



## Price forecast Oil, Gas & Chemicals

June 30, 2021





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# Forecast commentary

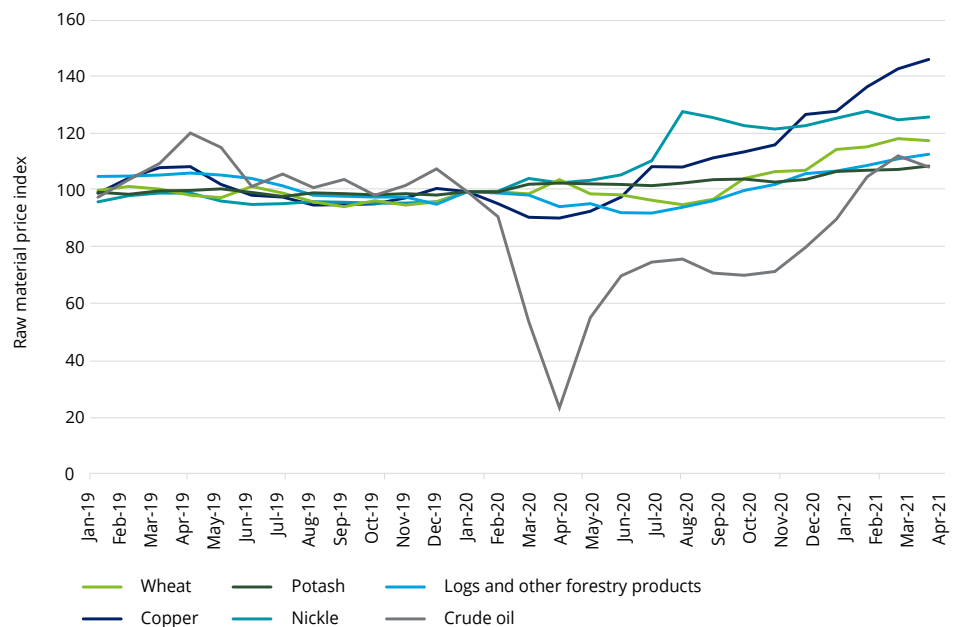
## Markets rally, resulting in resilient commodity prices

As the vaccination rate against COVID-19 soared and energy demand increased as advanced economies began the arduous path toward recovery, crude oil and natural gas prices in the second quarter of 2021 continued to show strength. Indices followed the upward market trend seen in all commodities over the past few months as consumers loosen their wallets and society begins to return to life as it was before the pandemic.

Global crude oil stocks decreased between January and June (H1 2021), indicating demand outpaced supply. Starting in July, OPEC+ plans to gradually increase production from member nations. By July, the supply OPEC+ plans to return to the market will be only 40% of the total 9.7 MMbbl/d cut when demand

first dropped. As such, OPEC+'s plan is not expected to oversupply the market. Instead, the increased volumes will fill demand growth from developed economies, which should result in stable prices during the summer months. Many developing nations have not had the same access to vaccines, which could slow global demand growth in the coming months. The International Energy Administration forecasts Canadian production levels will increase to record levels in the second half of the year, after heavy maintenance activities for oilsands upgraders are finished. Turnaround activities were either delayed or took additional time to complete due to COVID-19 outbreaks in Alberta. Maintenance activities for major oilsands producers are scheduled to be completed by the end of the third quarter, allowing for an uptick in production levels once operations are fully resumed.

## Raw material price indices



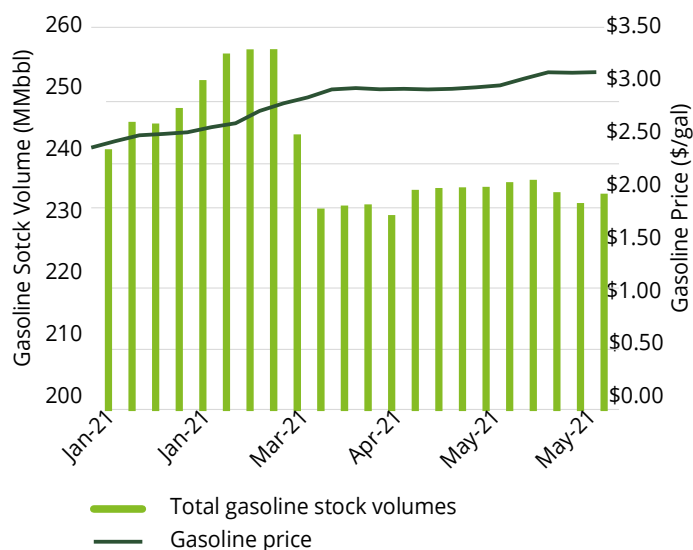
Source: Statistics Canada (202001=100).

North American crude oil prices were bolstered by higher demand for refined product during the resurgence of service industries, including transportation. The West Texas Intermediate (WTI) price averaged US\$65.24/bbl in May 2021, 13% higher than the average price in the first quarter. Oil prices are expected to remain elevated as supply stays relatively stable and demand increases heading into the summer driving season. US gasoline stocks dropped in March as demand increased and supply remained relatively flat. The imbalance caused gasoline prices to surge to levels not seen since May 2019, indicating a recovery of the US economy as public health restrictions to contain the spread of COVID-19 are lifted. Gasoline prices in the United States are more dependent on crude

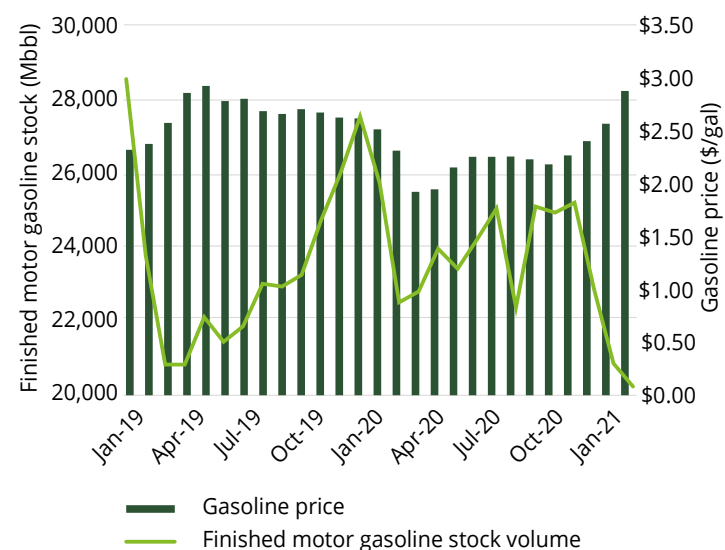
oil prices because a larger portion of the price composition is attributed to feedstock and refining in comparison to Canada, it's attributed to taxes and distribution. As US refineries rebound from low utilization in March, gasoline stocks are expected to build, stabilizing the retail market and reducing gasoline prices. The increase in refinery utilization rates also indicates the need for more crude oil feedstock, which in turn raises demand for North American crude oil.

Overall, we expect crude oil prices to hover at recent values over the summer as countries continue to lift their pandemic restrictions and OPEC+ gradually increases production levels to match demand growth.

### US total gasoline stock and price



### US finished motor gasoline stock and price



Source: EIA.

Natural gas prices remained stable throughout the spring of 2021, showing strength in a historically softer price period. Natural gas demand in Alberta trended above the five-year average, which resulted in decreased natural gas storage levels throughout Western Canada. Canadian production levels dropped in April during spring breakup activities but rebounded in May and June to levels above the five-year trend.

