Deloitte.



Price Forecast December 31, 2016 Resource Evaluation & Advisory

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Forecast commentary

"After climbing a great hill, one only finds that there are many more hills to climb."

Nelson Mandela

After another tough year in the oil industry, there is some hope on the horizon after OPEC agreed on November 30, 2016 to cut production by 1.2 million barrels per day in 2017 and non-OPEC countries, including Russia, committed to curtailing production by another 0.6 million barrels per day. These are positive steps towards rebalancing the supply-and-demand equation that has been out of sync for the last couple of years. However, there is doubt about whether the deal will be followed firmly, as many of these counties are dependent on oil exports to fund their government spending. While some "cheating" is expected, even a portion of this proposed cut should bring world supply below projected demand for 2017.

While this should bolster oil prices in the short term, United States and Canadian production will likely increase as a result, putting a damper on price. Rig activity had already started to pick up in both



Source: IEA World Oil Report (November 2016)

jurisdictions before the volume cut, but the demand aspect of the market is still a cause for some concern in the long term as International Energy Agency reports continue to indicate a flattening of demand growth at 1.2 MMbbl/d. This flattening is due to slowdowns in the Americas, China and even India. Our long-term view of oil is unchanged from previous forecasts, at \$75/bbl USD for WTI, as decreasing demand growth and movement in the global community towards more sustainable forms of energy lead us away from \$100/bbl oil in the future. The futures market is still showing very minimal growth in the price of oil, with a three-year growth of less than \$1.00/bbl for WTI and marginally more for Brent prices. So while the market is more optimistic than it has been all year, no one is willing to bet that the industry will be bouncing back to high prices quickly. As a result, we expect WTI to grow modestly, to \$55/bbl USD in 2017 and \$57/bbl USD in 2018.

Producers in Canada have another source of hope with the recent approvals of Enbridge's Line 3 and Kinder Morgan's Trans Mountain pipeline projects. Both pipelines will have the ability to transport light and blended bitumen and provide enhanced access to market for Canadian oil. We expect Edmonton Light to be \$69/ bbl CAD in 2017 and \$70/bbl CAD in 2018. Similarly, we expect WCS to be \$53/bbl CAD in 2017 and \$54/bbl CAD in 2018.

Figure 1: World oil demand

100.0

With arctic air sweeping the continent, natural gas prices have risen significantly in December, which has led to a backwardation in the Henry Hub and AECO futures curves as many people see this price spike as temporary. Some signs still point to a weak natural gas market in the future: storage is near all-time highs and supply continues to remain strong as producers have cut costs and can still drill efficiently in a low-price environment. If cold weather persists and electricity production continues to switch to natural gas from coal, we expect prices to be

Figure 2: AECO Natural gas futures

stronger than the futures markets would suggest; this is the basis of our longerterm views. While weather remains largely unpredictable, demand for natural gas in the future will be influenced by political policies related to the phasing out of coal and transition to cleaner forms of energy.

Deloitte forecasts a price of \$3.30/Mcf USD for Henry Hub, and \$3.25/Mcf CAD for AECO in 2017. Both of these prices are expected to be steady in 2018 before slowly increasing in 2019 and onwards.



Propane

Propane prices took a dive in early 2015 after the Cochin pipeline system was removed from propane services and have continued to languish throughout 2016 as supply accumulated. Excess supply may be compounded by continued drilling in the Montney and other liquidsrich gas plays. There has been some relief from the lowest points seen in 2015 due to the construction of new rail terminals designed to ship propane to the United States. In the long term, domestic demand is expected to increase significantly with the planned construction of two propane-to-plastics plants in Alberta, which are set to take advantage of by the Alberta government. These petrochemical plants are expected to be operational sometime after 2021.

