

Price forecast

December 31, 2017

Resource Evaluation & Advisory

Forecast commentary

The rearview mirror is always clearer than the windshield.

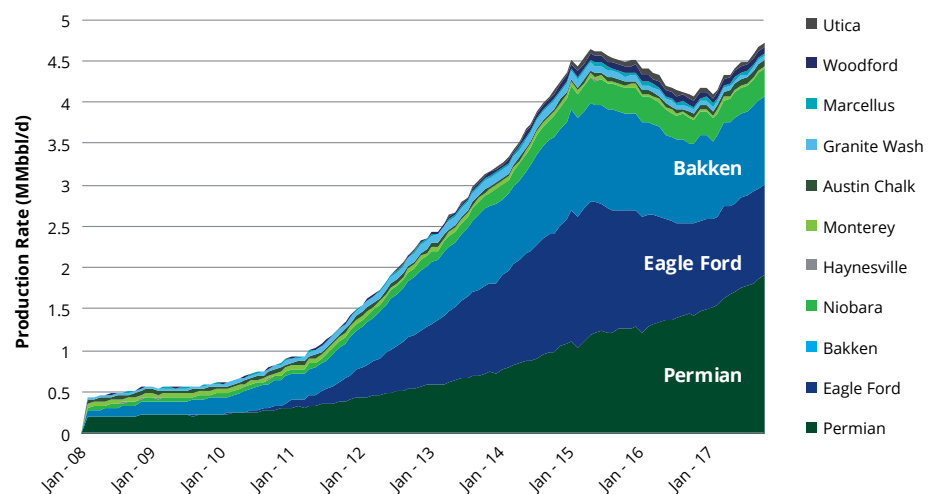
— Warren Buffett

The past year has seen relatively stable oil prices, with relative optimism for the future as OPEC extended its current production cuts until the end of 2018 and global oil demand growth remains strong. Both factors are key steps towards rebalancing the global crude oil market and reducing world crude inventories. Over the last quarter, crude oil prices rose on news of continued compliance by OPEC participating nations and the expectation the cuts would continue into 2018; however, the differential between Brent and WTI prices has widened over the last year to over \$6 USD/bbl, as Brent prices have grown more than WTI. WTI price growth has been dampened by increased oil production in the United States (U.S.), which has resulted in transportation constraints and continental oversupply. Rig

counts in the U.S. have risen throughout the year, leading to near-record oil production rates in 2017. Currently, tight oil plays represent almost half of U.S. crude oil production, with a flurry of development in the Permian and Eagle Ford basins leading the way.

Long term, WTI prices should be buoyed by the increased ability of the U.S. to export light sweet crude oil to large consumer markets such as Asia. U.S. crude oil exports to Asia rose in 2017 and accounted for approximately 33 percent of all crude oil export volumes, making Asia the second-largest destination for U.S. crude. It is expected the current differential will narrow as U.S. exports continue to increase to take advantage of higher waterborne prices.

US Tight Oil Production



Source: EIA



Overall, annual crude oil import volumes in the U.S. are similar to those in 2016. Canadian exports to the U.S. remain immobile while heavy oil competitors Mexico and Venezuela continue to decrease their supply to the U.S.. Canadian heavy crude oil differentials to WTI have increased over the last quarter as increasing supply from oil sands projects has sparked concerns over transportation bottlenecks. However, as the U.S. continues to ramp up light oil production, and similar quality heavy oil imports from Venezuela and Mexico decline, the demand for Canadian heavy crude should continue to grow, barring any

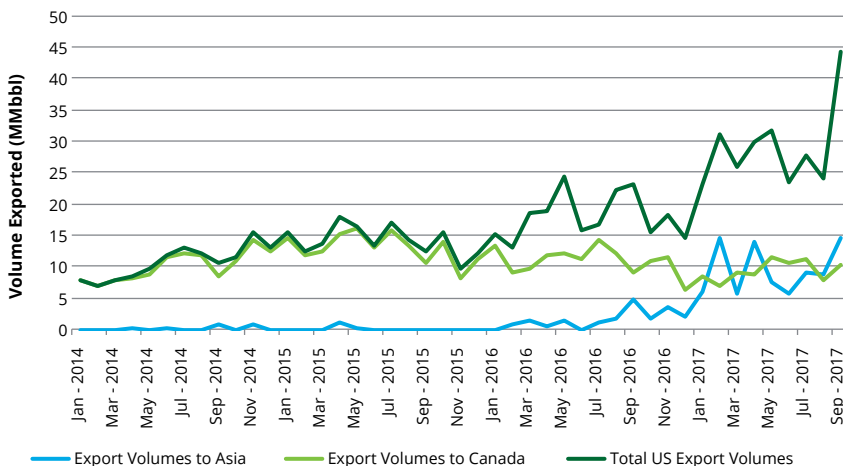
changes to current crude slates and refinery configurations in the U.S. Gulf Coast region. If Canada can increase its market share and access U.S. heavy oil refining capacity, we expect the price differential between WCS and WTI prices to taper or at least be moderate when compared to the historical differential.

Considering the increase in crude oil prices over the last two quarters and the increased heavy oil price differential, Deloitte has forecast WTI to be US\$55.00/bbl in 2018 and WCS to be C\$46.40/bbl.

