Deloitte.



Price forecast June 30 , 2017 Resource Evaluation & Advisory

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Forecast commentary

True stability results when presumed order and presumed disorder are balanced. A truly stable system expects the unexpected, is prepared to be disrupted, waits to be transformed.

- Tom Robbins, author

This past quarter has seen forces of both stability and volatility, with OPEC extending its current production cuts into 2018 and oil prices continuing to be highly sensitive to rig activity and inventory levels. This "balance" kept oil prices hovering at around \$50/bbl for most of the last quarter, but volatility appears to have overtaken stability in June as prices dropped to a six-month low on reports of increased gasoline stockpiles caused by lower-than-expected demand as we enter the summer driving season.

In an attempt to put upward pressure on oil prices, OPEC agreed to extend existing production cuts-which have removed approximately 1.8 million barrels per day from the market-to March 2018. Increasing unplanned production outages in regions such as Libya and Nigeria add some uncertainty to the oil supply as it is not known how long these outages will last. (Production outages in the Middle East and Africa were one of the culprits that propped up oil prices for several years even as the United States was drastically increasing production levels throughout the early 2010s.) If the current outages are resolved, this would put more downward pressure on prices, especially as the U.S. once again begins to ramp up production.

Production cuts by OPEC have helped to stabilize the market over the past six months, which has allowed activity levels in North America to increase considerably from this time last year. Production from the United States has increased by more than 500 Mbbl/d, which has made up for a significant portion of the OPEC production cutbacks. Western Canadian activity has also picked up, with CAODC forecasting a 36-per-cent increase in well completions over last year.





Source: EIA Short-Term Energy Outlook, May 2017

Canada active rig count



Source: Baker Hughes

United States active rig count



Source: Baker Hughes

With this increase in activity, inventories of oil in the United States remain very high, although they are down from the peak of more than 530 million barrels reached in March 2017. While storage levels have been dropping, they are still considerably higher than the five-year average. Futures contracts have reflected a hesitant market that is unwilling to bet on increasing prices anytime soon, with minimal growth beyond \$50/bbl for the next few years. We forecast WTI to be \$48.00/bbl USD in 2017 and Edmonton Light to be \$58.65/bbl CAD. The North American market for natural gas has also been relatively stable over the last quarter, with storage levels in the United States and Western Canada below 2016 levels but higher than the five-year average. Both AECO and Henry Hub prices have been relatively flat, supply and demand have remained relatively unchanged in the U.S. and Canada, and storage levels are close to the five-year average. We are not expecting the summer weather forecast to impact prices substantially as temperatures are expected to be average.





AECO differential to Henry Hub

The differential between AECO and Henry Hub continues to be unusually high at nearly double the historical average over the last five years. This differential has been on an upward trend over the last several years. During this time, both production and consumption have remained consistent in Canada and the U.S., and pipeline flows out of Western Canada have also not changed significantly. Natural gas exports from the United States to countries other than Canada, however, have increased substantially, from less than 2 Bcf/d in 2014 to around 6 Bcf/d in 2017 so far. A large part of this increase has been due to new LNG export facilities which have come online during these years, primarily along the Gulf of Mexico. This has likely strengthened Henry Hub prices in relation to AECO, as excess gas in the southern states now has access to an additional market. This differential is therefore not expected to narrow in the near future. We forecast Henry Hub to be \$3.10/Mcf USD in 2017 and AECO to be \$2.40/Mcf CAD.



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 20.5° API Hardisty	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								
6 Months H	\$50.40	\$50.40	\$63.26	\$63.26	\$50.24	\$43.74	1.9%	0.748
6 Months F	\$48.00	\$48.00	\$58.65	\$58.65	\$43.65	\$39.65	0.0%	0.750
Avg.	\$49.20	\$49.20	\$60.95	\$60.95	\$46.95	\$41.70	-	0.749
Forecast								
2017	\$48.00	\$48.00	\$58.65	\$58.65	\$43.65	\$39.65	0.0%	0.750
2018	\$51.00	\$52.00	\$61.85	\$63.10	\$47.80	\$43.70	2.0%	0.760
2019	\$55.00	\$57.20	\$65.40	\$68.05	\$52.45	\$48.25	2.0%	0.780
2020	\$60.00	\$63.65	\$69.15	\$73.40	\$57.45	\$53.20	2.0%	0.810
2021	\$65.00	\$70.35	\$71.75	\$77.65	\$61.45	\$57.10	2.0%	0.850
2022	\$70.00	\$77.30	\$77.65	\$85.75	\$69.15	\$64.75	2.0%	0.850
2023	\$70.00	\$78.85	\$77.65	\$87.45	\$70.55	\$66.05	2.0%	0.850
2024	\$70.00	\$80.40	\$77.65	\$89.20	\$71.95	\$67.35	2.0%	0.850