Source: National Gas Exchange Inc. (NGX)



Upstream M&A activity

Transactions in 2016 concentrated mostly on assets rather than corporate acquisitions, although there were a few of those as well, with acquirers looking to increase their holdings in existing focus areas. The second quarter of 2016 saw increased activity for Canadian-listed companies, with 10 transactions greater than 500MM\$. The last half of the year had another eight transactions greater than this threshold. The targets for these material transactions were mostly large gas resource plays such as the Montney or prolific light oil plays in Saskatchewan such as Viking or Mississippian for Canadian assets.

Figure 3 displays the transactions that occurred in 2016 that were greater than 10MM\$, showing which province the assets were focused as well as the total transaction value in MM\$. More than 50 percent of all transactions were targeting assets in Alberta, with a total value of 4.3B\$. It is interesting to note that this included a lot of smaller deals, whereas the Saskatchewan based transactions made up less of the activity but had double the average deal price.

Major transactions occurred in the United States as well, with most involving Texas assets. Devon Energy Corporation did three major transactions this year totalling over 1.8B\$ for assets held in Texas, and Anadarko recently sold assets totalling almost 1.8B\$ in this region, showing the appetite for the oil-rich basins in that jurisdiction.

One group from which Deloitte anticipates greater activity is the private equity market.

3,265 5,245 AB 131 SK

Figure 3: Transaction value involving Canadian companies in 2016 (MM\$)

While the need for capital has always been an important part of the oil-and-gas sector, private equity may provide the most appealing partnering solution to help companies grow. Private equity typically looks to realize on its investments in three to five years, which is not always a match for the long-term, cyclical nature of the oil patch. However, with companies in need of cash, the majority of banks still looking to minimize their exposure in the Canadian oil-and-gas sector, and a lack of investment from the public equity markets, this might be a perfect time to look at partnering with private equity. Private Equity firms (PEs) are poised to invest in the sector and are evaluating new opportunities on a daily basis. With the recovery of WTI pricing through 2016 to more sustainable levels, PEs are looking to position investments for an upward swing in prices. However, equity providers have the luxury of being selective with their investment, so companies looking to secure a strong partner need to understand the investment criteria of PEs and craft the right corporate strategy and investment prospectus.

A year in review

2016 had its share of ups and downs with price fluctuations and major events impacting the market. Below is a look back at some of those events as we head into the new year.





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Canadian domestic price forecast

Crude oil price and market demand forecast

Edmonton Par (Real \$)



Forecast commentary

- 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								
2013	\$100.76	\$97.91	\$96.08	\$93.36	\$74.97	\$65.49	0.009	0.972
2014	\$96.15	\$93.26	\$96.91	\$94.00	\$81.06	\$73.70	0.019	0.906
2015	\$49.24	\$48.69	\$57.65	\$57.00	\$44.80	\$39.63	0.011	0.783
2016								
12 Months H	\$42.98	\$42.98	\$52.24	\$52.24	\$38.80	\$34.01	0.016	0.754
0 Months F	-	-	-	-	-	-	0.000	-
Avg.	\$42.98	\$42.98	\$52.24	\$52.24	\$38.80	\$34.01	-	0.754
Forecast								
2017	\$55.00	\$55.00	\$68.90	\$68.90	\$52.90	\$48.90	0.000	0.740
2018	\$57.00	\$58.15	\$69.75	\$71.15	\$54.85	\$50.75	0.020	0.760
2019	\$60.00	\$62.40	\$71.80	\$74.70	\$58.05	\$53.90	0.020	0.780
2020	\$65.00	\$69.00	\$75.30	\$79.90	\$62.95	\$58.70	0.020	0.810
2021	\$70.00	\$75.75	\$77.65	\$84.05	\$66.75	\$62.40	0.020	0.850
2022	\$75.00	\$82.80	\$83.55	\$92.25	\$74.60	\$70.15	0.020	0.850
2023	\$75.00	\$84.45	\$83.55	\$94.10	\$76.05	\$71.55	0.020	0.850
2024	\$75.00	\$86.15	\$83.55	\$95.95	\$77.60	\$73.00	0.020	0.850

Natural gas price and market demand forecast AECO Natural Gas (Real \$)