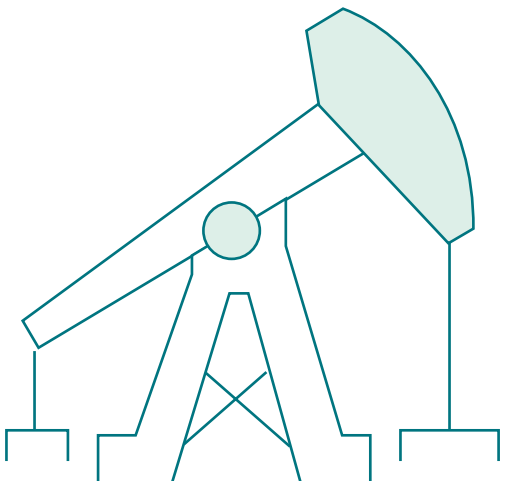
In the United States, dry gas production remained relatively flat in Q2 while domestic natural gas demand trended to historical values. Stable domestic production coupled with high-export volumes to Mexico and liquid natural gas markets resulted in stock draws and reduced storage volumes during the quarter. The EIA predicts US natural gas consumption will decrease marginally for the remainder of the year. As the price of natural gas increases, electricity generation is expected to shift to coal and renewable sources; however, industrial consumption is expected to increase during this timeframe as manufacturing operations scale to meet increased demand as the pandemic recedes.

Overall, we expect North American natural gas prices to remain strong over the summer months as supply and demand remain flat.

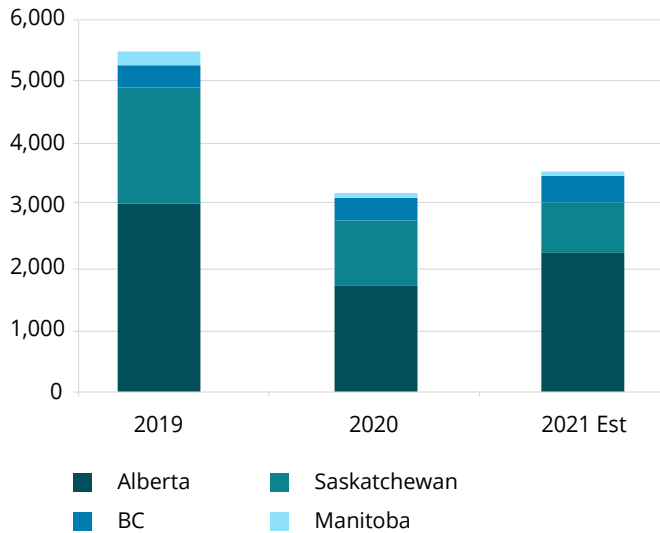
#### Canadian producers revert to 2019 drilling trends

While the recent strength of oil prices has motivated increased drilling activity, companies have not been motivated to put a significant number of rigs to work. The last time oil prices reached these levels was in the second half of 2018, which saw an average of 140-170 active oil rigs a day. At this point in the season, the number of active oil and gas rigs is similar to the second half of 2019 (H2 2019)—averaging between 100-150 rigs a day—indicating that even with higher commodity prices, oil development activity in 2021 is not expected to outpace that of 2019. Current estimates by industry groups, such as the Petroleum Services Association of Canada, peg a 40% reduction in oil development activity compared to 2019. Oil wells are still expected to account for two-thirds of Canadian drilling for 2021.

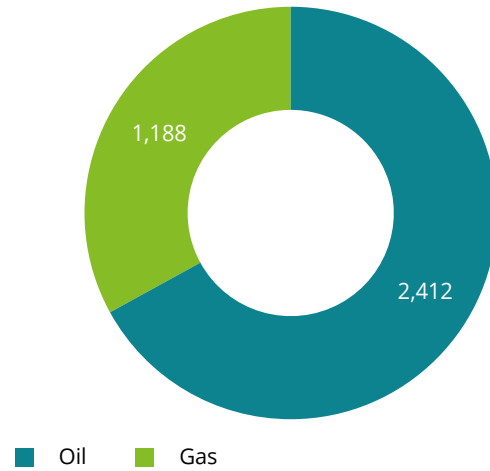
As the price of natural gas increases, electricity generation is expected to shift to coal and renewable sources.



### Wells drilled, by province



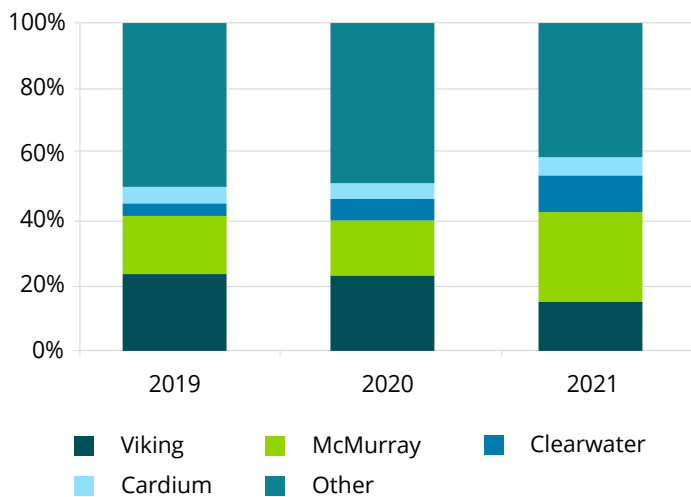
### Wells drilled, by target product (2021 Est)



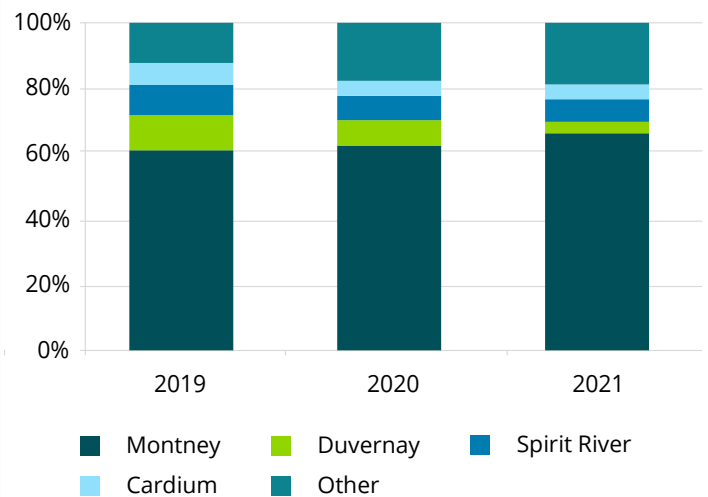
Source: DOB, PSAC.

Although total oil-drilling activity is lower than 2019 levels, the target formations distribution has remained relatively unchanged over the past three years. The exception is an increase in Clearwater drilling.

### Oil wells drilled, by formation



### Gas wells drilled, by formation



Source: DOB.



Natural gas drilling remains stable

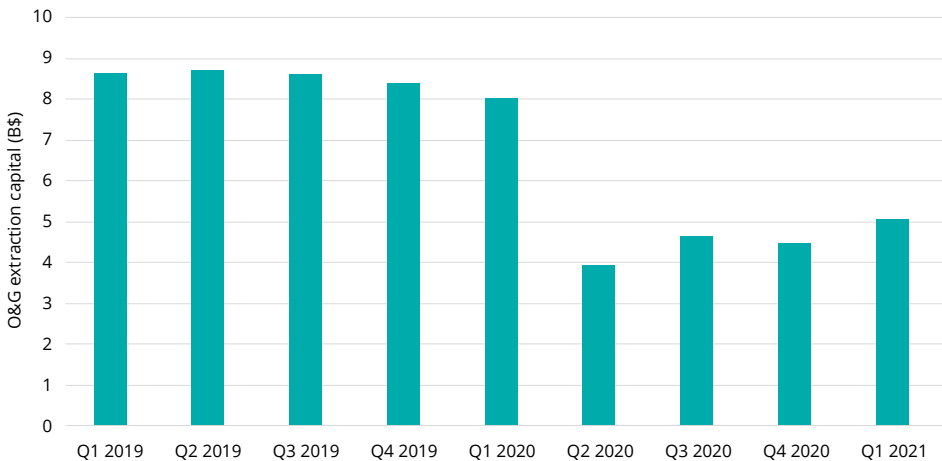
Natural gas prices have been relatively stable since late 2019, averaging above \$2.50/GJ over the past eight months. Based on stable, elevated prices, it's little surprise that natural gas drilling dropped by only 10% between 2019 and 2020; compare that to a 50% drop in oil drilling. The Montney Formation continues to be the most drilled gas formation, representing approximately 60% of all gas wells spud. It should be noted that the level of Duvernay drilling has decreased in recent years, most likely due to higher drilling costs and less-proven production results within the developed acreage to date. Based on the current stability of the market, natural gas drilling is expected to outpace 2019 levels by 20%. If prices remain stable in the Canadian AECO market, natural gas drilling is expected to stay fairly consistent with 2021 levels as producers fill demand for domestic use, exports to the United States, oilsands operations, and most recently, potential blue hydrogen production projects.