On the natural gas side, Canadian prices were extremely volatile in 2017, with the differential to Henry Hub fluctuating substantially over the year, often to great effect on a day-by-day basis. The summer months saw large discrepancies between AECO and Henry Hub prices as Canadian producers felt the effects of midstream infrastructure maintenance projects amid steady natural gas production. AECO prices witnessed traces of recovery in Q4 2017 due to the resumption of transportation systems to full capacity operations. However, it is expected 2018 prices may have similar price volatility in the summer months as more maintenance projects are planned. Historical price fluctuations over the last 10 years show AECO prices were on average 20 percent higher in winter months than summer months. Deloitte has accounted for this seasonal price fluctuation when forecasting AECO prices for 2018.

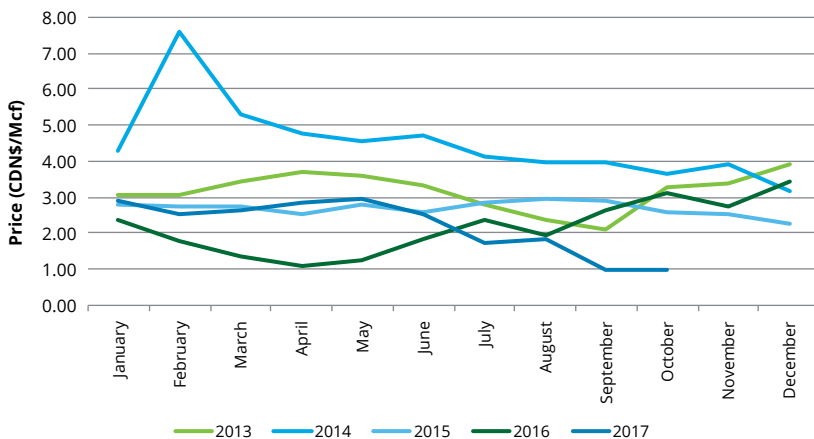
In addition to infrastructure issues in Canada, AECO prices have also been affected by increased U.S. natural gas production through both shale gas plays and solution gas from tight oil fields. Currently, 22 percent of U.S. shale gas production (11 percent of total gas production) is attributed to solution gas from the Permian, Eagle Ford, and Bakken tight oil drilling. This equates to over 10 Bcf/d of gas from oil plays that affect the supply-and-demand balance. With increased domestic supply, the U.S. can export

US Crude Oil Exports



Source: EIA

AECO Price Seasonality



Source: DOB



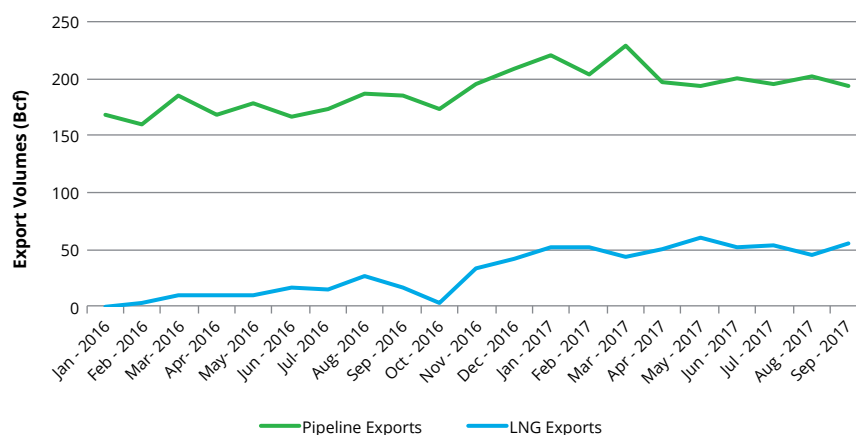
additional volumes to Mexico by pipeline and abroad through LNG facilities. The U.S. grew its natural gas export market by 31 percent in 2017, with the majority of pipeline export volumes directed to Mexico, and an increase in LNG export volumes more than three times 2016 average volumes.

Henry Hub prices reflect U.S. optionality to export markets as prices have remained relatively stable throughout 2017. Natural gas export volumes from Canada to the U.S. were flat in 2017, demonstrating that the U.S. does not require additional volumes from Canada to meet domestic demand.

Canada's limited ability to access new markets, combined with increased U.S. natural gas production, results in low AECO pricing as the U.S. continues to expand its transportation infrastructure and export markets.

Considering natural gas pricing seasonality and increased production in the U.S., Deloitte has forecast AECO to be C\$2.00/Mcf and Henry Hub to be US\$2.80/Mcf in 2018.

