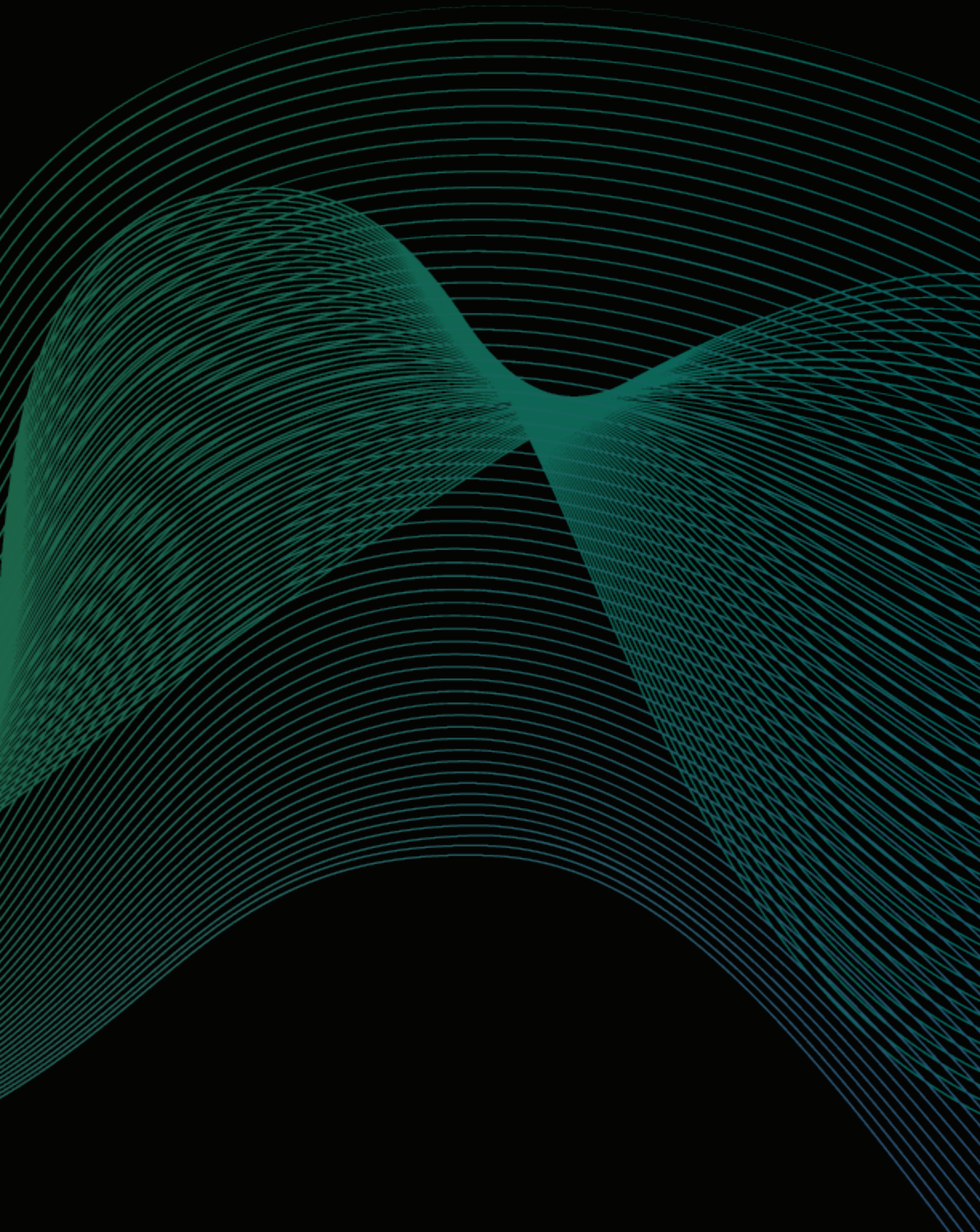
Deloitte.

Oil and gas price forecast

New realities for energy security and decarbonization

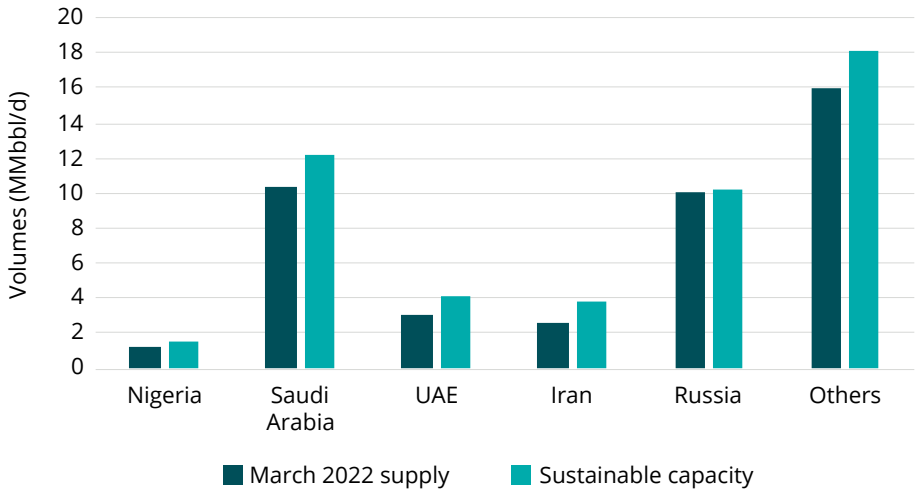
June 30, 2022



Forecast commentary

Crude oil and natural gas prices maintained elevated levels through Q2 2022 as supply concerns remained a constant in the industry. In its May 2022 Oil Market Report, the IEA (International Energy Agency) forecasts that crude oil demand will increase by 3.6 Mbbl/d from April to August in response to the summer driving season, increased airline traffic, and rebounding demand in China. To somewhat offset this estimated growth in demand, OPEC+ announced in May that there would be an increase in crude oil output. The member nations agreed to boost output by 648,000 bbl/d in July and August, an increase of 216,000 bbl/d from the previously agreed-upon plan. Although OPEC+ has agreed to this rate increase, there's speculation that many member nations, outside of the big players, may struggle to increase supply as recent data indicates most member nations are already operating at or near full capacity.

OPEC+ member nations supply versus capacity

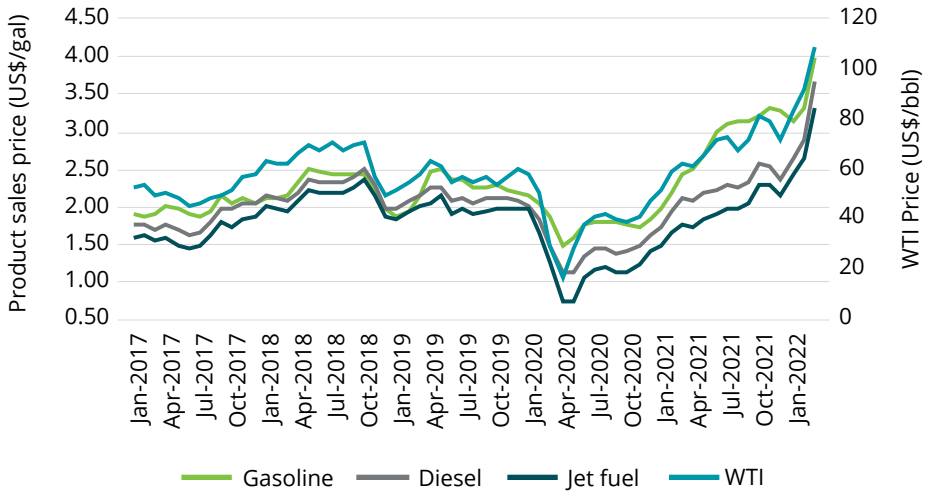


Source: IEA (International Energy Agency)

The growth of supply from North America has been steady over the last several months, but is not expected to close the gap with growing demand. WTI prices averaged approximately US$110/bbl over the last quarter, which is spurring increased drilling activity to some extent.