Natural gas price and market demand forecast AECO natural gas (real \$)



-PU.UU										
2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
		_	Historical	Deloitte Ma	rch 31, 2017	Deloitte Ju	ine 30, 2017			

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.
- In contrast to other forecasts in the industry, Deloitte's long-term views consider two more years of growth in terms of real dollars.

Year	AB Ref. Avg. Price	AB AECO Avg. Price	AB AECO Avg. Price	B.C. 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						
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						
6 Months H	\$2.55	\$2.75	\$2.75	\$2.39	\$3.05	\$3.05
6 Months F	\$2.10	\$2.40	\$2.40	\$2.00	\$3.10	\$3.10
Avg.	\$2.32	\$2.57	\$2.57	\$2.19	\$3.07	\$3.07
Forecast						
2017	\$2.10	\$2.40	\$2.40	\$2.00	\$3.10	\$3.10
2018	\$2.50	\$2.65	\$2.70	\$2.30	\$3.15	\$3.20
2019	\$2.65	\$2.75	\$2.85	\$2.45	\$3.20	\$3.35
2020	\$2.85	\$2.90	\$3.10	\$2.65	\$3.25	\$3.45
2021	\$3.05	\$3.00	\$3.25	\$2.80	\$3.30	\$3.55
2022	\$3.20	\$3.10	\$3.40	\$3.00	\$3.40	\$3.75
2023	\$3.50	\$3.30	\$3.70	\$3.25	\$3.55	\$4.00
2024	\$3.85	\$3.55	\$4.10	\$3.60	\$3.75	\$4.30

International price forecast

Crude oil price and market demand forecast

Year	Avg. 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							
2017	\$48.00	\$49.00	\$41.50	\$47.00	\$49.50	\$41.00	\$47.70
2018	\$51.00	\$52.00	\$44.50	\$50.00	\$52.50	\$44.00	\$50.70
2019	\$55.00	\$56.00	\$48.50	\$54.00	\$56.50	\$48.00	\$54.70
2020	\$60.00	\$61.00	\$53.50	\$59.00	\$61.50	\$53.00	\$59.70
2021	\$65.00	\$66.00	\$58.50	\$64.00	\$66.50	\$58.00	\$64.70
2022	\$70.00	\$71.00	\$63.50	\$69.00	\$71.50	\$63.00	\$69.70
2023	\$70.00	\$71.00	\$63.50	\$69.00	\$71.50	\$63.00	\$69.70
2024	\$70.00	\$71.00	\$63.50	\$69.00	\$71.50	\$63.00	\$69.70

- 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.

Year	USD to GBP Exchange	USD to EUR Exchange	NYMEX Henry Hub	Permian Waha	San Juan Ignacio	Rocky Mtn 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								
2017	1.300	1.100	\$3.10	\$2.85	\$2.85	\$2.85	\$5.20	\$2.70
2018	1.300	1.100	\$3.15	\$2.90	\$2.90	\$2.90	\$5.25	\$2.95
2019	1.300	1.100	\$3.20	\$2.95	\$2.95	\$2.95	\$5.30	\$3.00
2020	1.300	1.100	\$3.25	\$3.00	\$3.00	\$3.00	\$5.35	\$3.05
2021	1.300	1.100	\$3.30	\$3.05	\$3.05	\$3.05	\$5.40	\$3.10
2022	1.300	1.100	\$3.40	\$3.15	\$3.15	\$3.15	\$5.50	\$3.15
2023	1.300	1.100	\$3.55	\$3.30	\$3.30	\$3.30	\$5.65	\$3.25
2024	1.300	1.100	\$3.75	\$3.50	\$3.50	\$3.50	\$5.85	\$3.40

Natural gas price and market demand forecast

Global trends

Storage

- The United States natural gas storage levels are much closer to the five-year average than this time last year. With average temperatures expected for the summer, storage levels are likely to remain high for the remainder of the year.
- Canadian natural gas storage is also hovering just over the five-year high, down from the five-year highs seen in 2016.