The nature of development planning is changing

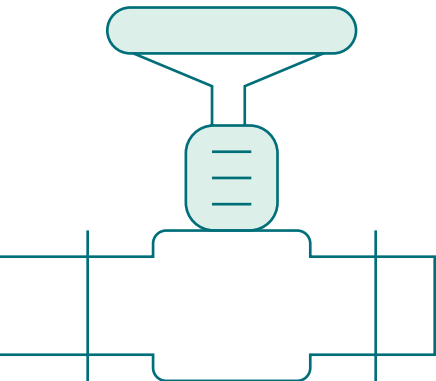
The market seems to have fundamentally changed with regard to development planning. Companies are practising capital investment restraint while prices are hot: rather than rapidly deploying cash flow, they're paying down debt and maintaining flexibility for future investments, including those associated with decarbonization and energy transition efforts. The ongoing push to transition energy to renewables has engulfed industry conversations, though it's uncertain how all producers will respond to and participate in this transition. Every company will have a different role to play, and different investments will be required depending on existing portfolios and corporate strategies.

Producers have indicated to the market that development plans will largely allow them to remain at flat production levels for 2021 in comparison to 2019/2020. Capital spending increased in Q1 2021 by almost 30% from lows in Q2 2020, but the upward trend is shallow and does not indicate significant capital is needed to maintain the flat production levels companies are looking to achieve.

Quarterly oil and gas capital spending



Source: Statistics Canada.

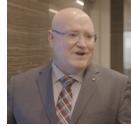






# Economic outlook

## Author



**Craig Alexander**

Chief Economist and Executive Advisor

As it gains momentum, the global economic recovery is supporting significantly higher commodity prices. Vaccination campaigns are making good progress in the advanced economies, allowing a relaxation or end to various public health-related restrictions. The diminishing health risks from COVID-19 and favourable economic and financial performance has lifted consumer and business sentiment. Along with improving labour markets, this rising confidence sets the stage for increased economic activity as individuals and companies start spending on what they've been wanting to but couldn't because of the pandemic.

The rebound in advanced-economy growth has created some concerns about the possibility of inflation. Indeed, inflation in the United States jumped to 5% in April. But the major central banks have all signalled they believe the acceleration in inflation is temporary given the economic slack created by the 2020 recession. They are also of the view that some of the price pressures are coming from transitory supply-chain disruption, temporary labour shortages, and higher commodity prices that are not predicted to keep climbing. Consequently, monetary stimulus is being maintained at an elevated degree. Although there's speculation that a sustained inflation shock could occur, bond investors clearly agree with the central banks: while bond yields have increased, the inflation premium remains modest. Time will tell if monetary authorities and investors are right.

The narrative is mixed with regard to emerging market economies. China has already recovered, even surpassing its pre-pandemic level of economic output. Growth is picking up in most developing nations, but most forecasters are predicting

it will take longer for them to recover. This is partly due to vaccinations occurring more slowly in these countries, which leads to governments keeping health-related restrictions in place for longer. Nevertheless, many emerging markets are still benefiting from the rapid increase in commodity prices and the rising global demand for their exports.

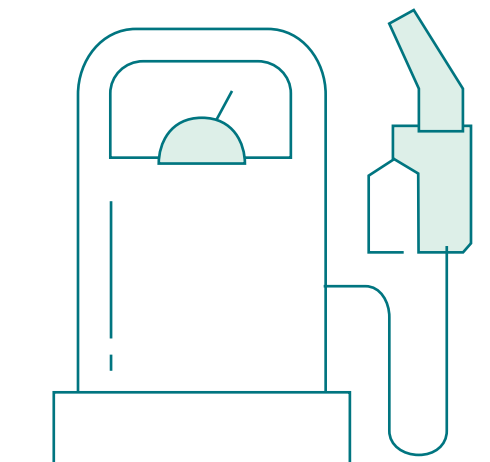
The main message is that the world economy appears to be on track for a strong recovery in the second half of this year and over the next couple of years. Yes, the pace of growth will be uneven by country and by industry, reflecting the pandemic's fallout for businesses. But one cannot dispute that the light at the end of the COVID-19 tunnel is getting brighter.

This is good news with regard to demand for the oil and gas sector.

### Oil and gas in Canada

Turning to domestic activity, the Canadian economy managed to avoid a double-dip recession during the pandemic's second and third waves. The increased health risks, however, did lead to a more moderate pace of recovery. The vaccination campaign had a slow start, but at the time of writing, it appears likely that second doses will be completed before the end of the summer.

The economic recovery in 2020 and the first half of 2021 has been fuelled by strong consumer spending, booming residential real estate markets, and increased government transfers and spending. This development is a bit worrying because it's adding to already dramatically high household debt. Nevertheless, the household sector has accumulated a vast amount of savings, giving consumers



significant spending potential—and consumer spending is 55% of the economy. Moreover, employment growth will intensify as public health restrictions are lifted. The upshot: the ingredients for strong consumer outlays once the health crisis has passed are in place, but they bring potential financial risks for the years ahead.

Business investment and exports have contributed to some growth, but have lagged other segments of the economy. The oil and gas sector has contributed to this weakness, which should not be a surprise given that the industry is highly cyclical, and investment always plunges when there's a recession. The rebound in oil prices is a welcome development and could lead to greater investment in the near term—but for domestic and international commitments to lower carbon emissions. During the pandemic, the federal government announced the price of carbon would rise over time to \$175 per tonne by 2030 so that Canada can meet its Paris Accord carbon-emission reduction target.

The increasing dominance of environmental, social, and governance (ESG) considerations for investment suggests that future investment in the carbon-based energy sector will be limited. It's also evident from international markets that global capital is shifting away from high carbon-emission activity and toward more sustainable, green investments. Moreover, pipelines continue to be contentious: the US government recently struck down the Keystone XL pipeline, while the State of Michigan is challenging the Line 5 pipeline that crosses its boundaries to provide oil to central and eastern Canada.

Putting the elements together, the baseline economic outlook is for strong economic growth in Canada in 2021. We expect 6.7% this year after its 5.3% decline in 2020, which will result in the economy returning to its pre-pandemic level of output late this year. The pace of expansion will slow in 2022 as fiscal stimulus diminishes and the Bank of Canada winds down its bond-buying program. The bank isn't likely to raise interest rates until mid-2022, and the commodity price rally will likely lose momentum.

This suggests the Canadian dollar will also stop its ascent relative to the US dollar, but it should remain above 80 US cents. The end of emergency programs should stop the rise in debt-to-GDP ratio even as the federal government is projected to continue running deficits. Federal and provincial governments are likely to be very slow in rebalancing their finances.