Increased crude prices coupled with a decrease in refining capacity of approximately 900 Mbbl/d, according to the Energy Information Administration, has resulted in higher refining margins as US operators try to meet bolstered global demand. Summer months have historically seen higher crude product prices due to increased demand as people enjoy summer vacations that include travel. With high prices, however, there may be less demand destruction as people look to save money and stay home. Inflation in not only energy prices but almost every other aspect of life will also make it difficult for many to afford the travel they were hoping to do. Gasoline, diesel, and jet fuel prices have followed the same trajectory as WTI prices throughout Q2, as crude oil stocks stayed below the five-year average. Consumer behaviour throughout the summer will be the wild card affecting how high prices will rise.

Crude product retail sales by refiners

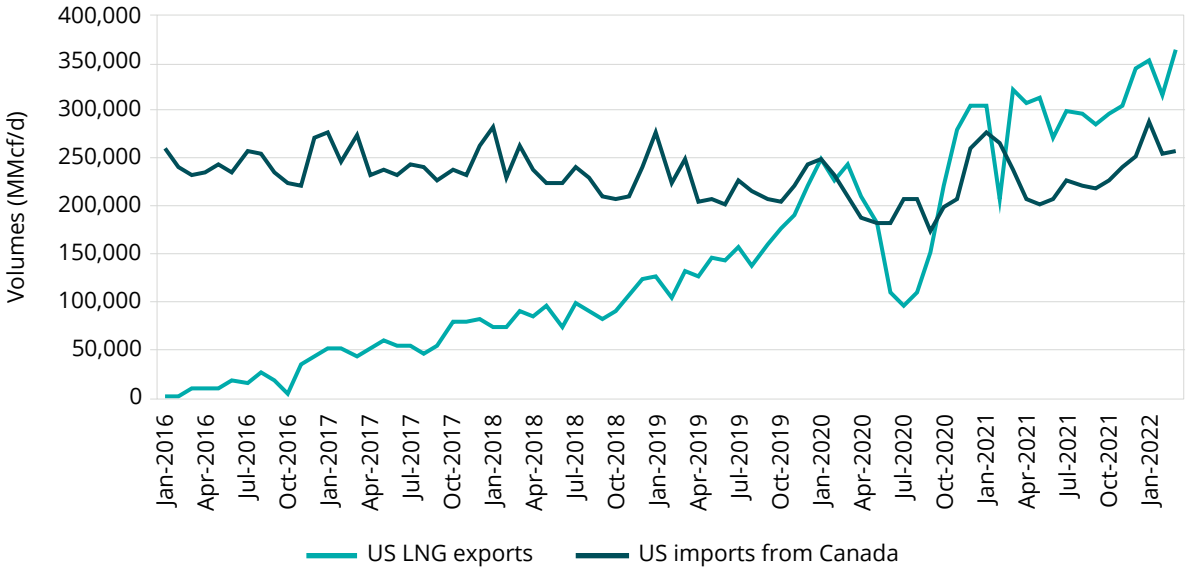


Source: Energy Information Administration (EIA)

Canadian heavy crude prices have shown wider differentials to the WTI benchmark, reaching US$20.80/bbl in June 2022—the widest margin in seven months. This can largely be attributed to increased heavy oil supply released from the US strategic reserves and decreased sour crude demand from Asia as refiners import additional volumes of Urals sour crude. The planned release of 180 MMbbl from the US strategic reserves between May and October has increased US domestic supply as sour crude volumes flood the US Gulf Coast from storage caverns in Louisiana and Texas. The United States plans to deliver up to 39 MMbbl of sour crude oil from strategic reserve stockpiles between July and August 2022, further increasing sour crude supply in the region, as oil sands operations emerge from summer maintenance programs. The release of the additional sour crude throughout the summer may widen the differential even more, reducing the competitive advantage that Canadian oilsands producers have benefited from with the confluence of high oil prices, a narrow differential, and a lower exchange rate.

In Q2 2022, North American natural gas prices soared to values not seen since 2008. Both Henry Hub and AECO prices surged due to steady US liquefied natural gas (LNG) exports, flat production rates, and low natural-gas storage levels. The United States

US LNG global exports and US natural gas imports from Canada



Source: Energy Information Administration (EIA)

exported 7.29 million tonnes of LNG in May 2022, the second-highest volume on record, due to increased sales to Europe and South America. It appears that every spare cubic foot of Canadian natural gas that's not being used for domestic consumption is being exported to the United States for LNG export. Canadian natural gas producers have capitalized on this by diversifying sales points, with some making direct deals with US LNG processors. To date, two major Canadian natural gas producers have been contracted to sell 280 MMcf/d of natural gas to US LNG export facilities in the US Gulf Coast starting with 140 MMcf/d in 2023. Other Canadian producers may look to enter into similar agreements, which would result in more natural gas being transported to the United States, above the more than 10% increase that has been observed over the last 12 months.

LNG demand in Europe is forecast to fall during the summer as the continent's storage levels rose to within historical seasonal levels over Q2 2022 amid increased fear about the supply of natural gas heading into winter. However, US cargoes historically slated for Europe will most likely be diverted to the southern hemisphere for the arrival of winter and Asia as China emerges from pandemic lockdowns.

A recent fire shut down the Freeport LNG facility in Texas—which accounts for approximately 20% of US LNG processing—and is expected to disturb exports in the near term. The closure, which is currently forecast to last until September, has removed a major LNG supplier from an already strained global market, causing worry for importing countries. With all this turmoil, we expect that natural gas prices will remain high throughout the summer months, an atypical trend for North American natural gas.

Deloitte Economic Advisory: Rising inflation and high energy prices pulling down economic growth

The economic outlook continues to change at a rapid pace. In the span of two years, we have gone from facing the deepest recession since the Great Depression to an overheating economy with widespread labour shortages to renewed worries of recession. Recession fears are being precipitated by rapid monetary tightening around much of the world in an attempt to rein in inflation. High inflation was initially caused by record levels of consumption and then exacerbated by strained supply chains, which also contributed to the higher prices. More recently, rising raw material prices continue to push inflation higher.

The consumer price index recorded a year-over-year increase of 7.7% in May. March data from the Raw Material Price Index revealed a 79.8% year-over-year jump for the price of crude oil and bitumen compared with March 2021, stemming from the Russia-Ukraine conflict. Similarly, natural gas prices rose 27.9% in March compared with the same month in 2021. The impacts of energy inflation have had ripple effects on the economy. These effects are increasing the costs that producers bear to bring goods to market and will ultimately hit the pockets of consumers. Household spending and residential investment will be the most adversely affected. The combination of rapid inflation and rising interest rates is already making life more unaffordable and negatively affecting consumers' purchasing power. Inflation is currently far outpacing wage growth, which means real wages are declining. At the same time, debt-servicing costs are rising as payments tied to variable-rate loans move higher and those with fixed-rate mortgages are renewing at higher rates. The impact on debt-servicing costs is only just beginning to be felt and will accelerate as more variable-rate mortgages require payment adjustments (not all automatically adjust with each interest rate increase) and fixed mortgages continue to roll over and get renewed at higher rates. Overall, declining real wage growth, higher debt-servicing costs, and a slowdown in job creation means that households will see a hit to their disposable income growth and will simply be unable to support the economic recovery to the same extent that we've seen in recent years. Consumer confidence is also being affected as households worry about their future financial prospects.