US Natural Gas Storage







United States Rig Counts



Canada Rig Counts



International



Rigs

United States

 United States oil rig counts have been on a steady rise after hitting a low point in May 2016. The increase over the last several years has been due to significant increased drilling activity in the Permian Basin but also some increases in activity in the Eagleford. This quarter has seen a 20-per-cent increase in overall rigs from the previous quarter and is now at a twoyear high.

Canada

 Canadian rigs dropped steeply as we entered spring breakup. The lows seen in April and May were similar to those seen in 2015. Rig counts in the first two weeks of June have risen significantly. Much of this increase is coming from oil rigs.

International

 Rig counts have levelled off or have been slightly increasing in most regions of the world. Latin America and the Middle East have seen the largest increases in recent months, growing by around 10 rigs each. North America continues to account for approximately 50 per cent of the world's active rigs, significantly less than the historic norm of 60-70 per cent seen over the last 40 years.

Canadian domestic price tables

				Crude Oil pricing						
Year	Price Inflation	Cost Inflation	CAD to USD Exchange	WTI Cushing, OK (40° API)	WTI Cushing, OK (40° API)	Edmonton City Gate (40° API)	Edmonton City Gate (40° API)	WCS (20.5° API) Hardisty	Bow River (25° API) Hardisty	Heavy Oil Hardisty (12° API)
				US\$/bbl	US\$/bbl	C\$/bbl	C\$/bbl	C\$/bbl	C\$/bbl	C\$/bbl
	Rate	Rate	Rate	Real	Current	Real	Current	Current	Current	Current
Historical										
2007	2.3.%	2.3%	0.981	\$84.77	\$75.40	\$86.51	\$82.53	\$54.84	\$55.64	\$41.55
2008	2.4%	2.4%	0.943	\$102.31	\$99.57	\$105.62	\$102.80	\$82.95	\$83.90	\$73.08
2009	0.3%	0.3%	0.880	\$62.95	\$61.65	\$67.49	\$66.10	\$58.66	\$59.80	\$54.40
2010	1.8%	1.18%	0.971	\$83.24	\$79.40	\$81.58	\$77.80	\$67.22	\$68.18	\$60.62
2011	2.9%	2.9%	1.012	\$99.24	\$94.88	\$99.92	\$95.54	\$77.12	\$78.42	\$69.60
2012	1.5%	1.5%	1.001	\$96.47	\$94.11	\$88.74	\$86.57	\$73.10	\$74.41	\$64.07
2013	0.9%	0.9%	0.972	\$100.76	\$97.91	\$96.08	\$93.36	\$74.97	\$76.29	\$65.49