**This is a positive outlook, but several risks should be monitored:**

1. The risk of a variant strain of COVID-19 that is more resistant to current vaccines. This is why vaccination needs to be done on a global basis as quickly as possible.
2. The risk of higher inflation. Central banks and governments have dramatically increased money supply, so the tinder for an inflation flame is present.
3. There might be cases of fiscal crisis in the post-pandemic world. After the financial crisis and recession in 2008-09, a fiscal crisis started in Greece and spread to other European nations. Fiscal risk needs to be monitored closely.
4. It's possible that many of the economic scars created by the pandemic are not yet seen because of the massive government stimulus. The economic damage may become more apparent with time.
5. The rise in importance of ESG considerations and the dramatic expansion of the role of government also poses risks.
6. Geopolitical risks persist, particularly the friction between the United States and China.

The most likely scenario is that strong economic growth as the pandemic fades supports the continued development of Canadian oil and gas assets, but it doesn't mean the path ahead is smooth sailing.

# Canadian domestic price forecast

## Crude oil price and market demand forecast

### Edmonton par (real \$)



## Forecast comments

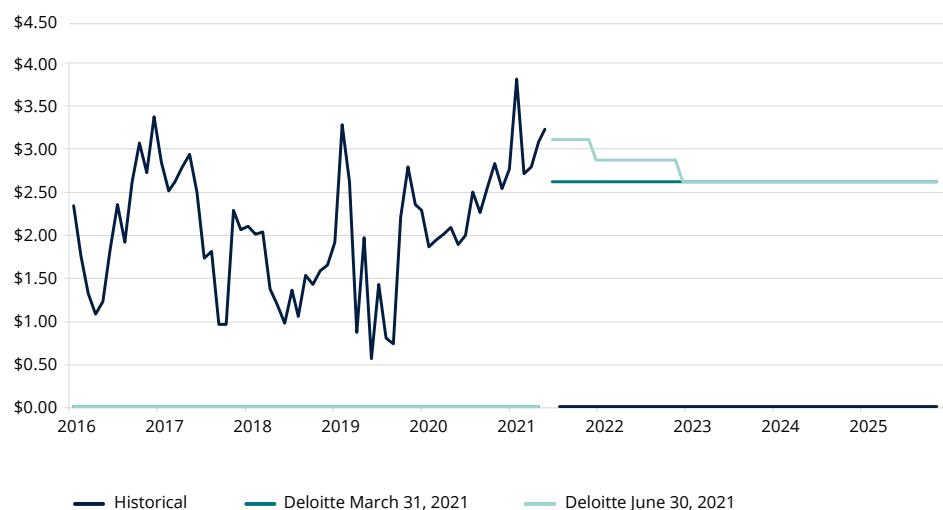
- Edmonton Par is forecast as a differential to WTI. This differential is based on Canadian Light Sweet Oil Index Futures which began trading in January 2014.
- The Edmonton crude oil price is used as the basis for the remaining Canadian crude reference points. Offsets are based on five-year historical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

Year	WTI Cushing, OK (40 API)	WTI Cushing, OK (40 API)	Edmonton City Gate (40 API)	Edmonton City Gate (40 API)	WCS Hardisty (20.5 API)	Heavy Oil Hardisty (12 API)	Cost Inflation	CAD to USD Exchange
	US\$/bbl Real	US\$/bbl Current	C\$/bbl Real	C\$/bbl Current	C\$/bbl Current	C\$/bbl Current	Rate	Rate
<b>Historical</b>								
2018	\$68.25	\$64.94	\$72.63	\$69.10	\$49.68	\$45.34	2.3%	0.772
2019	\$58.54	\$56.98	\$70.90	\$69.02	\$58.75	\$55.11	1.9%	0.754
2020	\$39.51	\$39.23	\$46.02	\$45.69	\$35.60	\$31.48	0.7%	0.746
<b>2021</b>								
6 Mths H	\$61.62	\$61.62	\$73.05	\$73.05	\$61.63	\$57.15	2.4%	0.803
6 Mths F	\$68.00	\$68.00	\$78.75	\$78.75	\$71.25	\$66.75	0.0%	0.800
Avg.	\$64.81	\$64.81	\$75.90	\$75.90	\$66.44	\$61.95	-	0.802
<b>Forecast</b>								
2021	\$68.00	\$68.00	\$78.75	\$78.75	\$71.25	\$66.75	0.0%	0.800
2022	\$62.00	\$63.25	\$71.25	\$72.70	\$62.50	\$57.90	2.0%	0.800
2023	\$55.00	\$57.20	\$62.50	\$65.05	\$52.00	\$47.35	2.0%	0.800
2024	\$55.00	\$58.35	\$62.50	\$66.35	\$53.05	\$48.30	2.0%	0.800
2025	\$55.00	\$59.55	\$62.50	\$67.65	\$54.10	\$49.25	2.0%	0.800
2026	\$55.00	\$60.70	\$62.50	\$69.00	\$55.20	\$50.25	2.0%	0.800
2027	\$55.00	\$61.95	\$62.50	\$70.40	\$56.30	\$51.25	2.0%	0.800
2028	\$55.00	\$63.20	\$62.50	\$71.80	\$57.45	\$52.25	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. Avg. Price	AB AECO Avg. Price	AB AECO Avg. Price	BC Direct Station 2 Sales	NYMEX Henry Hub	NYMEX Henry Hub
	C\$/Mcf	C\$/Mcf	C\$/Mcf	C\$/Mcf	US\$/Mcf	US\$/Mcf
	Current	Real	Current	Current	Real	Current
<b>Historical</b>						
2018	\$1.36	\$1.62	\$1.54	\$1.26	\$3.33	\$3.17
2019	\$1.48	\$1.86	\$1.81	\$1.02	\$2.64	\$2.57
2020	\$2.00	\$2.27	\$2.25	\$2.20	\$2.05	\$2.04
<b>2021</b>						
6 Mths H	\$2.83	\$3.10	\$3.10	\$3.01	\$3.22	\$3.22
6 Mths F	\$2.90	\$3.15	\$3.15	\$3.10	\$3.10	\$3.10
Avg.	\$2.87	\$3.12	\$3.12	\$3.05	\$3.16	\$3.16
<b>Forecast</b>						
2021	\$2.90	\$3.15	\$3.15	\$3.10	\$3.10	\$3.10
2022	\$2.70	\$2.90	\$2.95	\$2.90	\$3.00	\$3.05
2023	\$2.50	\$2.65	\$2.75	\$2.70	\$2.90	\$3.00
2024	\$2.55	\$2.65	\$2.80	\$2.75	\$2.90	\$3.10
2025	\$2.60	\$2.65	\$2.85	\$2.80	\$2.90	\$3.15
2026	\$2.65	\$2.65	\$2.95	\$2.85	\$2.90	\$3.20
2027	\$2.70	\$2.65	\$3.00	\$2.95	\$2.90	\$3.25
2028	\$2.75	\$2.65	\$3.05	\$3.00	\$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
	Current	Current	Current	Current	Current	Current	Current
<b>Forecast</b>							
2021	\$68.00	\$72.00	\$66.50	\$71.00	\$72.00	\$67.00	\$71.00
2022	\$63.25	\$67.30	\$61.70	\$66.30	\$67.30	\$60.20	\$66.30
2023	\$57.20	\$61.40	\$55.65	\$60.35	\$61.40	\$54.10	\$60.35
2024	\$58.35	\$62.60	\$56.75	\$61.55	\$62.60	\$55.20	\$61.55
2025	\$59.55	\$63.85	\$57.90	\$62.80	\$63.85	\$56.30	\$62.80
2026	\$60.70	\$65.15	\$59.05	\$64.05	\$65.15	\$57.40	\$64.05
2027	\$61.95	\$66.45	\$60.25	\$65.30	\$66.45	\$58.55	\$65.30
2028	\$63.20	\$67.75	\$61.45	\$66.60	\$67.75	\$59.75	\$66.60

