65                  | \$3.00                  | \$2.75                   | \$2.90          | \$3.25          | \$33.80            |
| <b>2027</b>  | \$8.50  | \$35.55 | \$51.35 | \$78.95               | \$2.75                       | \$2.65                  | \$3.05                  | \$2.80                   | \$2.90          | \$3.35          | \$34.45            |
| <b>2028</b>  | \$8.65  | \$36.25 | \$52.35 | \$80.55               | \$2.80                       | \$2.65                  | \$3.10                  | \$2.85                   | \$2.90          | \$3.40          | \$35.15            |
| <b>2029</b>  | \$8.85  | \$37.00 | \$53.40 | \$82.15               | \$2.85                       | \$2.65                  | \$3.15                  | \$2.95                   | \$2.90          | \$3.45          | \$35.85            |
| <b>2030</b>  | \$9.00  | \$37.75 | \$54.50 | \$83.80               | \$2.95                       | \$2.65                  | \$3.25                  | \$3.00                   | \$2.90          | \$3.55          | \$36.55            |
| <b>2031</b>  | \$9.20  | \$38.50 | \$55.60 | \$85.50               | \$3.00                       | \$2.65                  | \$3.30                  | \$3.05                   | \$2.90          | \$3.60          | \$37.30            |
| <b>2032</b>  | \$9.40  | \$39.25 | \$56.70 | \$87.20               | \$3.05                       | \$2.65                  | \$3.35                  | \$3.10                   | \$2.90          | \$3.70          | \$38.05            |
| <b>2033</b>  | \$9.55  | \$40.05 | \$57.80 | \$88.95               | \$3.10                       | \$2.65                  | \$3.45                  | \$3.15                   | \$2.90          | \$3.75          | \$38.80            |
| <b>2034</b>  | \$9.75  | \$40.85 | \$59.00 | \$90.70               | \$3.15                       | \$2.65                  | \$3.50                  | \$3.25                   | \$2.90          | \$3.85          | \$39.60            |
| <b>2035</b>  | \$9.95  | \$41.65 | \$60.15 | \$92.55               | \$3.25                       | \$2.65                  | \$3.55                  | \$3.30                   | \$2.90          | \$3.90          | \$40.40            |
| <b>2036</b>  | \$10.15 | \$42.50 | \$61.35 | \$94.40               | \$3.30                       | \$2.65                  | \$3.65                  | \$3.35                   | \$2.90          | \$4.00          | \$41.20            |
| <b>2037</b>  | \$10.35 | \$43.35 | \$62.60 | \$96.25               | \$3.35                       | \$2.65                  | \$3.70                  | \$3.45                   | \$2.90          | \$4.05          | \$42.00            |
| <b>2038</b>  | \$10.55 | \$44.20 | \$63.85 | \$98.20               | \$3.45                       | \$2.65                  | \$3.80                  | \$3.50                   | \$2.90          | \$4.15          | \$42.85            |
| <b>2039</b>  | \$10.80 | \$45.10 | \$65.10 | \$100.15              | \$3.50                       | \$2.65                  | \$3.85                  | \$3.55                   | \$2.90          | \$4.20          | \$43.70            |
| <b>2039+</b>                                       | 2.0%    | 2.0%    | 2.0%    | 2.0%                  | 2.0%                         | 0.0%                    | 2.0%                    | 2.0%                     | 0.0%            | 2.0%            | 2.0%               |