US Natural Gas Export Volumes



Source: EIA



Trends to watch in 2018

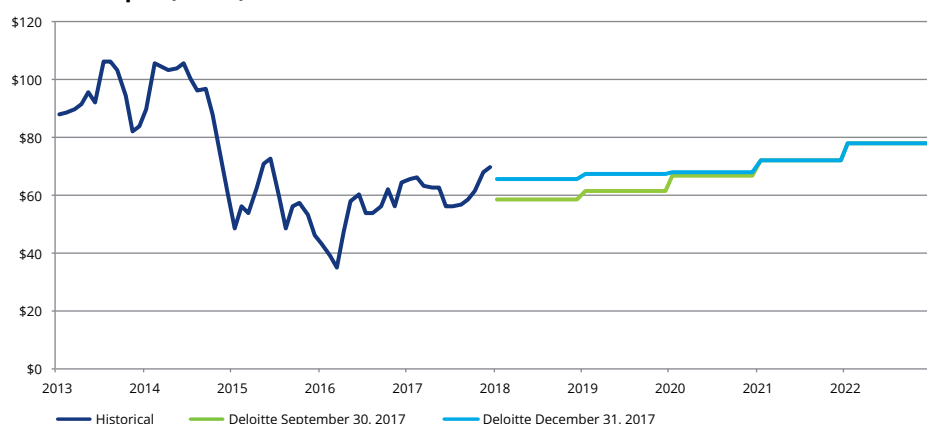
- **Q1 2017 saw a surge in drilling activity, which led to crew shortages and cost escalations.** More of the same can be expected in 2018 as producers take advantage of stable, growing prices. Drilling and completion costs will likely rise as competition for rigs increases.
- **Uncertainty of AECO pricing in a volatile environment may hinder Canadian dry gas producers from moving forward with their development plans.** Producers may be quick to shut in production if there are similar maintenance outages to those that occurred in summer 2017. Companies will also likely hedge significant volumes to protect against price volatility.
- **Light oil development, particularly in Saskatchewan and southeast Alberta, should continue at a consistent pace.** Expansion of enhanced oil recovery operations will most likely be an area of increased production volumes in certain conventional plays such as the Viking and Midale formations.
- **Total bitumen production may for the first time exceed 3 MMbbl/d.** Incremental production of existing in-situ operations and expansion projects are scheduled to come on-stream in 2018. The new Sturgeon refinery, Alberta's first new refinery to be built in 30 years, is scheduled to begin operations in spring 2018 with an upgrading capacity of 50,000 bbl/d.
- **Producers will continue to target liquid-rich gas plays in the Deep Basin.** Condensate prices are increasing as the domestic condensate supply does not meet increased demand for expanding bitumen production. It is expected the demand for condensate will rise due to increased bitumen capacity from oil sands expansion projects. In addition, if proposed crude oil pipeline projects move forward, increased diluent will be required to transport heavy oil. Partial upgrading potential and increased transport capacity by train would slow the demand for diluent; however, rail transport is more costly than pipelines and partial upgrading is relatively new to the industry.



Canadian domestic price forecast

Crude oil price and market demand forecast

Edmonton par (real \$)



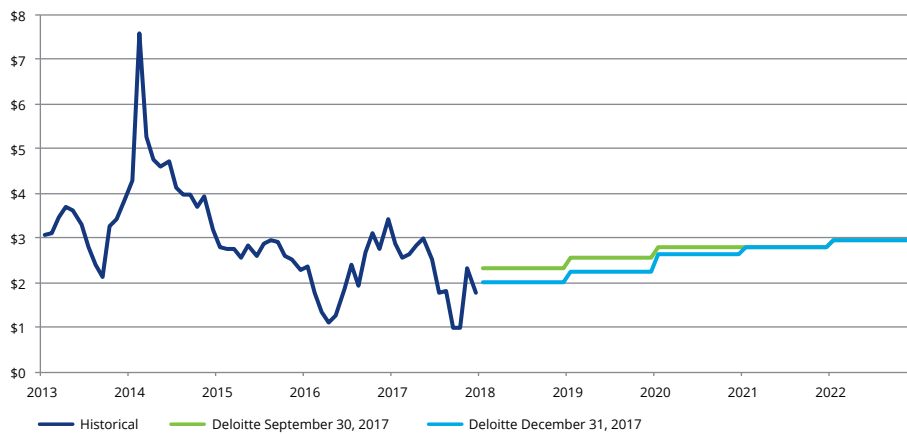
Forecast comments

- 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	US\$/bbl	C\$/bbl	C\$/bbl	C\$/bbl	C\$/bbl		
	Real	Current	Real	Current	Current	Current	Rate	Rate
Historical								
2014	\$96.15	\$93.26	\$96.91	\$94.00	\$81.06	\$73.70	1.9%	0.906
2015	\$49.96	\$48.69	\$58.49	\$57.00	\$44.80	\$39.63	1.1%	0.783
2016	\$43.79	\$43.15	\$52.98	\$52.22	\$38.90	\$34.08	1.4%	0.755
2017								
12 Mths H	\$50.84	\$50.84	\$62.11	\$62.11	\$50.85	\$45.03	1.6%	0.771
0 Mths F	-	-	-	-	-	-	-	-
Avg.	\$50.84	\$50.84	\$62.11	\$62.11	\$50.85	\$45.03	-	0.771
Forecast								
2018	\$55.00	\$55.00	\$65.40	\$65.40	\$46.40	\$41.40	0.0%	0.780
2019	\$57.50	\$58.65	\$66.90	\$68.25	\$50.90	\$45.80	2.0%	0.800
2020	\$60.00	\$62.40	\$67.90	\$70.65	\$55.05	\$49.85	2.0%	0.825
2021	\$65.00	\$69.00	\$71.75	\$76.15	\$60.20	\$57.05	2.0%	0.850
2022	\$70.00	\$75.75	\$77.65	\$84.05	\$67.80	\$64.55	2.0%	0.850
2023	\$70.00	\$77.30	\$77.65	\$85.75	\$69.15	\$65.85	2.0%	0.850
2024	\$70.00	\$78.85	\$77.65	\$87.45	\$70.55	\$67.20	2.0%	0.850
2025	\$70.00	\$80.40	\$77.65	\$89.20	\$71.95	\$68.50	2.0%	0.850