Businesses are also worrying. The prospect of reduced demand from the household sector is making them increasingly cautious about their investment and expansion plans. This narrative is just as true in Canada as it is in the United States, where the fallout of inflation and US Federal Reserve interest rate hikes will slow US economic growth and, consequently, demand for Canadian exports. While the outlook for oil investment is more positive over the next two years—

due to surging oil demand and rapidly rising oil prices as a result of the war in Ukraine—over the long term, the investment outlook in Canada's oil and gas sector is muted, as businesses remain hesitant to invest.

If inflation proves harder to tame or interest rates climb higher than anticipated, it will not take much to trigger a contraction. While we judge the probability of a recession at around 40%, it's clear that economic growth will slow sharply over the next year as high inflation and rising rates take some of the wind out of the sails of the economic recovery. The last time we saw interest rates this high was before the financial crisis of 2008–09—and debt levels were much lower back then. Overall, we expect that policymakers will be able to cool inflation, which means much weaker growth ahead. Central banks are trying to engineer a soft landing, but the conduct of monetary policy is far from an exact science. Our modelling suggests that the most likely scenario is a pronounced slowdown. We project real GDP growth of 3.3% this year, followed by 1.7% next year. We also feel that recession scenario planning is prudent on a contingency basis. Overall, the war in Ukraine, the possibility of a COVID-19 resurgence, and the uncertain impact of aggressive monetary tightening against a backdrop of elevated debt levels make the economic outlook subject to an unusual amount of risk and uncertainty. Deloitte's Q2 2022 economic outlook shares more insights on the Canadian and global economy and can be found here.

New realities for energy security and decarbonization

Energy security emerging as a major issue for economies and oil and gas producers is something that few would have predicted even one year ago. And yet, with the Russian invasion of Ukraine, many countries—especially Russia's biggest oil and gas customers—are reconsidering how they fuel their economies and accelerating their plans to adopt alternative energy sources.

In a sector not known for rushing decisions, the speed of the response has been remarkable. Japan, which backed away from nuclear power after the Fukushima accident, is restarting its nuclear plants to meet its decarbonization goals and reduce its reliance on Russian energy. In Germany, there are growing calls from opposition parties to extend the life of its nuclear plants despite the country's commitment to phase out nuclear power.

In Canada, the uncertainty surrounding supply is not so acute. For one, Canada has never relied on Russian oil to the same extent as other parts of the world. Canada is also somewhat shielded from shortages and supply interruptions by an abundance of energy from alternative sources, principally nuclear and hydro. This energy mix also means that the Canadian economy is closer to net-zero than other, more fossil-fuel-reliant economies.

That's not to say that Canada is immune to the forces driving the supply and price of oil, nor the impact on net-zero goals. Targets set by the Government of Canada (net-zero grid by 2035 and net-zero emissions by 2050) are being weighed against new energy-security pressures. To ensure a secure, affordable energy supply, capital that would otherwise go to decarbonization projects may be diverted in favour of new liquefied natural gas (LNG) plants and pipelines, or other major oil and gas projects.

Even if the transition to green sources slows down, there will still be pressure on legacy electrical generation and transmission. As an interim step, natural gas may be increasingly viewed as an option for jurisdictions where resources are more plentiful and access to alternatives is limited, such as Saskatchewan, Alberta, British Columbia, and the Maritimes.

Weighing the risks

In this complex and uncertain environment, progress on major decarbonization projects is in danger of losing momentum. The energy industry continues to explore investments to help Canada reach its decarbonization goals, but also recognizes that the solutions will involve projects with a size, scale, and degree of risk that no individual company could be expected to undertake alone.

The risks of investing in long-term decarbonization projects have probably only increased since the end of 2021. They include:

Urgency risk
Electricity demand is expected to rise sharply in the coming year. Current capacity, which sits at about 150 GW, may need to triple by 2050 to meet demand. Adding capacity is always a complex task—doing so while keeping the economy working and reducing emissions simultaneously adds additional pressure on stakeholders, especially as the long-term viability of some alternative sources remains unclear.

Regulatory risk
Attaining regulatory approval for infrastructure projects is often a lengthy and complex process involving many layers of government plus other stakeholders. Each layer presents a different source of regulatory risk to investors. Steps should be taken to boost intra-governmental cooperation and accelerate approval times. This is not only a Canadian issue—very few jurisdictions around the world have completed the preparation work for large-scale carbon capture, utilization, and storage (CCUS) operations, for example.

In this complex and uncertain environment, progress on major decarbonization projects is in danger of losing momentum.

However, waiting isn't an option. Major new projects need to be planned, financed, approved, and built at a faster-than-normal rate. The diverse stakeholders (all levels of government, Indigenous groups, utilities, and industry) will have to find common ground or face costly delays. For example, governments will have to not only expedite the regulatory process but also take steps to catalyze investments in these projects.

Market risk
Uncertainties surrounding the market for greener energy, combined with the scale and lengthy investment horizon of many decarbonization projects, add risk for investors. To mitigate this risk, governments should invest in infrastructure projects and create scaffolding upon which the market can grow organically.

Economic risk
Based on current costs, adding to and improving grid capacity and transmission infrastructure will require trillions of dollars of investment, and those costs are growing by the day. High inflation and rising interest rates are increasing the economic risks. The cost of borrowing is rising at a time when government debt levels are also high, meaning the investment pool is shallower. Financing alternatives—such as raising rates or taxes—can be politically difficult to implement.

Geopolitical risk
Nobody can say when the war in Ukraine will end or how long sanctions against Russia will remain, but there's likely to be a lasting impact on energy markets. And it's not just the Russia-Ukraine conflict.

China's economic growth will also have an outsized influence on markets. The same goes for the shift away from fossil fuels, which could alter the balance of power between states. Geopolitical risk can have profound effects, spurring some economies to commit to long-term projects that may have once been considered unviable. To mitigate that risk, it will be imperative for all nations—particularly those in Western Europe—to find alternative, secure, affordable, and sustainable energy sources.

The silver linings

In its most recent budget, the federal government showed encouraging signs that it recognizes its role as a catalyst for investment in the economy's transition to net-zero emissions. The budget included several provisions to support the transition, including:

- Refundable investment tax credits for businesses that incur CCUS expenses. To incentivize near-term investment, the credits will be reduced by 50% beginning in 2031.
- New investments to expand both the generation and transmission of clean energy. These funds will be used to support pre-development activities for intra-provincial transmission, renewable electricity, and grid modernization projects.
- Small modular reactors (SMRs) were singled out for their potential to provide localized power at a fraction of the cost and complexity of full-sized nuclear reactors. Funds were set aside for research into SMRs, specifically for dealing with waste, integrating SMRs into the power supply chain, enhancing safety, and cooperating internationally on regulatory issues.

A larger role for the Canadian Infrastructure Bank (CIB) was also announced in the budget. Previously limited to investments in areas such as broadband and public transit, the CIB will now help fund projects related to decarbonization, including SMRs, clean fuel, hydrogen, CCUS, and battery storage, transportation, and distribution. The CIB will also invest in infrastructure for charging and refuelling zero-emission vehicles.

It remains to be seen whether the support provided in the budget will be enough to spur the massive investment in Canada's energy sector needed to meet the net-zero goals of 2035 and 2050. What is certain is that, from a decarbonization perspective, accelerating Canada's shift away from oil and gas needs to be prioritized.