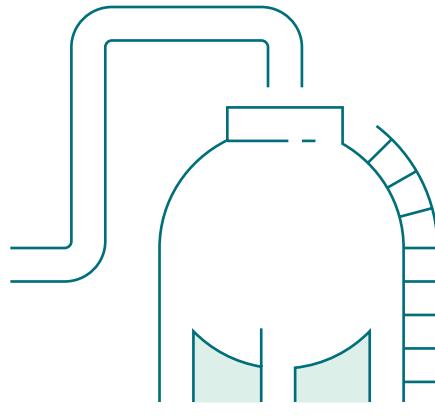
**Notes:**

- Data sources include: EIA, DOB, NRC, Flint Hills Resources, Alberta Government.
- All prices are in Canadian dollars except WTI and NYMEX gas which are in US dollars.
- Edmonton city gate prices based on historical light oil par prices posted by the government of Alberta and Net Energy differential futures (40 Deg. API < 0.5% Sulphur).
- Natural Gas Liquid prices are forecasted at Edmonton therefore an additional transportation cost must be included to plant gate sales point.
- 1 Mcf is equivalent to 1 mmbtu.
- Real prices listed in 2020 dollars with no escalation considered.
- Alberta gas prices, except AECO, include an average cost of service to the plant gate.
- NGL prices have been switched from a mix reference to a spec reference.

**Disclaimer** - No representation or warranty of any kind (whether expressed or implied) is given by Deloitte LLP as to the accuracy, completeness, currency or fitness for any purpose of this document. As such, this document does not constitute the giving of investment advice, nor a part of any advice on investment decisions. Accordingly, regardless of the form of action, whether in contract, tort or otherwise, and to the extent permitted by applicable law, Deloitte LLP accepts no liability of any kind and disclaims all responsibility for the consequences of any person acting or refraining from acting in reliance on this price forecast in whole or in part. **This price forecast is not for dissemination in the United States or for distribution to United States wire services.**

## Additional crude reference prices

| Year              | Crude oil pricing                     |                                | Natural gas pricing                                  |                                    |
|-------------------|---------------------------------------|--------------------------------|--|------------------------------------|
|                   | Lt. Sour<br>35 Deg. API<br>Cromer, SK | MSO<br>31 Deg. API<br>Hardisty | Synbit (AWB)<br>70% Bitumen<br>30% Cond. 21 Deg. API | Ontario Dawn<br>Reference<br>Point |
|                   | C\$/bbl                               | C\$/bbl                        | C\$/bbl  | C\$/mcf                            |
|                   | Current                               | Current                        | Current  | Current                            |
| <b>Historical</b> |                                       |                                |  |                                    |
| <b>2010</b>       | \$76.40                               | \$72.32                        | \$67.64  | \$4.79                             |
| <b>2011</b>       | \$92.13                               | \$83.39                        | \$80.29  | \$4.34                             |
| <b>2012</b>       | \$84.27                               | \$77.53                        | \$74.75  | \$3.11                             |
| <b>2013</b>       | \$91.76                               | \$82.65                        | \$76.90  | \$4.13                             |
| <b>2014</b>       | \$92.91                               | \$89.39                        | \$82.03  | \$5.76                             |
| <b>2015</b>       | \$55.46                               | \$54.70                        | \$44.28  | \$3.72                             |
| <b>2016</b>       | \$51.37                               | \$48.29                        | \$39.58  | \$3.46                             |
| <b>2017</b>       | \$62.06                               | \$58.16                        | \$50.60  | \$3.97                             |
| <b>2018</b>       | \$73.06                               | \$62.82                        | \$54.46  | \$4.07                             |
| <b>2019</b>       | \$69.68                               | \$65.72                        | \$58.85  | \$3.22                             |
| <b>2020</b>       |                                       |                                |  |                                    |
| <b>3 Mths H</b>   | \$54.32                               | \$48.88                        | \$35.57  | \$2.50                             |
| <b>9 Mths F</b>   | \$32.25                               | \$27.25                        | \$23.05  | \$2.60                             |
| <b>Avg.</b>       | \$37.77                               | \$32.66                        | \$26.18  | \$2.57                             |
| <b>Forecast</b>   |                                       |                                |  |                                    |
| <b>2020</b>       | \$32.25                               | \$27.25                        | \$23.05  | \$2.60                             |
| <b>2021</b>       | \$49.25                               | \$43.15                        | \$35.50  | \$3.05                             |
| <b>2022</b>       | \$61.85                               | \$55.60                        | \$45.85  | \$3.45                             |
| <b>2023</b>       | \$74.00                               | \$67.65                        | \$58.10  | \$3.65                             |
| <b>2024</b>       | \$75.50                               | \$69.00                        | \$59.25  | \$3.75                             |
| <b>2025</b>       | \$77.00                               | \$70.40                        | \$60.45  | \$3.80                             |
| <b>2026</b>       | \$78.55                               | \$71.80                        | \$61.65  | \$3.90                             |
| <b>2027</b>       | \$80.10                               | \$73.25                        | \$62.90  | \$3.95                             |
| <b>2028</b>       | \$81.70                               | \$74.70                        | \$64.15  | \$4.05                             |
| <b>2029</b>       | \$83.35                               | \$76.20                        | \$65.45  | \$4.10                             |
| <b>2030</b>       | \$85.00                               | \$77.70                        | \$66.75  | \$4.20                             |
| <b>2031</b>       | \$86.75                               | \$79.25                        | \$68.05  | \$4.30                             |
| <b>2032</b>       | \$88.45                               | \$80.85                        | \$69.45  | \$4.40                             |
| <b>2033</b>       | \$90.25                               | \$82.45                        | \$70.80  | \$4.45                             |
| <b>2034</b>       | \$92.05                               | \$84.10                        | \$72.25  | \$4.55                             |
| <b>2035</b>       | \$93.85                               | \$85.80                        | \$73.70  | \$4.65                             |
| <b>2036</b>       | \$95.75                               | \$87.50                        | \$75.15  | \$4.75                             |
| <b>2037</b>       | \$97.65                               | \$89.25                        | \$76.65  | \$4.85                             |
| <b>2038</b>       | \$99.60                               | \$91.05                        | \$78.20  | \$4.95                             |
| <b>2039</b>       | \$101.60                              | \$92.85                        | \$79.75  | \$5.05                             |
| <b>2039+</b>      | 2.0%                                  | 2.0%                           | 2.0%   | 2.0%                               |