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 Current	C\$/Mcf Real	C\$/Mcf Current	C\$/Mcf Current	US\$/Mcf Real	US\$/Mcf Current
Historical						
2014	\$4.22	\$4.64	\$4.50	\$4.16	\$4.53	\$4.39
2015	\$2.56	\$2.76	\$2.69	\$1.81	\$2.70	\$2.63
2016	\$1.93	\$2.19	\$2.16	\$1.75	\$2.55	\$2.52
2017						
12 Mths H	\$2.19	\$2.16	\$2.16	\$1.55	\$2.99	\$2.99
0 Mths F	-	-	-	-	-	-
Avg.	\$2.19	\$2.16	\$2.16	\$1.55	\$2.99	\$2.99
Forecast						
2018	\$2.25	\$2.00	\$2.00	\$1.25	\$2.80	\$2.80
2019	\$2.55	\$2.25	\$2.30	\$1.75	\$2.90	\$2.95
2020	\$3.00	\$2.65	\$2.75	\$2.35	\$3.10	\$3.25
2021	\$3.25	\$2.80	\$2.95	\$2.55	\$3.30	\$3.50
2022	\$3.45	\$2.95	\$3.20	\$2.75	\$3.40	\$3.70
2023	\$3.70	\$3.10	\$3.40	\$3.00	\$3.55	\$3.90
2024	\$4.05	\$3.35	\$3.75	\$3.30	\$3.75	\$4.20
2025	\$4.35	\$3.55	\$4.10	\$3.60	\$3.90	\$4.50

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
Forecast							
2018	\$55.00	\$61.00	\$50.00	\$59.25	\$61.50	\$53.00	\$60.00
2019	\$57.50	\$61.50	\$52.50	\$59.75	\$62.00	\$53.50	\$60.50
2020	\$60.00	\$62.00	\$55.00	\$60.25	\$62.50	\$54.00	\$61.00
2021	\$65.00	\$67.00	\$60.00	\$65.25	\$67.50	\$59.00	\$66.00
2022	\$70.00	\$72.00	\$65.00	\$70.25	\$72.50	\$64.00	\$71.00
2023	\$70.00	\$72.00	\$65.00	\$70.25	\$72.50	\$64.00	\$71.00
2024	\$70.00	\$72.00	\$65.00	\$70.25	\$72.50	\$64.00	\$71.00
2025	\$70.00	\$72.00	\$65.00	\$70.25	\$72.50	\$64.00	\$71.00

- 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 per cent 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	Real	Real	Real	Real	Real	Real
Forecast								
2018	1.35	1.20	\$2.80	\$2.35	\$2.40	\$2.45	\$8.30	\$3.30
2019	1.35	1.20	\$2.90	\$2.45	\$2.50	\$2.55	\$7.90	\$4.20
2020	1.35	1.20	\$3.10	\$2.65	\$2.70	\$2.75	\$7.60	\$4.05
2021	1.35	1.20	\$3.30	\$2.85	\$2.90	\$2.95	\$7.50	\$4.00
2022	1.35	1.20	\$3.40	\$2.95	\$3.00	\$3.05	\$7.50	\$4.05
2023	1.35	1.20	\$3.55	\$3.10	\$3.15	\$3.20	\$7.50	\$4.10
2024	1.35	1.20	\$3.75	\$3.30	\$3.35	\$3.40	\$7.50	\$4.20
2025	1.35	1.20	\$3.90	\$3.45	\$3.50	\$3.55	\$7.50	\$4.30

Global trends

Storage

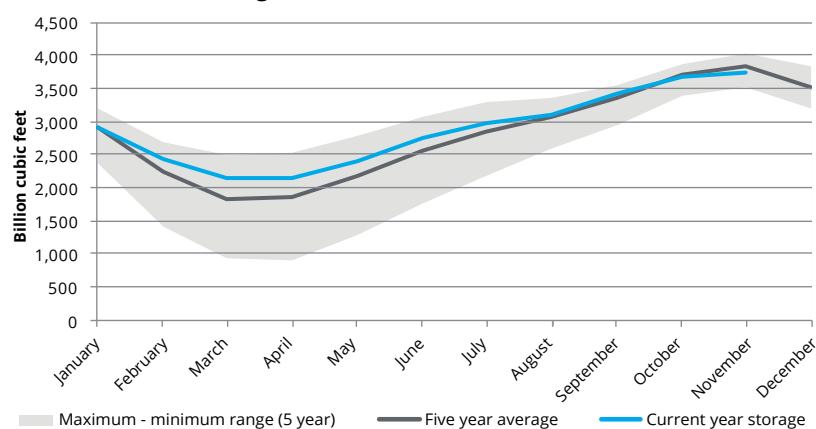
United States

- The United States natural gas storage levels are now below the five-year average. Storage draws have been larger this year due to higher demand and increased exports.

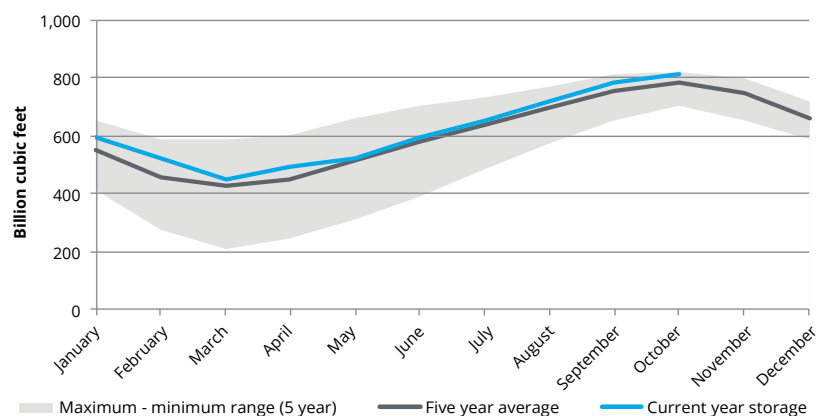
Canada

- Canadian natural gas storage remains significantly above the five-year average. Growth in production continues to offset growth in demand. With warmer than average weather in November and December, storage levels are expected to be at historic highs going into the winter months.