2014	1.9%	1.9%	0.906	\$96.15	\$93.26	\$96.91	\$94.00	\$81.06	\$81.49	\$73.70
2015	1.1%	1.1%	0.783	\$49.96	\$48.69	\$58.49	\$57.00	\$44.80	\$45.23	\$39.63
2016	1.4%	1.4%	0.755	\$43.79	\$43.15	\$52.98	\$52.22	\$38.90	\$39.23	\$34.08
2017	1									
6 Months H	1.9%	1.9%	0.748	\$50.40	\$50.40	\$63.26	\$63.26	\$50.24	\$50.58	\$43.74
6 Months F	1.4%	0.0%	0.750	\$48.00	\$48.00	\$58.65	\$58.65	\$43.65	\$45.65	\$39.65
Avg.	-		0.749	\$49.20	\$49.20	\$60.95	\$60.95	\$46.95	\$48.11	\$41.70
Forecast	-									
2017	0.0%	0.0%	0.750	\$48.00	\$48.00	\$58.65	\$58.65	\$43.65	\$45.65	\$39.65
2018	2.0%	2.0%	0.760	\$51.00	\$52.00	\$61.85	\$63.10	\$47.80	\$49.85	\$43.70
2019	2.0%	2.0%	0.780	\$55.00	\$57.20	\$65.40	\$68.05	\$52.45	\$54.50	\$48.25
2020	2.0%	2.0%	0.810	\$60.00	\$63.65	\$69.15	\$73.40	\$57.45	\$59.60	\$53.20
2021	2.0%	2.0%	0.850	\$65.00	\$70.35	\$71.75	\$77.65	\$61.45	\$63.60	\$57.10
2022	2.0%	2.0%	0.850	\$70.00	\$77.30	\$77.65	\$85.75	\$69.15	\$71.40	\$64.75
2023	2.0%	2.0%	0.850	\$70.00	\$78.85	\$77.65	\$87.45	\$70.55	\$72.80	\$66.05
2024	2.0%	2.0%	0.850	\$70.00	\$80.40	\$77.65	\$89.20	\$71.95	\$74.25	\$67.35
2025	2.0%	2.0%	0.850	\$70.00	\$82.00	\$77.65	\$91.00	\$73.40	\$75.75	\$68.70
2026	2.0%	2.0%	0.850	\$70.00	\$83.65	\$77.65	\$92.80	\$74.85	\$77.25	\$70.10
2027	2.0%	2.0%	0.850	\$70.00	\$85.35	\$77.65	\$94.65	\$76.35	\$78.80	\$71.50
2028	2.0%	2.0%	0.850	\$70.00	\$87.05	\$77.65	\$96.55	\$77.90	\$80.40	\$72.90
2029	2.0%	2.0%	0.850	\$70.00	\$88.80	\$77.65	\$98.50	\$79.45	\$82.00	\$74.40
2030	2.0%	2.0%	0.850	\$70.00	\$90.55	\$77.65	\$100.45	\$81.05	\$83.65	\$75.85
2031	2.0%	2.0%	0.850	\$70.00	\$92.35	\$77.65	\$102.45	\$82.65	\$85.30	\$77.40
2032	2.0%	2.0%	0.850	\$70.00	\$94.20	\$77.65	\$104.50	\$84.30	\$87.00	\$78.95
2033	2.0%	2.0%	0.850	\$70.00	\$96.10	\$77.65	\$106.60	\$86.00	\$87.40	\$80.50
2034	2.0%	2.0%	0.850	\$70.00	\$98.00	\$77.65	\$108.75	\$87.75	\$88.75	\$82.10
2035	2.0%	2.0%	0.850	\$70.00	\$100.00	\$77.65	\$110.90	\$89.50	\$92.35	\$83.75
2036	2.0%	2.0%	0.850	\$70.00	\$102.00	\$77.65	\$113.10	\$91.25	\$94.20	\$85.45
2036+	2.0%	2.0%	0.850	0.00%	2.00%	0.00%	2.00%	2.00%	2.00%	2.00%