### Notes:

- Data sources include: EIA, DOB, NRC, Flint Hills Resources, Alberta Government.
- All prices are in Canadian dollars except WTI and NYMEX gas which are in US dollars.
- Edmonton city gate prices based on historical light oil par prices posted by the Government of Alberta and Net Energy differential futures (40 Deg. API < 0.5% Sulphur).
- Natural Gas Liquid prices are forecasted at Edmonton therefore an additional transportation cost must be included to plant gate sales point.
- 1 Mcf is equivalent to 1 mmmbtu.
- Real prices listed in 2020 dollars with no escalation considered.
- Alberta gas prices, except AECO, include an average cost of service to the plant gate.
- NGL prices have been switched from a mix reference to a spec reference.

**Disclaimer** - No representation or warranty of any kind (whether expressed or implied) is given by Deloitte LLP as to the accuracy, completeness, currency or fitness for any purpose of this document. As such, this document does not constitute the giving of investment advice, nor a part of any advice on investment decisions. Accordingly, regardless of the form of action, whether in contract, tort or otherwise, and to the extent permitted by applicable law, Deloitte LLP accepts no liability of any kind and disclaims all responsibility for the consequences of any person acting or refraining from acting in reliance on this price forecast in whole or in part. **This price forecast is not for dissemination in the United States or for distribution to United States wire services.**