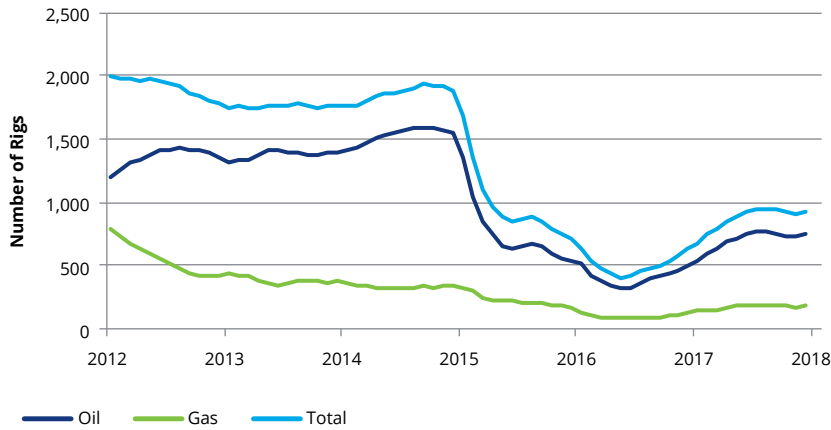
US Natural Gas Storage



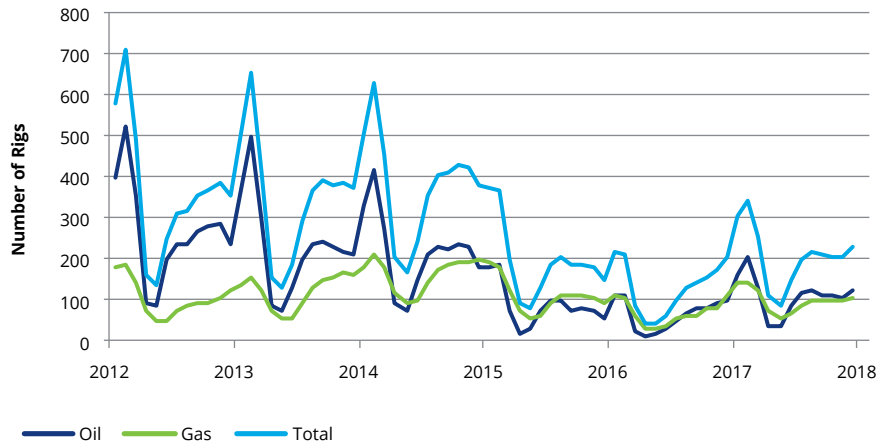
Canada Natural Gas Storage



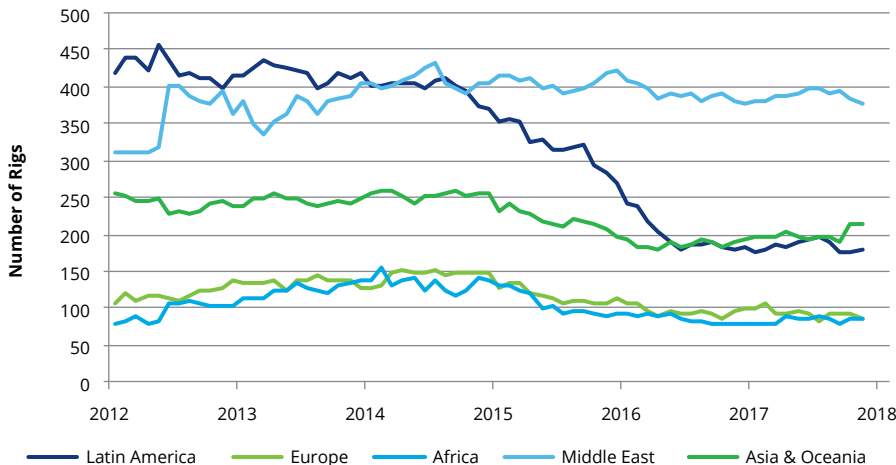
United States Rig Counts



Canada Rig Counts



International Rig Counts



Rigs

United States

- United States oil rig counts remain steady after significant growth since 2016. Drilling increases in the Permian basin drove the majority of this growth. Rig counts have begun to increase slightly in the last two months in conjunction with rising oil prices.

Canada

- Canadian rigs counts in the last quarter are approximately 20 percent higher than the last quarter of 2016. This growth has come from both oil and gas rigs. Rig counts are expected to continue to grow throughout the winter as drilling season begins.

International

- Rig counts in the Middle East have begun to fall in recent months, while drilling has increased in Asia. Total world rig counts have remained unchanged throughout 2017 after growing in 2016, primarily due to increased drilling in the United States.