- 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
			US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf
	Rate	Rate	Current	Current	Current	Current	Current	Current
<b>Forecast</b>								
2021	1.40	1.20	\$3.10	\$2.80	\$2.85	\$2.95	\$8.60	\$2.30
2022	1.40	1.20	\$3.05	\$2.75	\$2.80	\$2.90	\$7.15	\$4.30
2023	1.40	1.20	\$3.00	\$2.70	\$2.75	\$2.85	\$5.60	\$3.75
2024	1.40	1.20	\$3.10	\$2.75	\$2.80	\$2.90	\$5.75	\$3.20
2025	1.40	1.20	\$3.15	\$2.80	\$2.85	\$3.00	\$5.85	\$3.25
2026	1.40	1.20	\$3.20	\$2.85	\$2.95	\$3.05	\$5.95	\$3.30
2027	1.40	1.20	\$3.25	\$2.95	\$3.00	\$3.10	\$6.10	\$3.40
2028	1.40	1.20	\$3.35	\$3.00	\$3.05	\$3.15	\$6.20	\$3.45

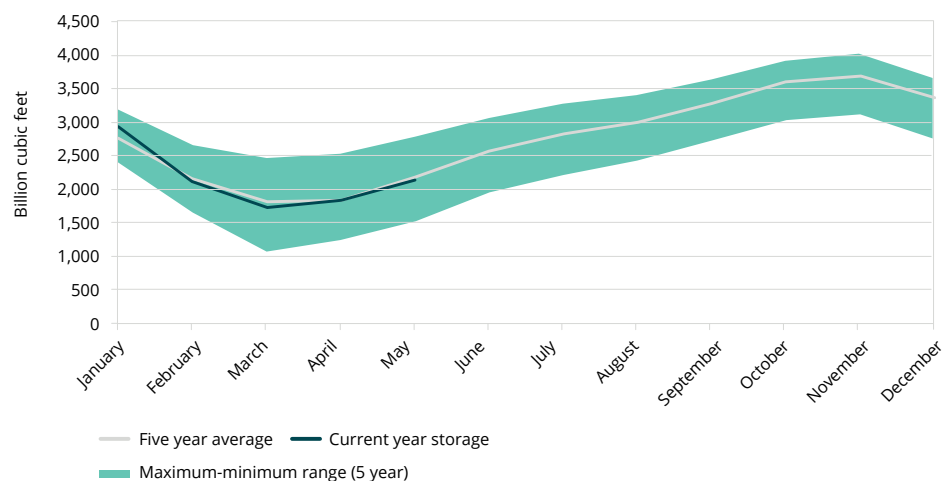
# Global trends

## Storage

### United States

Natural gas storage in the United States has tracked the five year average through much of the year, indicating a balanced market.

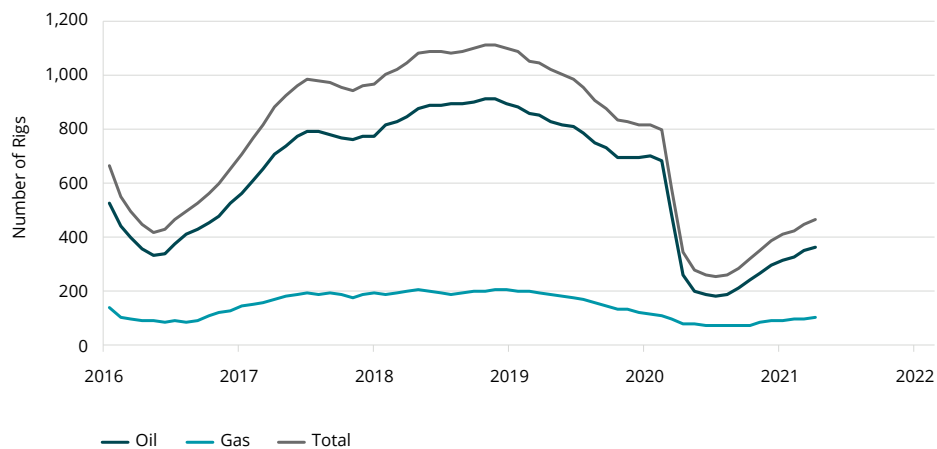
US natural gas storage



Source: Baker Hughes.

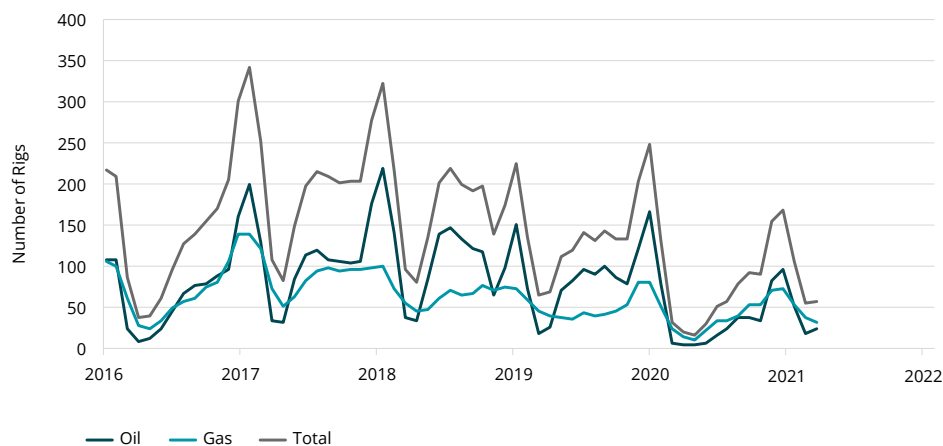


## US rig counts



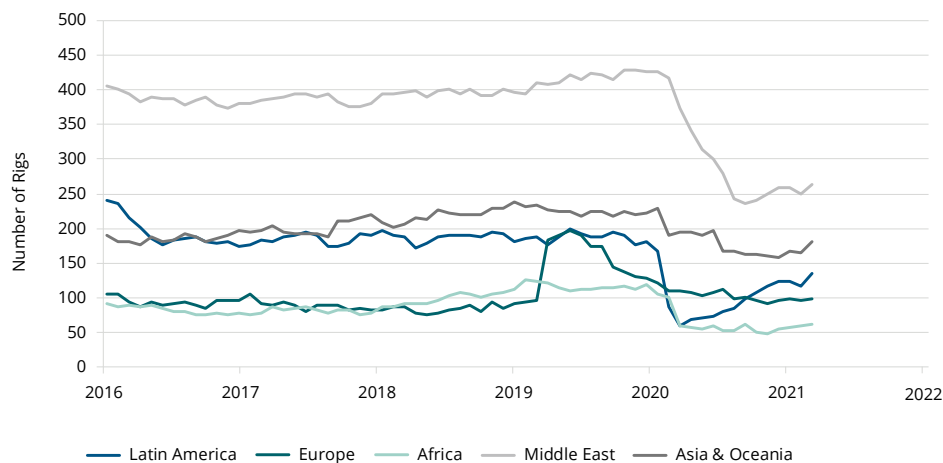
Source: Baker Hughes.

## Canada rig counts



Source: Baker Hughes.

## International rig counts



Source: Baker Hughes.

## Rigs

## United States

As prices continue to remain strong, the growth rate in oil rig counts has started to increase after slowing temporarily in March 2021. Gas rig counts have also begun trending upwards after leveling off in the first quarter of the year.

## Canada

Oil and gas rig counts have bottomed out at a level closer to those seen in 2019 than in 2020. Summer drilling activity will likely outpace 2020 activity as both oil and gas prices continue to remain strong.

## International

With signs of optimism returning to the oil markets, rig counts have begun to rise across the globe. The Middle East and Latin America are expected to see the most growth in drilling activity throughout the rest of the year.