In its most recent budget, the federal government showed encouraging signs that it recognizes its role as a catalyst for investment in the economy's transition to net-zero emissions.

Additional incentives and government support will likely be required to make it happen. A recent report suggests Canada is on track to reach about half of the 81-megatonne cut to greenhouse emissions by 2030.[1] While further emission cuts are considered "technically feasible," they will require extraordinary investment from both industry and government.

Short-term opportunities

New investments need to balance the need for energy security and our decarbonization targets. There are several opportunities being explored that address both needs.

Look to cleaner, marketable natural gas
The proven marketability of natural gas makes it an ideal, cleaner alternative to oil and coal as a source of energy. While natural gas is less viable as a long-term solution in a net-zero world, it has tremendous value as a transitional fuel.

Fill the Russian void
As many countries grapple with how to exist without Russian oil or gas to meet their energy needs, Canadian producers may find themselves part of the solution as suppliers. This may involve LNG facilities in Atlantic Canada or cross-country pipelines to deliver gas. Any new projects would have to be expedited.

Improve productivity
A high-interest-rate environment—where companies try to do more with less—rewards improvements in productivity. The Canadian energy industry (not just oil and gas) could use the opportunity to remedy long-standing productivity issues, such as suboptimal tech enablement.

Start small
Smaller-scale decarbonization projects (there are several examples in Alberta) require less time and investment. These projects can be vital for testing and proving the technologies that will be needed for larger-scale projects in the future.

Think together
Partnerships between governments, stakeholders, and the private sector will be a key part of any plan to build major projects. These arrangements are not without precedent, especially in the infrastructure space. But with so many interests involved, they can be tricky to manage without experience and the right kind of guidance.

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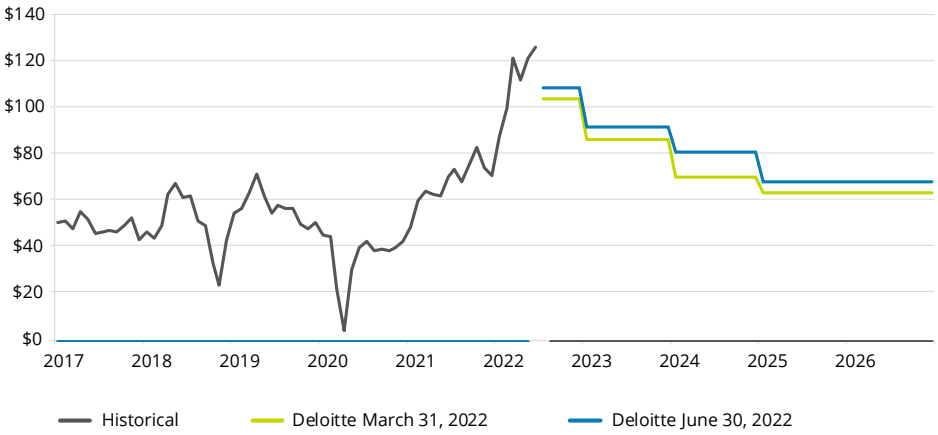
[1] Marieke Walsh, "Canada's 2030 climate targets for oil and gas industry not feasible, government analysis says," *Globe and Mail*, June 14, 2022.

Canadian domestic price forecast

Crude oil price and market demand forecast

Hardisty WSC (real $)



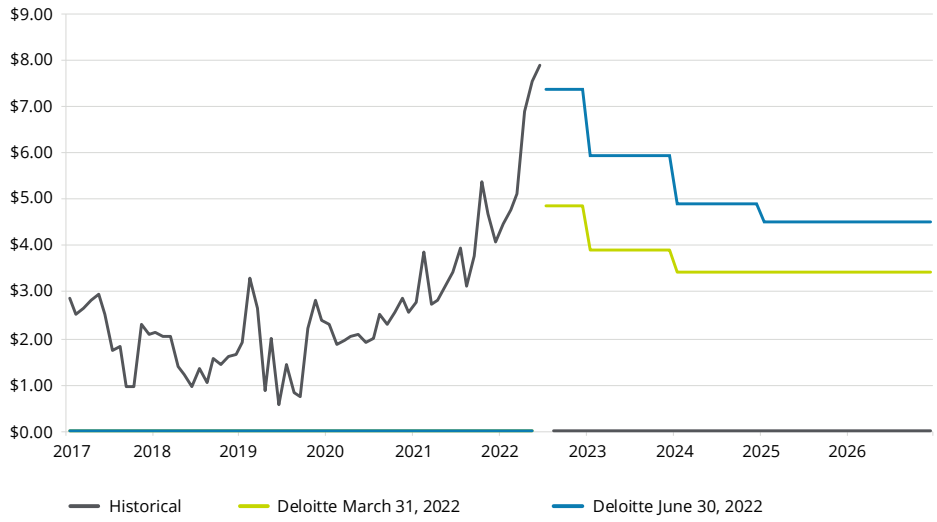
Forecast comments

WCS is forecast as a differential to WTI. This differential is based on Western Canadian Select Crude Oil Futures.

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
Historical								
2019	$60.60	$56.98	$73.40	$69.02	$57.33	$55.11	1.9%	0.754
2020	$40.90	$39.23	$47.64	$45.69	$36.09	$31.48	0.7%	0.746
2021	$70.38	$67.99	$83.27	$80.44	$68.21	$63.82	3.4%	0.798
2022								
6 Mths H	$102.34	$102.34	$127.91	$127.91	$111.81	$110.53	6.2%	0.787
6 Mths F	$105.00	$105.00	$128.15	$128.15	$108.75	$104.25	0.0%	0.800
Avg.	$103.67	$103.67	$128.03	$128.03	$110.28	$107.39	-	0.794
Forecast								
2022	$105.00	$105.00	$128.15	$128.15	$108.75	$104.25	0.0%	0.800
2023	$90.00	$93.60	$108.15	$112.50	$95.60	$90.90	4.0%	0.800
2024	$80.00	$84.85	$93.75	$99.45	$86.20	$81.40	2.0%	0.800
2025	$70.00	$75.75	$81.25	$87.90	$74.40	$69.50	2.0%	0.800
2026	$70.00	$77.25	$81.25	$89.65	$75.90	$70.90	2.0%	0.800
2027	$70.00	$78.80	$81.25	$91.45	$77.40	$72.35	2.0%	0.800
2028	$70.00	$80.40	$81.25	$93.30	$78.95	$73.75	2.0%	0.800
2029	$70.00	$82.00	$81.25	$95.15	$80.50	$75.25	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
Historical						
2019	$1.48	$1.93	$1.81	$1.02	$2.73	$2.57
2020	$2.00	$2.35	$2.25	$2.20	$2.12	$2.04
2021	$3.27	$3.77	$3.64	$3.34	$4.05	$3.91
2022						
6 Mths H	$5.20	$6.12	$6.12	$5.94	$6.24	$6.24
6 Mths F	$7.00	$7.40	$7.40	$7.25	$7.50	$7.50
Avg.	$6.10	$6.76	$6.76	$6.59	$6.87	$6.87
Forecast						
2022	$7.00	$7.40	$7.40	$7.25	$7.50	$7.50
2023	$5.75	$5.95	$6.20	$6.05	$6.00	$6.25
2024	$4.75	$4.90	$5.20	$5.05	$5.00	$5.30
2025	$4.45	$4.50	$4.85	$4.70	$4.50	$4.85
2026	$4.50	$4.50	$4.95	$4.80	$4.50	$4.95
2027	$4.60	$4.50	$5.05	$4.90	$4.50	$5.05
2028	$4.70	$4.50	$5.15	$5.00	$4.50	$5.15
2029	$4.80	$4.50	$5.25	$5.10	$4.50	$5.25