Canadian domestic price tables

Year				Crude Oil Pricing				
	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. AP Hardisty
	Rate	Rate	Rate	US\$/bbl Real	US\$/bbl Current	C\$/bbl Real	C\$/bbl Current	C\$/bbl Current
Historical								
2007	2.4%	2.4%	0.997	\$96.23	\$91.69	\$94.44	\$89.98	\$50.19
2008	2.4%	2.4%	0.943	\$102.31	\$99.57	\$105.62	\$102.80	\$82.95
2009	0.3%	0.3%	0.880	\$62.95	\$61.65	\$67.49	\$66.10	\$58.66
2010	1.8%	1.8%	0.971	\$83.24	\$79.40	\$81.58	\$77.80	\$67.22
2011	2.9%	2.9%	1.012	\$99.24	\$94.88	\$99.92	\$95.54	\$77.12
2012	1.5%	1.5%	1.001	\$96.47	\$94.11	\$88.74	\$86.57	\$73.10
2013	0.9%	0.9%	0.972	\$100.76	\$97.91	\$96.08	\$93.36	\$74.97
2014	1.9%	1.9%	0.906	\$96.15	\$93.26	\$96.91	\$94.00	\$81.06
2015	1.1%	1.1%	0.783	\$49.96	\$48.69	\$58.49	\$57.00	\$44.80
2016	1.4%	1.4%	0.755	\$43.79	\$43.15	\$52.98	\$52.22	\$38.90
2017								
12 Mths H	1.6%	1.6%	0.771	\$50.84	\$50.84	\$62.11	\$62.11	\$50.85
0 Mths F	0.0%	0.0%	-	-	-	-	-	-
Avg.	N/A	N/A	0.771	\$50.84	\$50.84	\$62.11	\$62.11	\$50.85
Forecast								
2018	0.0%	0.0%	0.780	\$55.00	\$55.00	\$65.40	\$65.40	\$46.40
2019	2.0%	2.0%	0.800	\$57.50	\$58.65	\$66.90	\$68.25	\$50.90
2020	2.0%	2.0%	0.825	\$60.00	\$62.40	\$67.90	\$70.65	\$55.05
2021	2.0%	2.0%	0.850	\$65.00	\$69.00	\$71.75	\$76.15	\$60.20
2022	2.0%	2.0%	0.850	\$70.00	\$75.75	\$77.65	\$84.05	\$67.80
2023	2.0%	2.0%	0.850	\$70.00	\$77.30	\$77.65	\$85.75	\$69.15
2024	2.0%	2.0%	0.850	\$70.00	\$78.85	\$77.65	\$87.45	\$70.55
2025	2.0%	2.0%	0.850	\$70.00	\$80.40	\$77.65	\$89.20	\$71.95
2026	2.0%	2.0%	0.850	\$70.00	\$82.00	\$77.65	\$91.00	\$73.40
2027	2.0%	2.0%	0.850	\$70.00	\$83.65	\$77.65	\$92.80	\$74.85
2028	2.0%	2.0%	0.850	\$70.00	\$85.35	\$77.65	\$94.65	\$76.35
2029	2.0%	2.0%	0.850	\$70.00	\$87.05	\$77.65	\$96.55	\$77.90
2030	2.0%	2.0%	0.850	\$70.00	\$88.80	\$77.65	\$98.50	\$79.45
2031	2.0%	2.0%	0.850	\$70.00	\$90.55	\$77.65	\$100.45	\$81.05
2032	2.0%	2.0%	0.850	\$70.00	\$92.35	\$77.65	\$102.45	\$82.65
2033	2.0%	2.0%	0.850	\$70.00	\$94.20	\$77.65	\$104.50	\$84.30
2034	2.0%	2.0%	0.850	\$70.00	\$96.10	\$77.65	\$106.60	\$86.00
2035	2.0%	2.0%	0.850	\$70.00	\$98.00	\$77.65	\$108.75	\$87.75
2036	2.0%	2.0%	0.850	\$70.00	\$100.00	\$77.65	\$110.90	\$89.50
2037	2.0%	2.0%	0.850	\$70.00	\$102.00	\$77.65	\$113.10	\$91.25
2037+	2.0%	2.0%	0.850	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 2017 dollars with no escalation considered

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Price Forecast December 31, 2017 | Canadian domestic price tables