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)
- 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

Year	Natural Gas Liq Edmonton Par p	uids pricing prices			Natural Gas pricing						Sulphur
rear	Ethane	Propane	Butane	Pentanes + Condensate	AB Ref. Avg. Price	AB AECO Avg. Price	AB AECO Avg. Price	B.C. Direct Station 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\$/it
	Current	Current	Current	Current	Current	Real	Current	Current	Real	Current	Current
Historical											
2007	\$16.85	\$52.38	\$63.87	\$87.56	\$5.61	\$6.06	\$5.78	\$5.85	\$6.69	\$6.69	\$57.32
2008	\$22.59	\$56.96	\$83.54	\$109.77	\$7.88	\$8.38	\$8.16	\$8.20	\$8.86	\$8.86	\$303.83
2009	\$11.61	\$34.62	\$56.21	\$69.49	\$3.85	\$4.04	\$3.96	\$4.17	\$3.95	\$3.95	(\$5.08)
2010	\$11.53	\$45.19	\$68.79	\$84.02	\$3.76	\$4.20	\$4.01	\$4.01	\$4.39	\$4.39	\$56.94
2011	\$10.30	\$52.41	\$86.98	\$105.24	\$3.46	\$3.80	\$3.63	\$3.34	\$4.00	\$4.00	\$101.60
2012	\$6.73	\$30.80	\$75.47	\$99.67	\$2.25	\$2.45	\$2.39	\$2.29	\$2.75	\$2.75	\$126.81
2013	\$8.68	\$38.54	\$77.44	\$103.52	\$2.98	\$3.27	\$3.17	\$3.11	\$3.73	\$3.73	\$62.17
2014	\$12.46	\$42.93	\$59.43	\$101.47	\$4.22	\$4.64	\$4.50	\$4.16	\$4.39	\$4.39	\$88.99
2015	\$7.49	\$5.35	\$33.70	\$55.15	\$2.56	\$2.76	\$2.69	\$1.81	\$2.63	\$2.63	\$107.45
2016	\$6.04	\$8.71	\$31.45	\$52.43	\$1.93	\$2.19	\$2.16	\$1.75	\$2.52	\$2.52	\$45.40
2017											
6 Months H	\$7.64	\$22.97	\$40.75	\$65.16	\$2.55	\$2.75	\$2.75	\$2.39	\$3.05	\$3.05	\$43.36
6 Months F	\$6.70	\$23.45	\$35.20	\$58.65	\$2.10	\$2.40	\$2.40	\$2.00	\$3.10	\$3.10	\$40.00
Avg.	\$7.17	\$23.21	\$37.97	\$61.90	\$2.32	\$2.57	\$2.57	\$2.19	\$3.07	\$3.07	\$41.68
Forecast											
2017	\$6.70	\$23.45	\$35.20	\$58.65	\$2.10	\$2.40	\$2.40	\$2.00	\$3.10	\$3.10	\$40.00
2018	\$7.55	\$25.25	\$37.85	\$63.10	\$2.50	\$2.65	\$2.70	\$2.30	\$3.15	\$3.20	\$40.80
2019	\$8.00	\$27.20	\$40.85	\$68.05	\$2.65	\$2.75	\$2.85	\$2.45	\$3.20	\$3.35	\$41.60
2020	\$8.60	\$29.35	\$44.05	\$73.40	\$2.85	\$2.90	\$3.10	\$2.65	\$3.25	\$3.45	\$42.45
2021	\$9.10	\$31.05	\$46.60	\$77.65	\$3.05	\$3.00	\$3.25	\$2.80	\$3.30	\$3.55	\$43.30
2022	\$9.60	\$34.30	\$51.45	\$85.75	\$3.20	\$3.10	\$3.40	\$3.00	\$3.40	\$3.75	\$44.15
2023	\$10.40	\$34.95	\$52.50	\$87.45	\$3.50	\$3.30	\$3.70	\$3.25	\$3.55	\$4.00	\$44.15
2024	\$11.45	\$35.65	\$53.55	\$89.20	\$3.85	\$3.55	\$4.10	\$3.60	\$3.75	\$4.30	\$45.05
2025	\$12.15	\$36.40	\$54.60	\$91.00	\$4.10	\$3.70	\$4.35	\$3.85	\$3.90	\$4.55	\$45.95
2026	\$12.55	\$37.10	\$55.70	\$92.80	\$4.25	\$3.75	\$4.50	\$4.00	\$3.95	\$4.70	\$46.85
2027	\$13.00	\$37.85	\$56.80	\$94.65	\$4.40	\$3.80	\$4.35	\$4.15	\$4.00	\$4.90	\$47.80
2028	\$13.25	\$38.60	\$57.95	\$96.55	\$4.50	\$3.80	\$4.50	\$4.25	\$4.00	\$4.95	\$48.75
2029	\$13.50	\$39.40	\$59.10	\$98.50	\$4.55	\$3.80	\$4.80	\$4.30	\$4.00	\$5.05	\$49.75
2030	\$13.80	\$40.15	\$60.30	\$100.45	\$4.65	\$3.80	\$4.90	\$4.40	\$4.00	\$5.15	\$51.75
2031	\$14.05	\$40.95	\$61.50	\$102.45	\$4.75	\$3.80	\$5.00	\$4.50	\$4.00	\$5.30	\$52.80
2032	\$14.35	\$41.80	\$62.70	\$104.50	\$4.85	\$3.80	\$5.10	\$4.60	\$4.00	\$5.40	\$53.85
2033	\$14.60	\$42.60	\$63.95	\$106.60	\$4.95	\$3.80	\$5.20	\$4.65	\$4.00	\$5.50	\$54.90
2034	\$14.90	\$43.50	\$65.25	\$108.75	\$5.05	\$3.80	\$5.30	\$4.75	\$4.00	\$5.60	\$56.00
2035	\$15.20	\$44.35	\$66.55	\$110.90	\$5.15	\$3.80	\$5.45	\$4.85	\$4.00	\$5.70	\$57.15
2036	\$15.50	\$45.25	\$67.90	\$113.10	\$5.25	\$3.80	\$5.55	\$4.95	\$4.00	\$5.85	\$58.25
2036+	2.00%	2.00%	2.00%	2.00%	2.00%	0.00%	2.00%	2.00%	0.00%	2.00%	2.00%