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
Forecast							
2022	$105.00	$110.00	$102.50	$109.00	$111.00	$100.00	$85.00
2023	$93.60	$97.75	$91.00	$96.70	$98.80	$90.20	$82.15
2024	$84.85	$88.05	$82.20	$87.00	$89.10	$80.35	$80.60
2025	$75.75	$79.00	$73.05	$77.90	$80.05	$71.15	$75.75
2026	$77.25	$80.55	$74.50	$79.45	$81.65	$72.55	$77.25
2027	$78.80	$82.20	$76.00	$81.05	$83.30	$74.00	$78.80
2028	$80.40	$83.80	$77.50	$82.65	$84.95	$75.50	$80.40
2029	$82.00	$85.50	$79.05	$84.35	$86.65	$77.00	$82.00

- 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
Forecast								
2022	1.25	1.05	$7.50	$7.00	$7.15	$7.35	$27.50	$10.00
2023	1.30	1.10	$6.25	$5.70	$5.90	$6.10	$24.45	$13.25
2024	1.30	1.10	$5.30	$4.75	$4.95	$5.15	$21.20	$11.35
2025	1.30	1.10	$4.85	$4.35	$4.50	$4.70	$18.40	$9.75
2026	1.30	1.10	$4.95	$4.40	$4.60	$4.80	$18.75	$8.55
2027	1.30	1.10	$5.05	$4.50	$4.65	$4.90	$19.15	$8.70
2028	1.30	1.10	$5.15	$4.60	$4.75	$5.00	$19.50	$8.90
2029	1.30	1.10	$5.25	$4.70	$4.85	$5.10	$19.90	$9.10

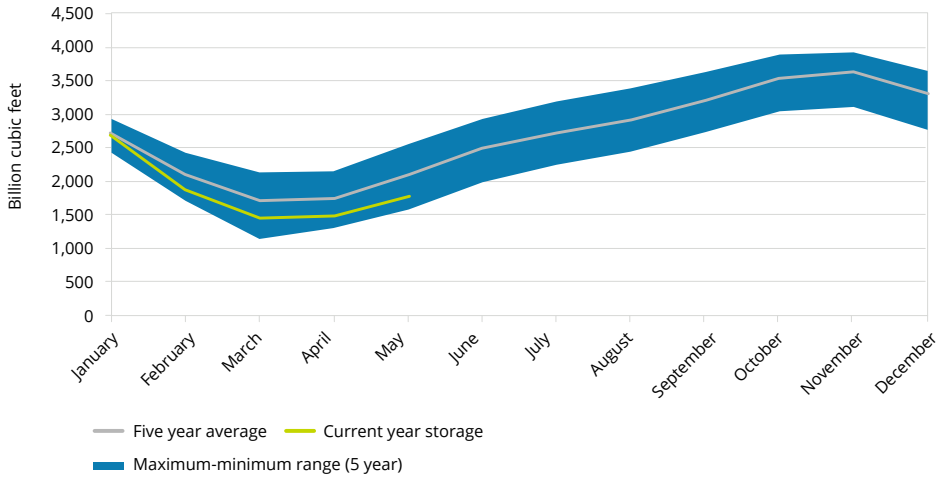
Global trends

Storage

United States

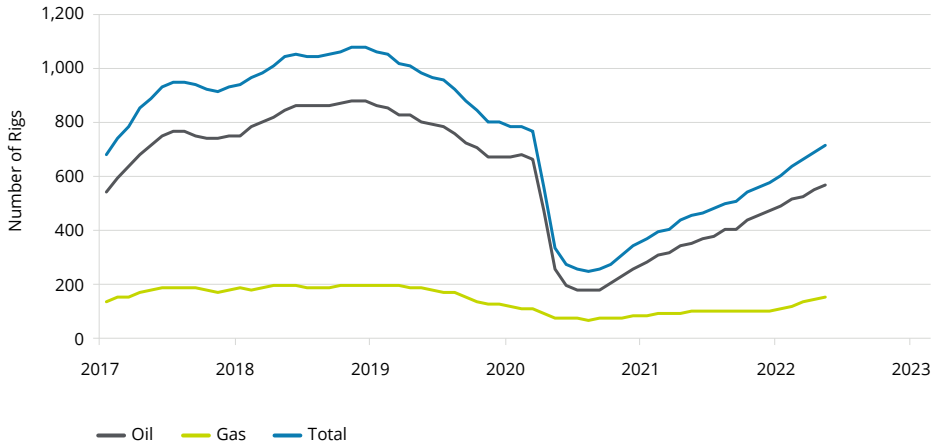
Natural gas storage in the United States continues to trend near the five-year low heading into summer.

US natural gas storage



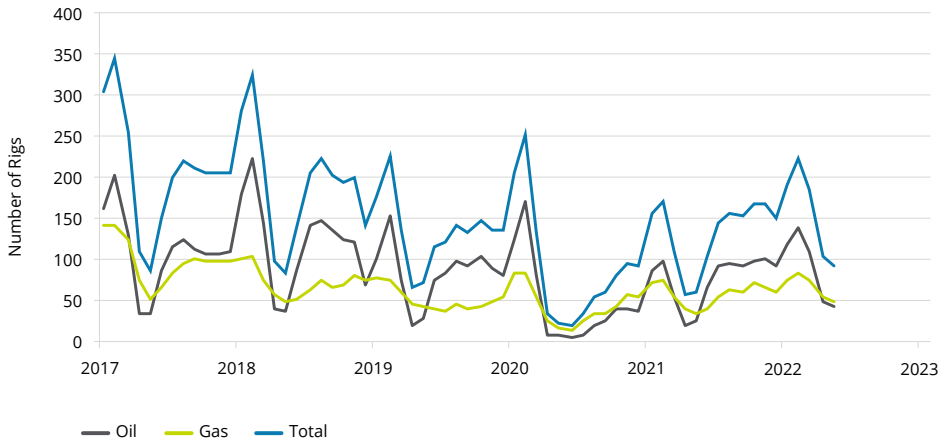
Source: Baker Hughes.

US rig counts



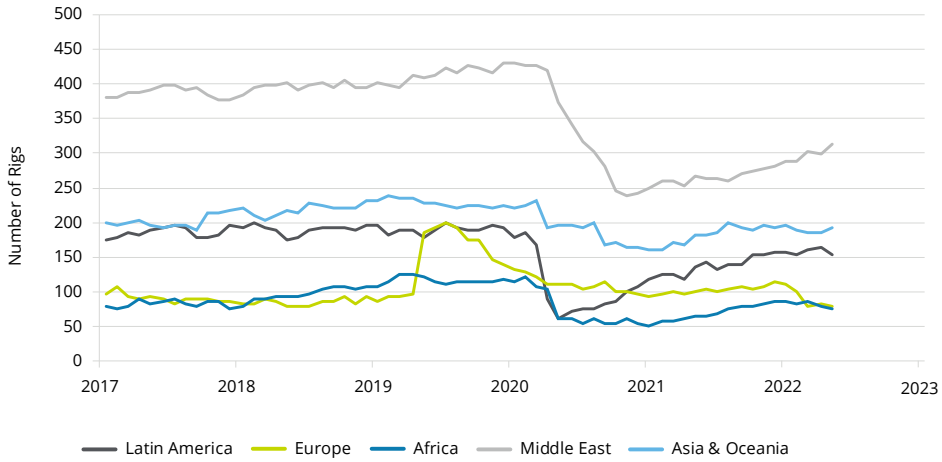
Source: Baker Hughes.