# International price tables

| Crude Oil Pricing |                  |                     |                          |                       |                       |            |               |            |  |                     |                  |                      |                         |             |              |                 |
|-------------------|------------------|---------------------|--------------------------|-----------------------|-----------------------|------------|---------------|------------|--|---------------------|------------------|----------------------|-------------------------|-------------|--------------|-----------------|
| Year              | Average WTI Spot | Alaskan North Slope | California Midway-Sunset | Louisiana Heavy Sweet | Louisiana Light Sweet | MARS Blend | Wyoming Sweet | Brent Spot | Gulf Coast Argus Sour Crude Index ASCI | Average OPEC Basket | Venezuelan Merey | Nigerian Bonny Light | Arabia UAE Dubai Feteoh | Mexico Maya | Russia Urals | Indonesia Minas |
|                   | US\$/bbl         | US\$/bbl            | US\$/bbl                 | US\$/bbl              | US\$/bbl              | US\$/bbl   | US\$/bbl      | US\$/bbl   | US\$/bbl                               | US\$/bbl            | US\$/bbl         | US\$/bbl             | US\$/bbl                | US\$/bbl    | US\$/bbl     | US\$/bbl        |
| <b>Forecast</b>   |                  |                     |                          |                       |                       |            |               |            |  |                     |                  |                      |                         |             |              |                 |
| <b>2020</b>       | \$32.50          | \$31.50             | \$34.50                  | \$35.50               | \$34.50               | \$31.50    | \$28.00       | \$36.50    | \$31.50                                | \$33.50             | \$26.50          | \$37.75              | \$35.50                 | \$29.50     | \$34.50      | \$33.50         |
| <b>2021</b>       | \$42.50          | \$41.50             | \$44.50                  | \$45.50               | \$44.50               | \$41.50    | \$38.00       | \$46.50    | \$41.50                                | \$44.50             | \$38.50          | \$47.75              | \$45.50                 | \$39.50     | \$45.50      | \$43.50         |
| <b>2022</b>       | \$50.00          | \$49.00             | \$52.00                  | \$53.00               | \$52.00               | \$49.00    | \$45.50       | \$54.00    | \$49.00                                | \$52.00             | \$46.00          | \$55.25              | \$53.00                 | \$47.00     | \$53.50      | \$51.00         |
| <b>2023</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2024</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2025</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2026</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2027</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2028</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2029</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2030</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2031</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2032</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2033</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2034</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2035</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2036</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2037</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2038</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2039</b>       | \$60.00          | \$59.00             | \$62.00                  | \$63.00               | \$62.00               | \$59.00    | \$55.50       | \$64.00    | \$59.00                                | \$62.00             | \$56.00          | \$65.25              | \$63.00                 | \$57.00     | \$63.50      | \$61.00         |
| <b>2039+</b>      | 0.0%             | 0.0%                | 0.0%                     | 0.0%                  | 0.0%                  | 0.0%       | 0.0%          | 0.0%       | 0.0%                                   | 0.0%                | 0.0%             | 0.0%                 | 0.0%                    | 0.0%        | 0.0%         | 0.0%            |

## Notes:

- Data sources include: EIA, OPEC, ARC Energy, Marex Spectron.
- Venezuelan Merey replaced BCF-17 in the OPEC basket March 1, 2009.

**Disclaimer** - No representation or warranty of any kind (whether expressed or implied) is given by Deloitte LLP as to the accuracy, completeness, currency or fitness for any purpose of this document. As such, this document does not constitute the giving of investment advice, nor a part of any advice on investment decisions. Accordingly, regardless of the form of action, whether in contract, tort or otherwise, and to the extent permitted by applicable law, Deloitte LLP accepts no liability of any kind and disclaims all responsibility for the consequences of any person acting or refraining from acting in reliance on this price forecast in whole or in part. **This price forecast is not for dissemination in the United States or for distribution to United States wire services.**

| Year            | Natural Gas pricing |               |                 |              |                  |                 |          |                    | Ethanol         |        |
|-----------------|---------------------|---------------|-----------------|--------------|------------------|-----------------|----------|--------------------|-----------------|--------|
|                 | USD to GBP          | USD to EUR    | NYMEX Henry Hub | Permian Waha | San Juan Ignacio | Rocky Mtn. Opal | UK NBP   | India Domestic Gas | US CBOT Ethanol |        |
|                 | Exchange rate       | Exchange rate | US\$/Mcf        | US\$/Mcf     | US\$/Mcf         | US\$/Mcf        | US\$/Mcf | US\$/Mcf           | US\$/gal        |        |
| <b>Forecast</b> |                     |               |                 |              |                  |                 |          |                    |                 |        |
| <b>2020</b>     | 1.300               | 1.130         | \$2.00          | \$0.75       | \$1.50           | \$1.75          | \$3.00   | \$2.30             |                 | \$1.30 |
| <b>2021</b>     | 1.300               | 1.130         | \$2.35          | \$1.35       | \$1.85           | \$2.10          | \$4.10   | \$1.75             |                 | \$1.30 |
| <b>2022</b>     | 1.300               | 1.130         | \$2.70          | \$1.95       | \$2.20           | \$2.45          | \$4.95   | \$2.30             |                 | \$1.30 |
| <b>2023</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.75             |                 | \$1.30 |
| <b>2024</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2025</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2026</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2027</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2028</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2029</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2030</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2031</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2032</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2033</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2034</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2035</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2036</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2037</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2038</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2039</b>     | 1.300               | 1.130         | \$2.90          | \$2.15       | \$2.40           | \$2.65          | \$5.15   | \$2.90             |                 | \$1.30 |
| <b>2039+</b>    | 1.300               | 1.130         | 0.0%            | 0.0%         | 0.0%             | 0.0%            | 0.0%     | 0.0%               |                 | 0.0%   |