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)

• 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

Additional crude reference prices

	Crude Oil pricing			Natural Gas
Year	Lt. Sour (35° API) Cromer, SK	MSO (31° API) Hardisty	Synbit (AWB) 70% Bitumen 30% Cond. (21° API)	Ontario Dawn Ref. Point
	C\$/bbl	C\$/bbl	C\$/bbl	C\$/mcf
	Current	Current	Current	Current
Historical				
2007	\$74.79	\$67.76	\$55.36	\$6.82
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				
6 Months H	\$62.40	\$60.09	\$50.17	\$4.32
6 Months F	\$57.65	\$54.65	\$45.35	\$4.40
Avg.	\$60.02	\$57.37	\$47.76	\$4.36
Forecast				
2017	\$57.65	\$54.65	\$45.35	\$4.40
2018	\$62.05	\$59.00	\$49.50	\$4.50
2019	\$67.00	\$63.90	\$54.20	\$4.55
2020	\$72.30	\$69.15	\$59.25	\$4.50
2021	\$76.60	\$73.35	\$63.25	\$4.70
2022	\$84.65	\$81.30	\$71.05	\$5.00
2023	\$86.30	\$82.95	\$72.45	\$5.35
2024	\$88.05	\$84.60	\$73.90	\$5.70
2025	\$89.80	\$86.30	\$75.40	\$5.85
2026	\$91.60	\$88.00	\$76.90	\$6.05
2027	\$93.45	\$89.80	\$78.45	\$6.15
2028	\$95.30	\$91.55	\$80.00	\$6.30
2029	\$97.20	\$93.40	\$81.60	\$6.40
2030	\$99.15	\$95.25	\$83.25	\$6.55
2031	\$101.15	\$97.20	\$84.90	\$6.65
2032	\$103.15	\$99.10	\$86.60	\$6.80
2033	\$105.20	\$101.10	\$88.35	\$6.95
2034	\$107.35	\$103.15	\$90.10	\$7.05
2035	\$109.50	\$105.20	\$91.90	\$7.20
2036	\$111.65	\$107.30	\$93.75	\$7.35
2036+	2.00%	2.00%	2.00%	2.00%

Notes:

• All prices are in Canadian dollars except WTI and NYMEX gas which are in U.S. dollars

- 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 bitumin (70%) and Condensate (30%) stream equivelent to the Acces Western Blend (AWB).

[•] 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)

International price tables

	Crude Oil pri	cing														
Year	Avg. WTI Spot	Alaskan North Slope	California Kern River	Louisiana Heavy Sweet	Louisiana Light Sweet	MARS Blend	Wyoming Sweet	Brent Spot	Gulf Coast ASC	Avg. OPEC Basket	Venezuelan Merey	Nigerian Bonny Light	Arabia UAE Dubai Fetch	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																
2017	\$48.00	\$40.00	\$43.00	\$45.70	\$46.00	\$41.50	\$44.00	\$49.00	\$41.50	\$47.00	\$41.00	\$49.50	\$48.00	\$41.00	\$47.70	\$45.00
2018	\$51.00	\$43.00	\$46.00	\$48.70	\$49.00	\$44.50	\$47.00	\$52.00	\$44.50	\$50.00	\$44.00	\$52.50	\$51.00	\$44.00	\$50.70	\$48.00
2019	\$55.00	\$47.00	\$50.00	\$52.70	\$53.00	\$48.50	\$51.00	\$56.00	\$48.50	\$54.00	\$48.00	\$56.50	\$55.00	\$48.00	\$54.70	\$52.00
2020	\$60.00	\$52.00	\$55.00	\$57.70	\$58.00	\$53.50	\$56.00	\$61.00	\$53.50	\$59.00	\$53.00	\$61.50	\$60.00	\$53.00	\$59.70	\$57.00
2021	\$65.00	\$57.00	\$60.00	\$62.70	\$63.00	\$58.50	\$61.00	\$66.00	\$58.50	\$64.00	\$58.00	\$66.50	\$65.00	\$58.00	\$64.70	\$62.00
2022	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2023	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2024	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2025	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2026	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2027	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2028	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2029	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2030	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2031	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2032	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2033	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2034	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2035	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2036	\$70.00	\$62.00	\$65.00	\$67.70	\$68.00	\$63.50	\$66.00	\$71.00	\$63.50	\$69.00	\$63.00	\$71.50	\$70.00	\$63.00	\$69.70	\$67.00
2036+	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.