Canada rig counts



Source: Baker Hughes.

International rig counts



Source: Baker Hughes.

Rigs

United States

Oil rig counts continue to grow as oil prices remain strong. Gas rig counts have also begun to climb after remaining flat through much of 2021.

Canada

Oil and gas rig counts reached a similar peak to those seen in 2019 as companies looked to capitalize on stronger oil and gas prices.

International

Strength in both oil and gas markets has led to rig counts increasing across much of the globe, with the most growth seen in the Middle East. European rig counts have dropped throughout 2022, largely due to sidelined rigs in Ukraine.

Canadian domestic price tables

Year	Price Inflation	Cost Inflation	CAD to USD Exchange	Crude Oil Pricing: WTI at Cushing Oklahoma	WTI at Cushing Oklahoma	Edmonton City Gate	Edmonton City Gate	WCS 20.5 Deg. API Hardisty
				US$/bbl	US$/bbl	C$/bbl	C$/bbl	C$/bbl
	Rate	Rate	Rate	Real	Current	Real	Current	Current
Historical								
2012	1.5%	1.5%	1.001	$111.59	$94.11	$102.65	$86.57	$73.10
2013	0.9%	0.9%	0.972	$114.33	$97.91	$109.02	$93.36	$74.97
2014	1.9%	1.9%	0.906	$107.88	$93.26	$108.73	$94.00	$81.06
2015	1.1%	1.1%	0.783	$55.25	$48.69	$64.68	$57.00	$44.80
2016	1.4%	1.4%	0.755	$48.42	$43.15	$58.59	$52.22	$38.90
2017	1.6%	1.6%	0.771	$56.27	$50.88	$68.69	$62.12	$49.51
2018	2.3%	2.3%	0.772	$70.66	$64.94	$75.18	$69.10	$49.89
2019	1.9%	1.9%	0.754	$60.60	$56.98	$73.40	$69.02	$57.33
2020	0.7%	0.7%	0.746	$40.90	$39.23	$47.64	$45.69	$36.09
2021	3.4%	3.4%	0.798	$70.38	$67.99	$83.27	$80.44	$68.21
2022								
6 Mths H	6.2%	6.2%	0.787	$102.34	$102.34	$127.91	$127.91	$111.81
6 Mths F	0.0%	0.0%	0.800	$105.00	$105.00	$128.15	$128.15	$108.75
Avg.	N/A	N/A	0.794	$103.67	$103.67	$128.03	$128.03	$110.28
Forecast								
2022	0.0%	0.0%	0.800	$105.00	$105.00	$128.15	$128.15	$108.75
2023	4.0%	4.0%	0.800	$90.00	$93.60	$108.15	$112.50	$95.60
2024	2.0%	2.0%	0.800	$80.00	$84.85	$93.75	$99.45	$86.20
2025	2.0%	2.0%	0.800	$70.00	$75.75	$81.25	$87.90	$74.40
2026	2.0%	2.0%	0.800	$70.00	$77.25	$81.25	$89.65	$75.90
2027	2.0%	2.0%	0.800	$70.00	$78.80	$81.25	$91.45	$77.40
2028	2.0%	2.0%	0.800	$70.00	$80.40	$81.25	$93.30	$78.95
2029	2.0%	2.0%	0.800	$70.00	$82.00	$81.25	$95.15	$80.50
2030	2.0%	2.0%	0.800	$70.00	$83.60	$81.25	$97.05	$82.15
2031	2.0%	2.0%	0.800	$70.00	$85.30	$81.25	$99.00	$83.75
2032	2.0%	2.0%	0.800	$70.00	$87.00	$81.25	$101.00	$85.45
2033	2.0%	2.0%	0.800	$70.00	$88.75	$81.25	$103.00	$87.15
2034	2.0%	2.0%	0.800	$70.00	$90.50	$81.25	$105.05	$88.90
2035	2.0%	2.0%	0.800	$70.00	$92.35	$81.25	$107.15	$90.70
2036	2.0%	2.0%	0.800	$70.00	$94.15	$81.25	$109.30	$92.50
2037	2.0%	2.0%	0.800	$70.00	$96.05	$81.25	$111.50	$94.35
2038	2.0%	2.0%	0.800	$70.00	$98.00	$81.25	$113.75	$96.25
2039	2.0%	2.0%	0.800	$70.00	$99.95	$81.25	$116.00	$98.15
2040	2.0%	2.0%	0.800	$70.00	$101.95	$81.25	$118.30	$100.10
2041	2.0%	2.0%	0.800	$70.00	$104.00	$81.25	$120.70	$102.10
2041+	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 2022 dollars with no escalation considered

	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
Historical											
2012	$6.73	$30.80	$75.47	$99.67	$2.25	$2.83	$2.39	$2.29	$3.26	$2.75	$126.81
2013	$8.68	$38.54	$77.44	$103.52	$2.98	$3.71	$3.17	$3.11	$4.35	$3.73	$62.17
2014	$12.46	$42.93	$59.43	$101.47	$4.22	$5.21	$4.50	$4.16	$5.08	$4.39	$88.99
2015	$7.49	$5.35	$33.70	$55.15	$2.56	$3.05	$2.69	$1.81	$2.98	$2.63	$107.45
2016	$6.04	$8.71	$31.45	$52.43	$1.93	$2.42	$2.16	$1.75	$2.82	$2.52	$45.40
2017	$6.11	$27.92	$40.98	$63.65	$2.13	$2.42	$2.19	$1.56	$3.30	$2.99	$41.85
2018	$6.90	$29.76	$46.17	$75.74	$1.36	$1.67	$1.54	$1.26	$3.45	$3.17	$89.25
2019	$5.00	$15.82	$21.40	$67.57	$1.48	$1.93	$1.81	$1.02	$2.73	$2.57	$37.54
2020	$6.20	$16.11	$20.93	$47.14	$2.00	$2.35	$2.25	$2.20	$2.12	$2.04	$2.60
2021	$10.08	$45.46	$40.28	$82.91	$3.27	$3.77	$3.64	$3.34	$4.05	$3.91	$69.73
2022											
6 Mths H	$17.87	$62.26	$67.60	$129.69	$5.20	$6.12	$6.12	$5.94	$6.24	$6.24	$164.01
6 Mths F	$20.35	$70.50	$70.50	$128.15	$7.00	$7.40	$7.40	$7.25	$7.50	$7.50	$150.00
Avg.	$19.11	$66.38	$69.05	$128.92	$6.10	$6.76	$6.76	$6.59	$6.87	$6.87	$157.00
Forecast											
2022	$20.35	$70.50	$70.50	$128.15	$7.00	$7.40	$7.40	$7.25	$7.50	$7.50	$150.00
2023	$17.00	$56.25	$61.90	$112.50	$5.75	$5.95	$6.20	$6.05	$6.00	$6.25	$104.00
2024	$14.30	$49.75	$54.70	$99.45	$4.75	$4.90	$5.20	$5.05	$5.00	$5.30	$106.10
2025	$13.40	$44.00	$48.35	$87.90	$4.45	$4.50	$4.85	$4.70	$4.50	$4.85	$108.20
2026	$13.70	$44.85	$49.35	$89.65	$4.50	$4.50	$4.95	$4.80	$4.50	$4.95	$110.35
2027	$13.95	$45.75	$50.30	$91.45	$4.60	$4.50	$5.05	$4.90	$4.50	$5.05	$112.55
2028	$14.25	$46.70	$51.35	$93.30	$4.70	$4.50	$5.15	$5.00	$4.50	$5.15	$114.80
2029	$14.50	$47.60	$52.35	$95.15	$4.80	$4.50	$5.25	$5.10	$4.50	$5.25	$117.10
2030	$14.80	$48.55	$53.40	$97.05	$4.90	$4.50	$5.40	$5.20	$4.50	$5.40	$119.45
2031	$15.10	$49.55	$54.45	$99.00	$5.00	$4.50	$5.50	$5.30	$4.50	$5.50	$121.85
2032	$15.40	$50.50	$55.55	$101.00	$5.10	$4.50	$5.60	$5.40	$4.50	$5.60	$124.30
2033	$15.70	$51.55	$56.65	$103.00	$5.20	$4.50	$5.70	$5.50	$4.50	$5.70	$126.80
2034	$16.05	$52.55	$57.80	$105.05	$5.30	$4.50	$5.80	$5.65	$4.50	$5.80	$129.30
2035	$16.35	$53.60	$58.95	$107.15	$5.40	$4.50	$5.95	$5.75	$4.50	$5.95	$131.90
2036	$16.70	$54.70	$60.15	$109.30	$5.50	$4.50	$6.05	$5.85	$4.50	$6.05	$134.55
2037	$17.00	$55.80	$61.35	$111.50	$5.65	$4.50	$6.20	$5.95	$4.50	$6.20	$137.25
2038	$17.35	$56.90	$62.55	$113.75	$5.75	$4.50	$6.30	$6.10	$4.50	$6.30	$139.95
2039	$17.70	$58.05	$63.80	$116.00	$5.85	$4.50	$6.40	$6.20	$4.50	$6.40	$142.75
2040	$18.05	$59.20	$65.10	$118.30	$5.95	$4.50	$6.55	$6.35	$4.50	$6.55	$145.65
2041	$18.40	$60.40	$66.40	$120.70	$6.10	$4.50	$6.70	$6.45	$4.50	$6.70	$148.55
2041+	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
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- 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 2022 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