# Canadian domestic price tables

Crude Oil Pricing								
Year	Price Inflation	Cost Inflation	CAD to USD Exchange	WTI at Cushing Oklahoma	WTI at Cushing Oklahoma	Edmonton City Gate	Edmonton City Gate	WCS 20.5 Deg. API Hardisty
	Rate	Rate	Rate	US\$/bbl Real	US\$/bbl Current	C\$/bbl Real	C\$/bbl Current	C\$/bbl Current
<b>Historical</b>								
2011	2.9%	2.9%	1.012	\$111.95	\$94.88	\$112.72	\$95.54	\$77.12
2012	1.5%	1.5%	1.001	\$107.80	\$94.11	\$99.16	\$86.57	\$73.10
2013	0.9%	0.9%	0.972	\$110.44	\$97.91	\$105.31	\$93.36	\$74.97
2014	1.9%	1.9%	0.906	\$104.21	\$93.26	\$105.03	\$94.00	\$81.06
2015	1.1%	1.1%	0.783	\$53.37	\$48.69	\$62.48	\$57.00	\$44.80
2016	1.4%	1.4%	0.755	\$46.77	\$43.15	\$56.59	\$52.22	\$38.90
2017	1.6%	1.6%	0.771	\$54.35	\$50.88	\$66.10	\$61.88	\$50.53
2018	2.3%	2.3%	0.772	\$68.25	\$64.94	\$72.63	\$69.10	\$49.68
2019	1.9%	1.9%	0.754	\$58.54	\$56.98	\$70.90	\$69.02	\$58.75
2020	0.7%	0.7%	0.746	\$39.51	\$39.23	\$46.02	\$45.69	\$35.60
<b>2021</b>								
6 Mths H	2.4%	2.4%	0.803	\$61.62	\$61.62	\$73.05	\$73.05	\$61.63
6 Mths F	0.0%	0.0%	0.800	\$68.00	\$68.00	\$78.75	\$78.75	\$71.25
Avg.	N/A	N/A	0.802	\$64.81	\$64.81	\$75.90	\$75.90	\$66.44
<b>Forecast</b>								
2021	0.0%	0.0%	0.800	\$68.00	\$68.00	\$78.75	\$78.75	\$71.25
2022	2.0%	2.0%	0.800	\$62.00	\$63.25	\$71.25	\$72.70	\$62.50
2023	2.0%	2.0%	0.800	\$55.00	\$57.20	\$62.50	\$65.05	\$52.00
2024	2.0%	2.0%	0.800	\$55.00	\$58.35	\$62.50	\$66.35	\$53.05
2025	2.0%	2.0%	0.800	\$55.00	\$59.55	\$62.50	\$67.65	\$54.10
2026	2.0%	2.0%	0.800	\$55.00	\$60.70	\$62.50	\$69.00	\$55.20
2027	2.0%	2.0%	0.800	\$55.00	\$61.95	\$62.50	\$70.40	\$56.30
2028	2.0%	2.0%	0.800	\$55.00	\$63.20	\$62.50	\$71.80	\$57.45
2029	2.0%	2.0%	0.800	\$55.00	\$64.45	\$62.50	\$73.25	\$58.60
2030	2.0%	2.0%	0.800	\$55.00	\$65.75	\$62.50	\$74.70	\$59.75
2031	2.0%	2.0%	0.800	\$55.00	\$67.05	\$62.50	\$76.20	\$60.95
2032	2.0%	2.0%	0.800	\$55.00	\$68.40	\$62.50	\$77.70	\$62.15
2033	2.0%	2.0%	0.800	\$55.00	\$69.75	\$62.50	\$79.25	\$63.40
2034	2.0%	2.0%	0.800	\$55.00	\$71.15	\$62.50	\$80.85	\$64.70
2035	2.0%	2.0%	0.800	\$55.00	\$72.55	\$62.50	\$82.45	\$65.95
2036	2.0%	2.0%	0.800	\$55.00	\$74.00	\$62.50	\$84.10	\$67.30
2037	2.0%	2.0%	0.800	\$55.00	\$75.50	\$62.50	\$85.80	\$68.65
2038	2.0%	2.0%	0.800	\$55.00	\$77.00	\$62.50	\$87.50	\$70.00
2039	2.0%	2.0%	0.800	\$55.00	\$78.55	\$62.50	\$89.25	\$71.40
2040	2.0%	2.0%	0.800	\$55.00	\$80.10	\$62.50	\$91.05	\$72.85
2040+	2.0%	2.0%	0.800	0.0%	2.0%	0.0%	2.0%	2.0%

## Notes:

- All prices are in Canadian dollars except WTI and NYMEX gas which are in U.S. 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 2021 dollars with no escalation considered

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Natural Gas Liquids Pricing 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>											
2011	\$10.30	\$52.41	\$86.98	\$105.24	\$3.46	\$4.28	\$3.63	\$3.34	\$4.72	\$4.00	\$101.60
2012	\$6.73	\$30.80	\$75.47	\$99.67	\$2.25	\$2.74	\$2.39	\$2.29	\$3.15	\$2.75	\$126.81
2013	\$8.68	\$38.54	\$77.44	\$103.52	\$2.98	\$3.58	\$3.17	\$3.11	\$4.21	\$3.73	\$62.17
2014	\$12.46	\$42.93	\$59.43	\$101.47	\$4.22	\$5.03	\$4.50	\$4.16	\$4.91	\$4.39	\$88.99
2015	\$7.49	\$5.35	\$33.70	\$55.15	\$2.56	\$2.95	\$2.69	\$1.81	\$2.88	\$2.63	\$107.45
2016	\$6.04	\$8.71	\$31.45	\$52.43	\$1.93	\$2.34	\$2.16	\$1.75	\$2.73	\$2.52	\$45.40
2017	\$6.11	\$27.92	\$40.98	\$63.65	\$2.13	\$2.34	\$2.19	\$1.56	\$3.19	\$2.99	\$41.85
2018	\$6.90	\$29.76	\$46.17	\$75.74	\$1.36	\$1.62	\$1.54	\$1.26	\$3.33	\$3.17	\$89.25
2019	\$5.00	\$15.82	\$21.40	\$67.57	\$1.48	\$1.86	\$1.81	\$1.02	\$2.64	\$2.57	\$37.54
2020	\$6.20	\$16.11	\$20.93	\$47.14	\$2.00	\$2.27	\$2.25	\$2.20	\$2.05	\$2.04	\$2.60
<b>2021</b>											
6 Mths H	\$7.01	\$35.54	\$34.95	\$75.23	\$2.83	\$3.10	\$3.10	\$3.01	\$3.22	\$3.22	\$36.39
6 Mths F	\$8.65	\$35.45	\$47.25	\$82.70	\$2.90	\$3.15	\$3.15	\$3.10	\$3.10	\$3.10	\$50.00
Avg.	\$7.83	\$35.50	\$41.10	\$78.96	\$2.87	\$3.12	\$3.12	\$3.05	\$3.16	\$3.16	\$43.20
<b>Forecast</b>											
2021	\$8.65	\$35.45	\$47.25	\$82.70	\$2.90	\$3.15	\$3.15	\$3.10	\$3.10	\$3.10	\$50.00
2022	\$8.15	\$32.70	\$43.60	\$76.30	\$2.70	\$2.90	\$2.95	\$2.90	\$3.00	\$3.05	\$51.00
2023	\$7.60	\$29.30	\$39.00	\$68.30	\$2.50	\$2.65	\$2.75	\$2.70	\$2.90	\$3.00	\$52.00
2024	\$7.75	\$29.85	\$39.80	\$69.65	\$2.55	\$2.65	\$2.80	\$2.75	\$2.90	\$3.10	\$53.05
2025	\$7.90	\$30.45	\$40.60	\$71.05	\$2.60	\$2.65	\$2.85	\$2.80	\$2.90	\$3.15	\$54.10
2026	\$8.05	\$31.10	\$41.40	\$72.50	\$2.65	\$2.65	\$2.95	\$2.85	\$2.90	\$3.20	\$55.20
2027	\$8.20	\$31.70	\$42.25	\$73.95	\$2.70	\$2.65	\$3.00	\$2.95	\$2.90	\$3.25	\$56.30
2028	\$8.40	\$32.35	\$43.10	\$75.40	\$2.75	\$2.65	\$3.05	\$3.00	\$2.90	\$3.35	\$57.45
2029	\$8.55	\$33.00	\$43.95	\$76.90	\$2.80	\$2.65	\$3.10	\$3.05	\$2.90	\$3.40	\$58.60
2030	\$8.70	\$33.65	\$44.80	\$78.45	\$2.85	\$2.65	\$3.15	\$3.10	\$2.90	\$3.45	\$59.75
2031	\$8.90	\$34.30	\$45.70	\$80.05	\$2.95	\$2.65	\$3.25	\$3.15	\$2.90	\$3.55	\$60.95
2032	\$9.10	\$35.00	\$46.65	\$81.65	\$3.00	\$2.65	\$3.30	\$3.25	\$2.90	\$3.60	\$62.15
2033	\$9.25	\$35.70	\$47.55	\$83.25	\$3.05	\$2.65	\$3.35	\$3.30	\$2.90	\$3.70	\$63.40
2034	\$9.45	\$36.40	\$48.50	\$84.95	\$3.10	\$2.65	\$3.45	\$3.35	\$2.90	\$3.75	\$64.70
2035	\$9.65	\$37.15	\$49.50	\$86.60	\$3.15	\$2.65	\$3.50	\$3.45	\$2.90	\$3.85	\$65.95
2036	\$9.80	\$37.90	\$50.45	\$88.35	\$3.25	\$2.65	\$3.55	\$3.50	\$2.90	\$3.90	\$67.30
2037	\$10.00	\$38.65	\$51.50	\$90.10	\$3.30	\$2.65	\$3.65	\$3.55	\$2.90	\$4.00	\$68.65
2038	\$10.20	\$39.40	\$52.50	\$91.95	\$3.35	\$2.65	\$3.70	\$3.65	\$2.90	\$4.05	\$70.00
2039	\$10.45	\$40.20	\$53.55	\$93.75	\$3.45	\$2.65	\$3.80	\$3.70	\$2.90	\$4.15	\$71.40
2040	\$10.65	\$41.00	\$54.65	\$95.65	\$3.50	\$2.65	\$3.85	\$3.80	\$2.90	\$4.20	\$72.85
2040+	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	2.0%	2.0%	0.0%	2.0%	2.0%