	Natural Gas pricing	5	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	Exchange	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/gal.
	rate	rate	Real	Real	Real	Real	Real	Real	Real
Forecast									
2017	1.300	1.100	\$3.10	\$2.85	\$2.85	\$2.85	\$5.20	\$2.70	\$1.50
2018	1.300	1.100	\$3.15	\$2.90	\$2.90	\$2.90	\$5.25	\$2.95	\$1.50
2019	1.300	1.100	\$3.20	\$2.95	\$2.95	\$2.95	\$5.30	\$3.00	\$1.50
2020	1.300	1.100	\$3.25	\$3.00	\$3.00	\$3.00	\$5.35	\$3.05	\$1.50
2021	1.300	1.100	\$3.30	\$3.05	\$3.05	\$3.05	\$5.40	\$3.10	\$1.50
2022	1.300	1.100	\$3.40	\$3.15	\$3.15	\$3.15	\$5.50	\$3.15	\$1.50
2023	1.300	1.100	\$3.55	\$3.30	\$3.30	\$3.30	\$5.65	\$3.25	\$1.50
2024	1.300	1.100	\$3.75	\$3.50	\$3.50	\$3.50	\$5.85	\$3.40	\$1.50
2025	1.300	1.100	\$3.90	\$3.65	\$3.65	\$3.65	\$6.00	\$3.60	\$1.50
2026	1.300	1.100	\$3.95	\$3.70	\$3.70	\$3.70	\$6.05	\$3.75	\$1.50
2027	1.300	1.100	\$4.00	\$3.75	\$3.75	\$3.75	\$6.10	\$3.80	\$1.50
2028	1.300	1.100	\$4.00	\$3.75	\$3.75	\$3.75	\$6.10	\$3.85	\$1.50
2029	1.300	1.100	\$4.00	\$3.75	\$3.75	\$3.75	\$6.10	\$3.85	\$1.50
2030	1.300	1.100	\$4.00	\$3.75	\$3.75	\$3.75	\$6.10	\$3.85	\$1.50
2031	1.300	1.100	\$4.00	\$3.75	\$3.75	\$3.75	\$6.10	\$3.85	\$1.50
2032	1.300	1.100	\$4.00	\$3.75	\$3.75	\$3.75	\$6.10	\$3.85	\$1.50
2033	1.300	1.100	\$4.00	\$3.75	\$3.75	\$3.75	\$6.10	\$3.85	\$1.50
2034	1.300	1.100	\$4.00	\$3.75	\$3.75	\$3.75	\$6.10	\$3.85	\$1.50
2035	1.300	1.100	\$4.00	\$3.75	\$3.75	\$3.75	\$6.10	\$3.85	\$1.50
2036	1.300	1.100	\$4.00	\$3.75	\$3.75	\$3.75	\$6.10	\$3.85	\$1.50
2036+	1.300	1.100	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.



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:

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

LLB

LNG

50	Mixed Sour Crude Oil
ŚW	Canadian Light Sweet
В	Canadian National Energy Board
Г	Nova Inventory Transfer
MEX	New York Mercantile Exchange
CD	Organization of Economic Cooperation and Development
РЕС	Organization of Petroleum Exporting Countries
DD	Petroleum Administration Defense District
GC	US Gulf Coast
WC	US West Coast
<u>I</u> S	Western Canada Select Crude Oil
ΓΙ	West Texas Intermediate
ΓS	West Texas Sour

Lloydminster Blend Crude Oil

Liquefied Natural Gas

Andrew Botterill 403-648-3239 abotterill@deloitte.ca

Lesley Mitchell 403-648-3215 lemitchell@deloitte.ca

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

Tel: 403-267-1700 Fax: 587-774-5398 onathan Listoe 403-648-3254 listoe@deloitte.ca

Sarah Clowes 587-293-3201 saclowes@deloitte.ca

Deloitte.

www.deloitte.ca/priceforecast

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