**Notes:**

- Data sources include: EIA, OPEC, ARC Energy, Marex Spectron.
- Venezuelan Merrey replaced BCF-17 in the OPEC basket March 1, 2009.

**Disclaimer** - No representation or warranty of any kind (whether expressed or implied) is given by Deloitte LLP as to the accuracy, completeness, currency or fitness for any purpose of this document. As such, this document does not constitute the giving of investment advice, nor a part of any advice on investment decisions. Accordingly, regardless of the form of action, whether in contract, tort or otherwise, and to the extent permitted by applicable law, Deloitte LLP accepts no liability of any kind and disclaims all responsibility for the consequences of any person acting or refraining from acting in reliance on this price forecast in whole or in part. **This price forecast is not for dissemination in the United States or for distribution to United States wire services.**

# Pricing philosophy

Price forecasting takes into account many variables that can influence future prices. Our experience tells us that we must continually review the forecasting tools we use to predict where oil and gas prices are heading. However, one constant influence on oil and gas pricing is the geo-political landscape. This impact is most accurately reflected in the financial industry's futures market for commodities, a main influence when Deloitte creates its price forecast. In other words, Deloitte looks to both the futures and the past when we create our forecasts.

This pricing philosophy challenges conventional thinking. The traditional view is based on the mean-reversion view of commodities presented by economists. Following this model, industry forecasts from 2000 to 2006 reflected a drop in prices over the long term from the current prices of the day – even though the futures market indicated otherwise. While the mean-reversion approach definitely has some merit, history has tended to reflect that the futures market is a more accurate barometer.

## Client focus

At Deloitte, we believe it is part of our role to help our clients in both the oil and gas sector and the investment community make better long-term business decisions by providing them with the most accurate and realistic information. We understand that sound analysis of changing trends can influence decisions on mergers, acquisitions, divestitures and investments. One way we

ensure our price forecasts are as accurate as possible, given the continuing impact of near-term volatility, is to review our pricing assumptions on a quarterly basis.

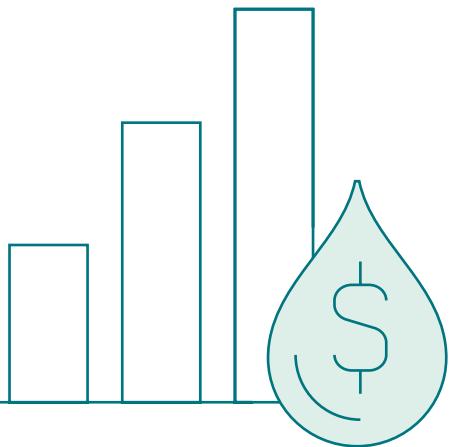
## Our process

In preparing the price forecast, Deloitte considers the current monthly trends, the actual price and trends for the year-to-date and the prior year actual prices. The base forecast for both oil and gas is based on New York Mercantile Exchange (NYMEX) futures in US dollars.

Crude oil and natural gas forecasts are based on yearly variable factors, weighted to a higher percent for the current data and then reflect a higher percent to prior year historical data for the later years. Gas prices have been determined independently from oil prices, but still reflect the current competitive nature of the two fuels and historical oil-to-gas ratios for the latter years of the gas forecast.