	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 Current	C\$/bbl Current	C\$/bbl Current	C\$/bbl Current	C\$/mcf Current	C\$/mcf Real	C\$/mcf Current	C\$/mcf Current	US\$/Mcf Real	US\$/Mcf Current	C\$/ft Current
Historical											
2007	\$18.35	\$60.24	\$77.79	\$98.37	\$6.17	\$6.79	\$6.47	\$6.75	\$7.46	\$7.11	\$143.08
2008	\$22.59	\$56.96	\$83.54	\$109.77	\$7.88	\$8.38	\$8.16	\$8.20	\$9.11	\$8.86	\$303.83
2009	\$11.61	\$34.62	\$56.21	\$69.49	\$3.85	\$4.04	\$3.96	\$4.17	\$4.03	\$3.95	(\$5.08)
2010	\$11.53	\$45.19	\$68.79	\$84.02	\$3.76	\$4.20	\$4.01	\$4.01	\$4.60	\$4.39	\$56.94
2011	\$10.30	\$52.41	\$86.98	\$105.24	\$3.46	\$3.80	\$3.63	\$3.34	\$4.18	\$4.00	\$101.60
2012	\$6.73	\$30.80	\$75.47	\$99.67	\$2.25	\$2.45	\$2.39	\$2.29	\$2.82	\$2.75	\$126.81
2013	\$8.68	\$38.54	\$77.44	\$103.52	\$2.98	\$3.27	\$3.17	\$3.11	\$3.84	\$3.73	\$62.17
2014	\$12.46	\$42.93	\$59.43	\$101.47	\$4.22	\$4.64	\$4.50	\$4.16	\$4.53	\$4.39	\$88.99
2015	\$7.49	\$5.35	\$33.70	\$55.15	\$2.56	\$2.76	\$2.69	\$1.81	\$2.70	\$2.63	\$107.45
2016	\$6.04	\$8.71	\$31.45	\$52.43	\$1.93	\$2.19	\$2.16	\$1.75	\$2.55	\$2.52	\$45.40
2017											
12 Mths H	\$6.06	\$27.56	\$40.96	\$62.85	\$2.19	\$2.16	\$2.16	\$1.55	\$2.99	\$2.99	\$35.21
0 Mths F	-	-	-	-	-	-	-	-	-	-	-
Avg.	\$6.06	\$27.56	\$40.96	\$62.85	\$2.19	\$2.16	\$2.16	\$1.55	\$2.99	\$2.99	\$35.21
Forecast											
2018	\$5.60	\$39.25	\$42.50	\$68.65	\$2.25	\$2.00	\$2.00	\$1.25	\$2.80	\$2.80	\$35.00
2019	\$6.45	\$37.55	\$44.35	\$71.65	\$2.55	\$2.25	\$2.30	\$1.75	\$2.90	\$2.95	\$35.70
2020	\$7.70	\$35.30	\$45.95	\$74.20	\$3.00	\$2.65	\$2.75	\$2.35	\$3.10	\$3.25	\$36.40
2021	\$8.35	\$34.30	\$49.50	\$79.95	\$3.25	\$2.80	\$2.95	\$2.55	\$3.30	\$3.50	\$37.15
2022	\$8.95	\$33.60	\$54.60	\$88.25	\$3.45	\$2.95	\$3.20	\$2.75	\$3.40	\$3.70	\$37.90
2023	\$9.60	\$34.30	\$55.70	\$90.05	\$3.70	\$3.10	\$3.40	\$3.00	\$3.55	\$3.90	\$38.65
2024	\$10.60	\$34.95	\$56.80	\$91.85	\$4.05	\$3.35	\$3.75	\$3.30	\$3.75	\$4.20	\$39.40
2025	\$11.45	\$35.65	\$57.95	\$93.70	\$4.35	\$3.55	\$4.10	\$3.60	\$3.90	\$4.50	\$40.20
2026	\$11.85	\$36.40	\$59.10	\$95.55	\$4.50	\$3.60	\$4.20	\$3.75	\$3.95	\$4.65	\$41.00
2027	\$12.20	\$37.10	\$60.30	\$97.45	\$4.65	\$3.65	\$4.35	\$3.90	\$4.00	\$4.80	\$41.85
2028	\$12.45	\$37.85	\$61.50	\$99.40	\$4.75	\$3.65	\$4.45	\$3.95	\$4.00	\$4.90	\$42.65
2029	\$12.70	\$38.60	\$62.75	\$101.40	\$4.85	\$3.65	\$4.55	\$4.05	\$4.00	\$4.95	\$43.50
2030	\$12.95	\$39.40	\$64.00	\$103.45	\$4.95	\$3.65	\$4.65	\$4.10	\$4.00	\$5.05	\$44.40
2031	\$13.20	\$40.15	\$65.25	\$105.50	\$5.05	\$3.65	\$4.70	\$4.20	\$4.00	\$5.15	\$45.30
2032	\$13.45	\$40.95	\$66.55	\$107.60	\$5.15	\$3.65	\$4.80	\$4.30	\$4.00	\$5.30	\$46.20
2033	\$13.75	\$41.80	\$67.90	\$109.75	\$5.25	\$3.65	\$4.90	\$4.35	\$4.00	\$5.40	\$47.10
2034	\$14.00	\$42.60	\$69.25	\$111.95	\$5.35	\$3.65	\$5.00	\$4.45	\$4.00	\$5.50	\$48.05
2035	\$14.30	\$43.50	\$70.65	\$114.20	\$5.45	\$3.65	\$5.10	\$4.55	\$4.00	\$5.60	\$49.00
2036	\$14.55	\$44.35	\$72.05	\$116.45	\$5.55	\$3.65	\$5.20	\$4.65	\$4.00	\$5.70	\$50.00
2037	\$14.85	\$45.25	\$73.50	\$118.80	\$5.70	\$3.65	\$5.30	\$4.75	\$4.00	\$5.85	\$51.00
2037+	2.0%	2.0%	2.0%	2.0%	2.0%	0.0%	2.0%	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
- 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 2017 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
Years	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 Current	C\$/bbl Current	C\$/bbl Current	C\$/mcf Current
Historical				
2007	\$85.13	\$62.47	\$51.54	\$7.47
2008	\$95.28	\$92.40	\$84.08	\$9.88
2009	\$64.04	\$63.76	\$58.92	\$4.80
2010	\$76.40	\$72.32	\$67.64	\$4.79
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				
12 Mths H	\$62.20	\$58.68	\$50.38	\$3.96
0 Mths F	\$0.00	\$0.00	\$0.00	\$0.00
Avg.	\$62.20	\$58.68	\$50.38	\$3.96
Forecast				
2018	\$64.40	\$61.40	\$49.60	\$3.85
2019	\$67.20	\$64.15	\$53.55	\$4.00
2020	\$69.60	\$66.50	\$57.10	\$4.15
2021	\$75.10	\$71.90	\$63.95	\$4.40
2022	\$82.95	\$79.70	\$71.65	\$4.60
2023	\$84.65	\$81.30	\$73.10	\$4.90
2024	\$86.30	\$82.95	\$74.55	\$5.25
2025	\$88.05	\$84.60	\$76.05	\$5.55
2026	\$89.80	\$86.30	\$77.55	\$5.75
2027	\$91.60	\$88.00	\$79.10	\$5.90
2028	\$93.45	\$89.80	\$80.70	\$6.05
2029	\$95.30	\$91.55	\$82.30	\$6.15
2030	\$97.20	\$93.40	\$83.95	\$6.30
2031	\$99.15	\$95.25	\$85.65	\$6.40
2032	\$101.15	\$97.20	\$87.35	\$6.55
2033	\$103.15	\$99.10	\$89.10	\$6.65
2034	\$105.20	\$101.10	\$90.90	\$6.80
2035	\$107.35	\$103.15	\$92.70	\$6.95
2036	\$109.50	\$105.20	\$94.55	\$7.05
2037	\$111.65	\$107.30	\$96.45	\$7.20
2037+	2.0%	2.0%	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)
- 1 Mcf is equivalent to 1 mmbtu
- Real prices listed in 2017 dollars with no escalation considered
- Sarnia price is Edmonton Sweet (MSW) delivered to Sarnia, Ontario
- Synbit is a combined bitumen (70%) and Condensate (30%) stream equivalent to the Acces Western Blend (AWB).