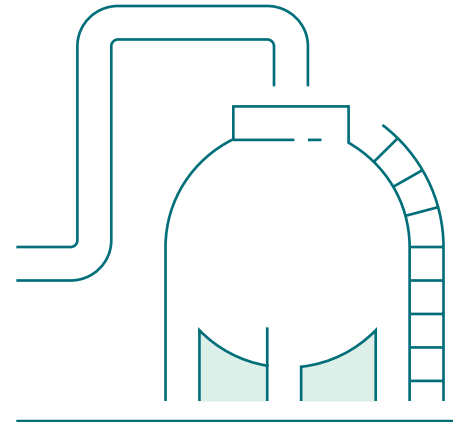
**Notes:**

- 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
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- 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 2021 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

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## Additional crude reference prices

Crude oil pricing				Natural gas pricing
Year	Lt. Sour 35 Deg. API Cromer, SK	MSO 31 Deg. API Hardisty	Synbit (AWB) 70% Bitumen 30% Cond. 21 Deg. API	Ontario Dawn Reference Point
	C\$/bbl	C\$/bbl	C\$/bbl	C\$/mcf
	Current	Current	Current	Current
<b>Historical</b>				
2011	\$92.13	\$83.39	\$80.29	\$4.34
2012	\$84.27	\$77.53	\$74.75	\$3.11
2013	\$91.76	\$82.65	\$76.90	\$4.13
2014	\$92.91	\$89.39	\$82.03	\$5.76
2015	\$55.46	\$54.70	\$44.28	\$3.72
2016	\$51.37	\$48.29	\$39.58	\$3.46
2017	\$62.06	\$58.16	\$50.60	\$3.97
2018	\$73.06	\$62.82	\$54.46	\$4.07
2019	\$69.68	\$65.72	\$58.85	\$3.22
2020	\$45.41	\$43.55	\$36.18	\$2.51
<b>2021</b>				
6 Mths H	\$68.55	\$65.63	\$62.57	\$3.54
6 Mths F	\$79.75	\$74.75	\$71.55	\$3.70
Avg.	\$74.15	\$70.19	\$67.06	\$3.62
<b>Forecast</b>				
2021	\$79.75	\$74.75	\$71.55	\$3.70
2022	\$73.70	\$68.60	\$63.40	\$3.60
2023	\$66.05	\$60.85	\$53.65	\$3.60
2024	\$67.40	\$62.10	\$54.70	\$3.65
2025	\$68.75	\$63.30	\$55.80	\$3.75
2026	\$70.10	\$64.60	\$56.90	\$3.80
2027	\$71.50	\$65.90	\$58.05	\$3.90
2028	\$72.95	\$67.20	\$59.20	\$3.95
2029	\$74.40	\$68.55	\$60.40	\$4.05
2030	\$75.90	\$69.90	\$61.60	\$4.10
2031	\$77.40	\$71.30	\$62.85	\$4.20
2032	\$78.95	\$72.75	\$64.10	\$4.30
2033	\$80.55	\$74.20	\$65.40	\$4.40
2034	\$82.15	\$75.70	\$66.70	\$4.45
2035	\$83.80	\$77.20	\$68.00	\$4.55
2036	\$85.45	\$78.75	\$69.40	\$4.65
2037	\$87.15	\$80.30	\$70.75	\$4.75
2038	\$88.90	\$81.90	\$72.20	\$4.85
2039	\$90.70	\$83.55	\$73.65	\$4.95
2040	\$92.50	\$85.20	\$75.10	\$5.05
2040+	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 mmbtu
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# 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 Feth	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
	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current
Forecast																
2021	\$68.00	\$62.25	\$67.00	\$66.50	\$67.00	\$66.50	\$63.25	\$72.00	\$66.50	\$71.00	\$54.00	\$72.00	\$71.00	\$67.00	\$71.00	\$69.50
2022	\$63.25	\$57.40	\$62.20	\$61.70	\$62.20	\$61.70	\$58.40	\$67.30	\$61.70	\$66.30	\$48.95	\$67.30	\$66.30	\$60.20	\$66.30	\$64.75
2023	\$57.20	\$51.25	\$56.20	\$55.65	\$56.20	\$55.65	\$52.30	\$61.40	\$55.65	\$60.35	\$42.65	\$61.40	\$60.35	\$54.10	\$60.35	\$58.80
2024	\$58.35	\$52.25	\$57.30	\$56.75	\$57.30	\$56.75	\$53.35	\$62.60	\$56.75	\$61.55	\$43.50	\$62.60	\$61.55	\$55.20	\$61.55	\$59.95
2025	\$59.55	\$53.30	\$58.45	\$57.90	\$58.45	\$57.90	\$54.40	\$63.85	\$57.90	\$62.80	\$44.40	\$63.85	\$62.80	\$56.30	\$62.80	\$61.15
2026	\$60.70	\$54.40	\$59.60	\$59.05	\$59.60	\$59.05	\$55.50	\$65.15	\$59.05	\$64.05	\$45.25	\$65.15	\$64.05	\$57.40	\$64.05	\$62.40
2027	\$61.95	\$55.45	\$60.80	\$60.25	\$60.80	\$60.25	\$56.60	\$66.45	\$60.25	\$65.30	\$46.15	\$66.45	\$65.30	\$58.55	\$65.30	\$63.65
2028	\$63.20	\$56.55	\$62.05	\$61.45	\$62.05	\$61.45	\$57.70	\$67.75	\$61.45	\$66.60	\$47.10	\$67.75	\$66.60	\$59.75	\$66.60	\$64.90
2029	\$64.45	\$57.70	\$63.25	\$62.70	\$63.25	\$62.70	\$58.90	\$69.15	\$62.70	\$67.95	\$48.05	\$69.15	\$67.95	\$60.95	\$67.95	\$66.20
2030	\$65.75	\$58.85	\$64.55	\$63.95	\$64.55	\$63.95	\$60.05	\$70.50	\$63.95	\$69.30	\$49.00	\$70.50	\$69.30	\$62.15	\$69.30	\$67.50
2031	\$67.05	\$60.05	\$65.85	\$65.20	\$65.85	\$65.20	\$61.25	\$71.90	\$65.20	\$70.70	\$50.00	\$71.90	\$70.70	\$63.40	\$70.70	\$68.85
2032	\$68.40	\$61.25	\$67.15	\$66.50	\$67.15	\$66.50	\$62.50	\$73.35	\$66.50	\$72.10	\$51.00	\$73.35	\$72.10	\$64.65	\$72.10	\$70.25
2033	\$69.75	\$62.45	\$68.50	\$67.85	\$68.50	\$67.85	\$63.75	\$74.85	\$67.85	\$73.55	\$52.00	\$74.85	\$73.55	\$65.95	\$73.55	\$71.65
2034	\$71.15	\$63.70	\$69.85	\$69.20	\$69.85	\$69.20	\$65.00	\$76.30	\$69.20	\$75.05	\$53.05	\$76.30	\$75.05	\$67.25	\$75.05	\$73.10
2035	\$72.55	\$65.00	\$71.25	\$70.60	\$71.25	\$70.60	\$66.30	\$77.85	\$70.60	\$76.55	\$54.10	\$77.85	\$76.55	\$68.60	\$76.55	\$74.55
2036	\$74.00	\$66.30	\$72.70	\$72.00	\$72.70	\$72.00	\$67.65	\$79.40	\$72.00	\$78.05	\$55.20	\$79.40	\$78.05	\$70.00	\$78.05	\$76.05
2037	\$75.50	\$67.60	\$74.15	\$73.45	\$74.15	\$73.45	\$69.00	\$81.00	\$73.45	\$79.60	\$56.30	\$81.00	\$79.60	\$71.40	\$79.60	\$77.55
2038	\$77.00	\$68.95	\$75.60	\$74.90	\$75.60	\$74.90	\$70.35	\$82.60	\$74.90	\$81.20	\$57.40	\$82.60	\$81.20	\$72.80	\$81.20	\$79.10
2039	\$78.55	\$70.35	\$77.15	\$76.40	\$77.15	\$76.40	\$71.75	\$84.25	\$76.40	\$82.85	\$58.55	\$84.25	\$82.85	\$74.25	\$82.85	\$80.70
2040	\$80.10	\$71.75	\$78.65	\$77.95	\$78.65	\$77.95	\$73.20	\$85.95	\$77.95	\$84.50	\$59.75	\$85.95	\$84.50	\$75.75	\$84.50	\$82.30
2040+	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%