Deloitte prepares our price and market forecasts based on information we collect from numerous government agencies, industry publications, oil refineries, natural gas marketers and industry trends. Inflation forecasts and exchange rates are also an integral part of the forecast.

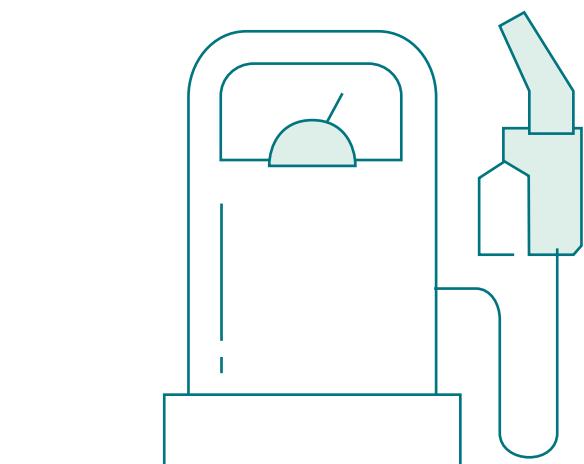
These forecasts are Deloitte's best estimate of how the future will look, and while they are considered reasonable, changing market conditions or additional information may require alteration from the indicated effective date.



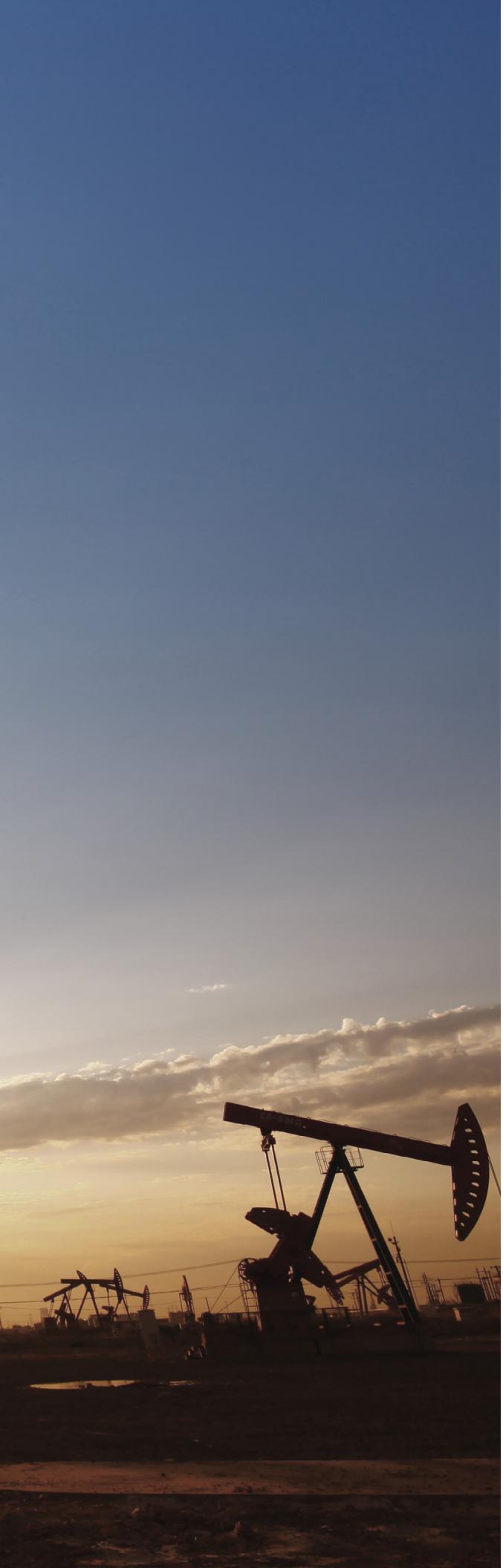
# Glossary

Some of the words, phrases and acronyms we use frequently when talking about pricing are listed below:

|      |   |       |  |
|------|---|-------|--|
| AECO | Alberta Energy Company - historical name of a virtual trading hub on the NGX system | LNG   | Liquefied Natural Gas                                |
| ANS  | Alaska North Slope  | MESC  | Middle East Sour Crude                               |
| ASCI | Argus Sour Crude Oil  | MSO   | Mixed Sour Crude Oil                                 |
| AWB  | Access Western Blend - Canadian condensate/bitumen mix                              | MSW   | Canadian Light Sweet                                 |
| BR   | Bow River Crude Oil   | NEB   | Canadian National Energy Board                       |
| CAPP | Canadian Association of Petroleum Producers   | NGX   | Natural Gas Exchange                                 |
| CBOT | Chicago Board Of Trade  | NIT   | Nova Inventory Transfer                              |
| CGA  | Canadian Gas Association  | NRC   | Natural Resources Canada                             |
| CME  | Chicago Mercantile Exchange   | NYMEX | New York Mercantile Exchange                         |
| DCQ  | Daily Contract Quantity   | OECD  | Organization of Economic Cooperation and Development |
| DOB  | Daily Oil Bulletin  | OPEC  | Organization of Petroleum Exporting Countries        |
| EIA  | Energy Information Administration   | PADD  | Petroleum Administration Defense District            |
| FERC | US Federal Energy Regulatory Commission   | USGC  | US Gulf Coast  |
| FOB  | Free on Board (shipper term)  | USWC  | US West Coast  |
| IEA  | International Energy Administration   | WCS   | Western Canada Select Crude Oil                      |
| LLB  | Lloydminster Blend Crude Oil  | WTI   | West Texas Intermediate                              |
|      |   | WTS   | West Texas Sour                                      |







# Contacts

**Andrew Botterill**  
403-648-3239  
[abotterill@deloitte.ca](mailto:abotterill@deloitte.ca)

**Sarah Clowes**  
587-293-3201  
[saclowes@deloitte.ca](mailto:saclowes@deloitte.ca)

**Lesley Mitchell**  
403-648-3215  
[lemitchell@deloitte.ca](mailto:lemitchell@deloitte.ca)

**Jonathan Listoe**  
403-648-3254  
[jlistoe@deloitte.ca](mailto:jlistoe@deloitte.ca)

Deloitte  
Bankers Court  
700, 850 - 2 Street SW  
Calgary AB T2P 0R8  
Canada

Tel: 403-267-1700  
Fax: 587-774-5398

# Deloitte.

[www.deloitte.ca/priceforecast](http://www.deloitte.ca/priceforecast)

No representation or warranty of any kind (whether expressed or implied) is given by Deloitte LLP as to the accuracy, completeness, currency or fitness for any purpose of this document. As such, this document does not constitute the giving of investment advice, nor a part of any advice on investment decisions. Accordingly, regardless of the form of action, whether in contract, tort or otherwise, and to the extent permitted by applicable law, Deloitte LLP accepts no liability of any kind and disclaims all responsibility for the consequences of any person acting or refraining from acting in reliance on this price forecast in whole or in part.

This price forecast is not for dissemination in the United States or for distribution to United States wire services.

#### **About Deloitte**

Deloitte provides audit and assurance, consulting, financial advisory, risk advisory, tax, and related services to public and private clients spanning multiple industries. Deloitte serves four out of five Fortune Global 500® companies through a globally connected network of member firms in more than 150 countries and territories bringing world-class capabilities, insights, and service to address clients' most complex business challenges. Deloitte LLP, an Ontario limited liability partnership, is the Canadian member firm of Deloitte Touche Tohmatsu Limited. Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee, and its network of member firms, each of which is a legally separate and independent entity. Please see [www.deloitte.com/about](http://www.deloitte.com/about) for a detailed description of the legal structure of Deloitte Touche Tohmatsu Limited and its member firms.

Our global Purpose is making an impact that matters. At Deloitte Canada, that translates into building a better future by accelerating and expanding access to knowledge. We believe we can achieve this Purpose by living our shared values to lead the way, serve with integrity, take care of each other, foster inclusion, and collaborate for measurable impact.

To learn more about how Deloitte's approximately 312,000 professionals, over 12,000 of whom are part of the Canadian firm, please connect with us on [LinkedIn](#) [Twitter](#) [Instagram](#), or [Facebook](#)