Additional crude reference prices

	Crude oil pricing			Natural gas pricing
Year	Lt. Sour 35 Deg. API Cromer, SK	MSO 31 Deg. API Hardisty	Syncrude Sweet Premium 32.5 Deg. API	Ontario Dawn Reference Point
	C$/bbl	C$/bbl	C$/bbl	C$/mcf
	Current	Current	Current	Current
Historical				
2012	$84.27	$77.53		$3.11
2013	$91.76	$82.65		$4.13
2014	$92.91	$89.39		$5.76
2015	$55.46	$54.70		$3.72
2016	$51.37	$48.29		$3.46
2017	$62.06	$58.16		$3.97
2018	$73.06	$62.82		$4.07
2019	$69.68	$65.72		$3.22
2020	$45.41	$43.55	$36.18	$2.51
2021	$80.08	$76.58	$69.55	$4.55
2022				
6 Mths H	$125.98	$122.13	$135.59	$7.68
6 Mths F	$127.15	$122.15	$128.75	$9.10
Avg.	$126.56	$122.14	$132.17	$8.39
Forecast				
2022	$127.15	$122.15	$128.75	$9.10
2023	$111.45	$108.30	$113.80	$7.50
2024	$98.40	$95.20	$102.10	$6.30
2025	$86.85	$83.60	$90.60	$5.80
2026	$88.55	$85.25	$92.45	$5.90
2027	$90.35	$86.95	$94.30	$6.00
2028	$92.15	$88.70	$96.15	$6.15
2029	$94.00	$90.50	$98.10	$6.25
2030	$95.85	$92.30	$100.05	$6.40
2031	$97.80	$94.15	$102.05	$6.50
2032	$99.75	$96.00	$104.10	$6.65
2033	$101.75	$97.95	$106.15	$6.80
2034	$103.75	$99.90	$108.30	$6.90
2035	$105.85	$101.90	$110.45	$7.05
2036	$107.95	$103.95	$112.65	$7.20
2037	$110.10	$106.00	$114.95	$7.35
2038	$112.35	$108.15	$117.25	$7.50
2039	$114.55	$110.30	$119.55	$7.65
2040	$116.85	$112.50	$121.95	$7.80
2041	$119.20	$114.75	$124.40	$7.95
2041+	2.0%	2.0%	2.0%	2.0%

Notes:

- Data sources include: EIA, DOB, NRC, Flint Hills Resources, Alberta Government
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- 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)
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International price tables

Year	Crude Oil Pricing														
	Average WTI Spot	Alaskan North Slope	California Midway-Sunset	Louisiana Light Sweet	Gulf Coast ASCI/ MARS	Wyoming Sweet	Brent Spot	Average OPEC Basket	Venezuelan Merey	Nigerian Bonny Light	Arabia UAE Dubai Feteh	UAE Murban	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
	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current
Forecast															
2022	$105.00	$99.00	$104.00	$104.50	$102.50	$102.25	$110.00	$109.00	$89.00	$111.00	$107.50	$108.75	$100.00	$85.00	$107.75
2023	$93.60	$87.35	$92.55	$93.10	$91.00	$90.75	$97.75	$96.70	$78.00	$98.80	$95.15	$96.45	$90.20	$82.15	$95.40
2024	$84.85	$78.50	$83.80	$84.35	$82.20	$81.95	$88.05	$87.00	$67.90	$89.10	$85.40	$86.70	$80.35	$80.60	$85.65
2025	$75.75	$69.25	$74.65	$75.20	$73.05	$72.75	$79.00	$77.90	$58.45	$80.05	$76.30	$77.65	$71.15	$75.75	$76.55
2026	$77.25	$70.65	$76.15	$76.70	$74.50	$74.20	$80.55	$79.45	$59.60	$81.65	$77.80	$79.20	$72.55	$77.25	$78.10
2027	$78.80	$72.05	$77.70	$78.25	$76.00	$75.70	$82.20	$81.05	$60.80	$83.30	$79.35	$80.75	$74.00	$78.80	$79.65
2028	$80.40	$73.50	$79.25	$79.80	$77.50	$77.20	$83.80	$82.65	$62.00	$84.95	$80.95	$82.40	$75.50	$80.40	$81.25
2029	$82.00	$74.95	$80.80	$81.40	$79.05	$78.75	$85.50	$84.35	$63.25	$86.65	$82.55	$84.05	$77.00	$82.00	$82.85
2030	$83.60	$76.45	$82.45	$83.05	$80.65	$80.35	$87.20	$86.00	$64.50	$88.40	$84.20	$85.70	$78.55	$83.60	$84.50
2031	$85.30	$78.00	$84.10	$84.70	$82.25	$81.95	$88.95	$87.75	$65.80	$90.15	$85.90	$87.45	$80.10	$85.30	$86.20
2032	$87.00	$79.55	$85.75	$86.40	$83.90	$83.60	$90.75	$89.50	$67.10	$91.95	$87.60	$89.20	$81.70	$87.00	$87.95
2033	$88.75	$81.15	$87.50	$88.10	$85.55	$85.25	$92.55	$91.30	$68.45	$93.80	$89.40	$90.95	$83.35	$88.75	$89.70
2034	$90.50	$82.75	$89.20	$89.85	$87.30	$86.95	$94.40	$93.10	$69.85	$95.70	$91.15	$92.80	$85.00	$90.50	$91.50
2035	$92.35	$84.40	$91.00	$91.65	$89.05	$88.70	$96.30	$94.95	$71.20	$97.60	$93.00	$94.65	$86.70	$92.35	$93.30
2036	$94.15	$86.10	$92.85	$93.50	$90.80	$90.45	$98.20	$96.85	$72.65	$99.55	$94.85	$96.55	$88.45	$94.15	$95.20
2037	$96.05	$87.80	$94.70	$95.35	$92.65	$92.30	$100.15	$98.80	$74.10	$101.55	$96.75	$98.45	$90.25	$96.05	$97.10
2038	$98.00	$89.60	$96.60	$97.30	$94.50	$94.15	$102.20	$100.80	$75.60	$103.60	$98.70	$100.45	$92.05	$98.00	$99.05
2039	$99.95	$91.35	$98.50	$99.20	$96.35	$96.00	$104.20	$102.80	$77.10	$105.65	$100.65	$102.45	$93.85	$99.95	$101.00
2040	$101.95	$93.20	$100.50	$101.20	$98.30	$97.95	$106.30	$104.85	$78.65	$107.75	$102.65	$104.50	$95.75	$101.95	$103.05
2041	$104.00	$95.05	$102.50	$103.25	$100.25	$99.90	$108.45	$106.95	$80.20	$109.90	$104.70	$106.60	$97.65	$104.00	$105.10
2041+	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.