Notes:

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

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Natural Gas pricing								Ethanol	
Year	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 Current	US\$/Mcf Current	US\$/Mcf Current	US\$/Mcf Current	US\$/Mcf Current	US\$/Mcf Current	US\$/gal Current
Forecast									
2021	1.400	1.200	\$3.10	\$2.80	\$2.85	\$2.95	\$8.60	\$2.30	\$2.00
2022	1.400	1.200	\$3.05	\$2.75	\$2.80	\$2.90	\$7.15	\$4.30	\$2.05
2023	1.400	1.200	\$3.00	\$2.70	\$2.75	\$2.85	\$5.60	\$3.75	\$2.10
2024	1.400	1.200	\$3.10	\$2.75	\$2.80	\$2.90	\$5.75	\$3.20	\$2.10
2025	1.400	1.200	\$3.15	\$2.80	\$2.85	\$3.00	\$5.85	\$3.25	\$2.15
2026	1.400	1.200	\$3.20	\$2.85	\$2.95	\$3.05	\$5.95	\$3.30	\$2.20
2027	1.400	1.200	\$3.25	\$2.95	\$3.00	\$3.10	\$6.10	\$3.40	\$2.25
2028	1.400	1.200	\$3.35	\$3.00	\$3.05	\$3.15	\$6.20	\$3.45	\$2.30
2029	1.400	1.200	\$3.40	\$3.05	\$3.10	\$3.20	\$6.35	\$3.50	\$2.35
2030	1.400	1.200	\$3.45	\$3.10	\$3.15	\$3.30	\$6.45	\$3.60	\$2.40
2031	1.400	1.200	\$3.55	\$3.15	\$3.25	\$3.35	\$6.60	\$3.65	\$2.45
2032	1.400	1.200	\$3.60	\$3.25	\$3.30	\$3.40	\$6.70	\$3.75	\$2.50
2033	1.400	1.200	\$3.70	\$3.30	\$3.35	\$3.50	\$6.85	\$3.80	\$2.55
2034	1.400	1.200	\$3.75	\$3.35	\$3.45	\$3.55	\$7.00	\$3.90	\$2.60
2035	1.400	1.200	\$3.85	\$3.45	\$3.50	\$3.65	\$7.15	\$3.95	\$2.65
2036	1.400	1.200	\$3.90	\$3.50	\$3.55	\$3.70	\$7.25	\$4.05	\$2.70
2037	1.400	1.200	\$4.00	\$3.55	\$3.65	\$3.80	\$7.40	\$4.10	\$2.75
2038	1.400	1.200	\$4.05	\$3.65	\$3.70	\$3.85	\$7.55	\$4.20	\$2.80
2039	1.400	1.200	\$4.15	\$3.70	\$3.80	\$3.95	\$7.70	\$4.30	\$2.85
2040	1.400	1.200	\$4.20	\$3.80	\$3.85	\$4.00	\$7.85	\$4.35	\$2.90
2040+	1.400	1.220	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%

**Notes:**

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

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# 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.

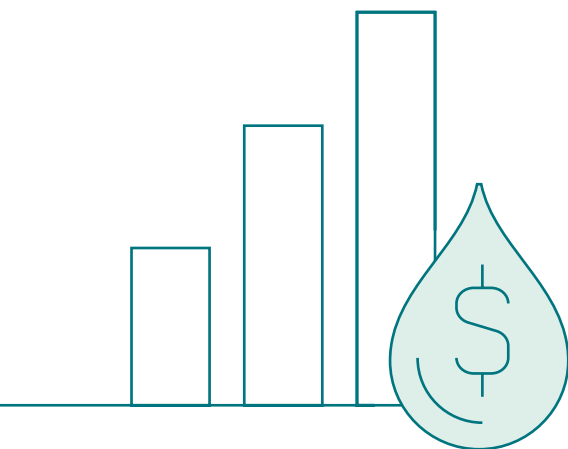
## Our process

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.

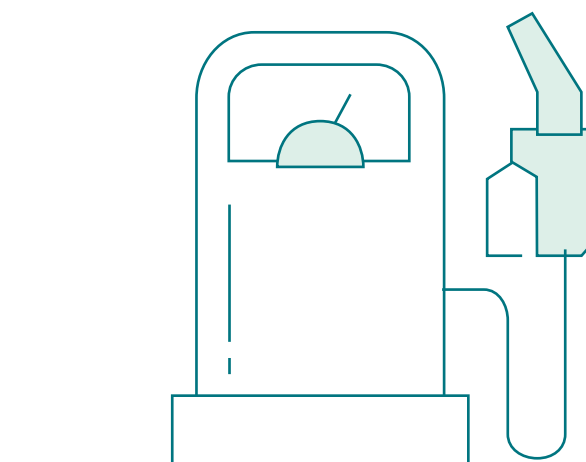
These forecasts are Deloitte's best estimate of how the future will look, and while they are considered reasonable, changing market conditions or additional information may require alteration from the indicated effective date.



# 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





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