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International price tables

Crude Oil Pricing																
Year	Average WTI Spot	Alaskan North Slope	California Kern River	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 Fateh	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
	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real	Real
Forecast																
2018	\$55.00	\$48.00	\$51.00	\$54.00	\$53.00	\$50.00	\$51.50	\$61.00	\$50.00	\$59.25	\$54.00	\$61.50	\$59.50	\$53.00	\$60.00	\$54.00
2019	\$57.50	\$50.50	\$53.50	\$56.50	\$55.50	\$52.50	\$54.00	\$61.50	\$52.50	\$59.75	\$54.50	\$62.00	\$60.00	\$53.50	\$60.50	\$56.50
2020	\$60.00	\$53.00	\$56.00	\$59.00	\$58.00	\$55.00	\$56.50	\$62.00	\$55.00	\$60.25	\$55.00	\$62.50	\$60.50	\$54.00	\$61.00	\$57.00
2021	\$65.00	\$58.00	\$61.00	\$64.00	\$63.00	\$60.00	\$61.50	\$67.00	\$60.00	\$65.25	\$60.00	\$67.50	\$65.50	\$59.00	\$66.00	\$62.00
2022	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2023	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2024	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2025	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2026	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2027	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2028	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2029	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2030	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2031	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2032	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2033	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2034	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2035	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2036	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2037	\$70.00	\$63.00	\$66.00	\$69.00	\$68.00	\$65.00	\$66.50	\$72.00	\$65.00	\$70.25	\$65.00	\$72.50	\$70.50	\$64.00	\$71.00	\$67.00
2037+	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:

- Venezuelan Merey replaced BCF-17 in the OPEC basket March 1, 2009.

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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 Real	US\$/Mcf Real	US\$/Mcf Real	US\$/Mcf Real	US\$/gal. Real	US\$/Mcf Real	US\$/bbl Real
Forecast									
2018	1.350	1.200	\$2.80	\$2.35	\$2.40	\$2.45	\$8.30	\$3.30	\$1.50
2019	1.350	1.200	\$2.90	\$2.45	\$2.50	\$2.55	\$7.90	\$4.20	\$1.50
2020	1.350	1.200	\$3.10	\$2.65	\$2.70	\$2.75	\$7.60	\$4.05	\$1.50
2021	1.350	1.200	\$3.30	\$2.85	\$2.90	\$2.95	\$7.50	\$4.00	\$1.50
2022	1.350	1.200	\$3.40	\$2.95	\$3.00	\$3.05	\$7.50	\$4.05	\$1.50
2023	1.350	1.200	\$3.55	\$3.10	\$3.15	\$3.20	\$7.50	\$4.10	\$1.50
2024	1.350	1.200	\$3.75	\$3.30	\$3.35	\$3.40	\$7.50	\$4.20	\$1.50
2025	1.350	1.200	\$3.90	\$3.45	\$3.50	\$3.55	\$7.50	\$4.30	\$1.50
2026	1.350	1.200	\$3.95	\$3.50	\$3.55	\$3.60	\$7.50	\$4.35	\$1.50
2027	1.350	1.200	\$4.00	\$3.55	\$3.60	\$3.65	\$7.50	\$4.40	\$1.50
2028	1.350	1.200	\$4.00	\$3.55	\$3.60	\$3.65	\$7.50	\$4.40	\$1.50
2029	1.350	1.200	\$4.00	\$3.55	\$3.60	\$3.65	\$7.50	\$4.40	\$1.50
2030	1.350	1.200	\$4.00	\$3.55	\$3.60	\$3.65	\$7.50	\$4.40	\$1.50
2031	1.350	1.200	\$4.00	\$3.55	\$3.60	\$3.65	\$7.50	\$4.40	\$1.50
2032	1.350	1.200	\$4.00	\$3.55	\$3.60	\$3.65	\$7.50	\$4.40	\$1.50
2033	1.350	1.200	\$4.00	\$3.55	\$3.60	\$3.65	\$7.50	\$4.40	\$1.50
2034	1.350	1.200	\$4.00	\$3.55	\$3.60	\$3.65	\$7.50	\$4.40	\$1.50
2035	1.350	1.200	\$4.00	\$3.55	\$3.60	\$3.65	\$7.50	\$4.40	\$1.50
2036	1.350	1.200	\$4.00	\$3.55	\$3.60	\$3.65	\$7.50	\$4.40	\$1.50
2037	1.350	1.200	\$4.00	\$3.55	\$3.60	\$3.65	\$7.50	\$4.40	\$1.50
2037+	1.350	1.200	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

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

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