Year	USD to GBP	USD to EUR	Natural Gas pricing					
			NYMEX Henry Hub	Permian Waha	San Juan Ignacio	Rocky Mtn. Opal	UK NBP	India Domestic Gas
	Exchange rate	Exchange rate	US$/Mcf Current	US$/Mcf Current	US$/Mcf Current	US$/Mcf Current	US$/Mcf Current	US$/Mcf Current
Forecast								
2022	1.250	1.050	$7.50	$7.00	$7.15	$7.35	$27.50	$10.00
2023	1.300	1.100	$6.25	$5.70	$5.90	$6.10	$24.45	$13.25
2024	1.300	1.100	$5.30	$4.75	$4.95	$5.15	$21.20	$11.35
2025	1.300	1.100	$4.85	$4.35	$4.50	$4.70	$18.40	$9.75
2026	1.300	1.100	$4.95	$4.40	$4.60	$4.80	$18.75	$8.55
2027	1.300	1.100	$5.05	$4.50	$4.65	$4.90	$19.15	$8.70
2028	1.300	1.100	$5.15	$4.60	$4.75	$5.00	$19.50	$8.90
2029	1.300	1.100	$5.25	$4.70	$4.85	$5.10	$19.90	$9.10
2030	1.300	1.100	$5.40	$4.80	$4.95	$5.20	$20.30	$9.25
2031	1.300	1.100	$5.50	$4.85	$5.05	$5.30	$20.70	$9.45
2032	1.300	1.100	$5.60	$4.95	$5.15	$5.40	$21.15	$9.65
2033	1.300	1.100	$5.70	$5.05	$5.25	$5.50	$21.55	$9.85
2034	1.300	1.100	$5.80	$5.15	$5.35	$5.65	$22.00	$10.00
2035	1.300	1.100	$5.95	$5.30	$5.45	$5.75	$22.40	$10.20
2036	1.300	1.100	$6.05	$5.40	$5.60	$5.85	$22.85	$10.45
2037	1.300	1.100	$6.20	$5.50	$5.70	$5.95	$23.35	$10.65
2038	1.300	1.100	$6.30	$5.60	$5.80	$6.10	$23.80	$10.85
2039	1.300	1.100	$6.40	$5.70	$5.90	$6.20	$24.25	$11.05
2040	1.300	1.100	$6.55	$5.85	$6.05	$6.35	$24.75	$11.30
2041	1.300	1.100	$6.70	$5.95	$6.15	$6.45	$25.25	$11.50
2041+	1.300	1.100	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.

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.

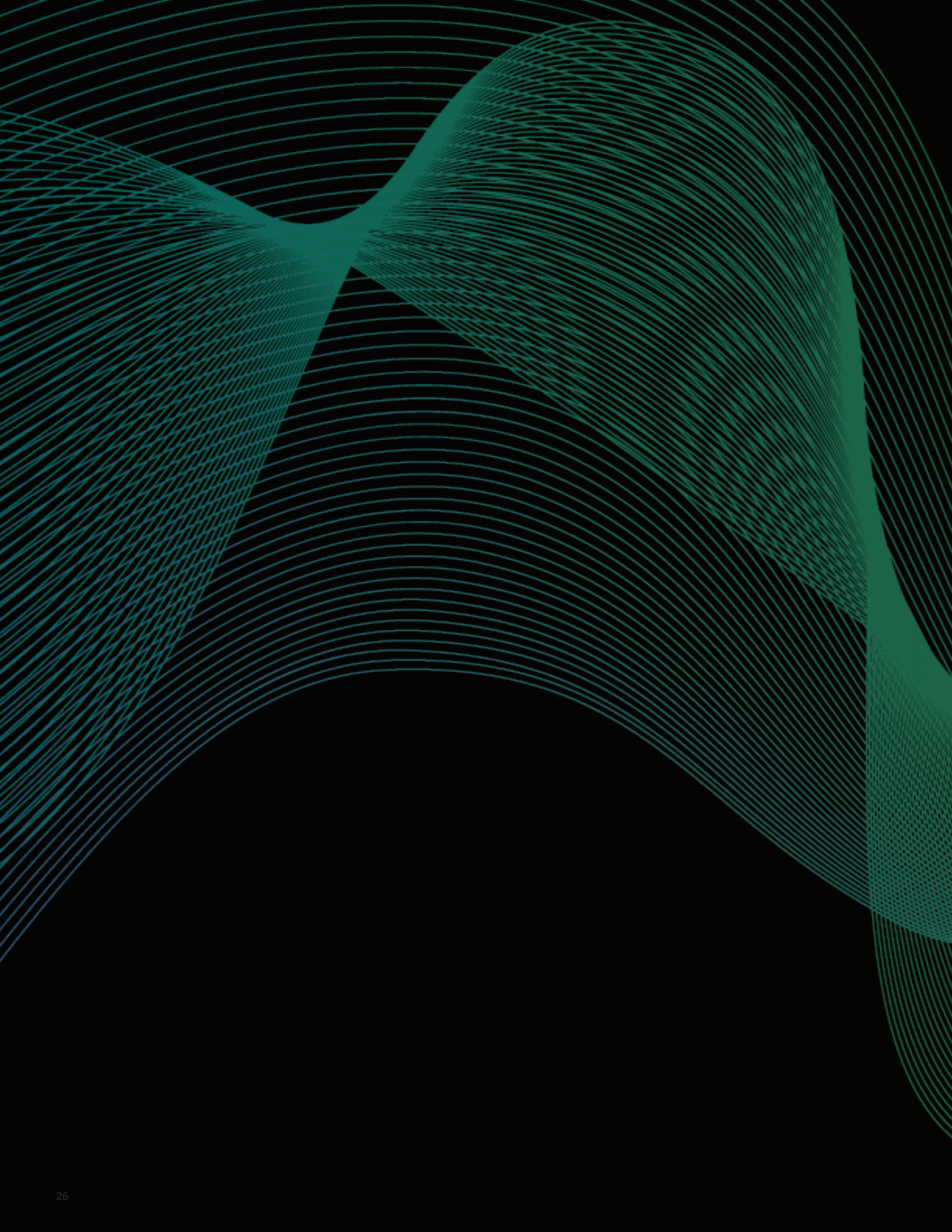
Deloitte prepares our price and market forecasts based on information we collect from numerous government agencies, industry publications, oil refineries, natural gas marketers and industry trends. Inflation forecasts and exchange rates are also an integral part of the forecast.

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



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