Forecast commentary

- 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						
2013	\$2.98	\$3.27	\$3.17	\$3.11	\$3.84	\$3.73
2014	\$4.22	\$4.64	\$4.50	\$4.16	\$4.53	\$4.39
2015	\$2.56	\$2.72	\$2.69	\$1.81	\$2.66	\$2.63
2016						
12 Months H	\$1.96	\$2.20	\$2.20	\$1.77	\$2.50	\$2.50
0 Months F	-	-	-	-	-	-
Avg.	\$1.96	\$2.20	\$2.20	\$1.77	\$2.50	\$2.50
Forecast						
2017	\$3.05	\$3.25	\$3.25	\$2.75	\$3.30	\$3.30
2018	\$3.15	\$3.30	\$3.35	\$2.85	\$3.35	\$3.40
2019	\$3.30	\$3.35	\$3.50	\$2.95	\$3.40	\$3.55
2020	\$3.35	\$3.35	\$3.55	\$3.00	\$3.45	\$3.65
2021	\$3.45	\$3.40	\$3.70	\$3.15	\$3.50	\$3.80
2022	\$3.70	\$3.55	\$3.90	\$3.35	\$3.60	\$3.95
2023	\$3.95	\$3.70	\$4.15	\$3.60	\$3.75	\$4.20
2024	\$4.25	\$3.90	\$4.50	\$3.90	\$3.90	\$4.50

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	Rate
Forecast							
2017	\$55.00	\$56.00	\$50.00	\$54.00	\$56.40	\$48.50	\$54.50
2018	\$57.00	\$58.00	\$52.00	\$56.00	\$58.40	\$50.50	\$56.50
2019	\$60.00	\$61.00	\$55.00	\$59.00	\$61.40	\$53.50	\$59.50
2020	\$65.00	\$66.00	\$60.00	\$64.00	\$66.40	\$58.50	\$64.50
2021	\$70.00	\$71.00	\$65.00	\$69.00	\$71.40	\$63.50	\$69.50
2022	\$75.00	\$76.00	\$70.00	\$74.00	\$76.40	\$68.50	\$74.50
2023	\$75.00	\$76.00	\$70.00	\$74.00	\$76.40	\$68.50	\$74.50
2024	\$75.00	\$76.00	\$71.00	\$73.00	\$76.40	\$68.00	\$74.50

reference points are based on historical

• 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

• United States Gulf Coast Argus Sour Crude

oil that serves as an international benchmark

trends to the WTI price.

grade.

Forecast commentary

- 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

Natural gas price and market demand forecast

Year	USD to GBP Exchange	USD to GBP Exchange	NYMEX Henry Hub	Permian Waha	San Juan Ignacio	Gulf Coast (Onshore)	Louisiana East Texas	Rocky Mtn Opal	UK NBP
			US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf
	Rate	Rate	Real	Real	Real	Real	Real	Real	Real
Forecast									
2017	1.250	1.050	\$3.30	\$3.10	\$3.10	\$3.20	\$3.20	\$3.05	\$5.30
2018	1.250	1.050	\$3.35	\$3.15	\$3.15	\$3.25	\$3.25	\$3.10	\$5.35
2019	1.250	1.050	\$3.40	\$3.20	\$3.20	\$3.30	\$3.30	\$3.15	\$5.40
2020	1.250	1.050	\$3.45	\$3.25	\$3.25	\$3.35	\$3.35	\$3.20	\$5.45
2021	1.250	1.050	\$3.50	\$3.30	\$3.30	\$3.40	\$3.40	\$3.25	\$5.50
2022	1.250	1.050	\$3.60	\$3.40	\$3.40	\$3.50	\$3.50	\$3.35	\$5.60
2023	1.250	1.050	\$3.75	\$3.55	\$3.55	\$3.65	\$3.65	\$3.50	\$5.75
2024	1.250	1.050	\$3.90	\$3.70	\$3.70	\$3.80	\$3.80	\$3.65	\$5.90

Forecast commentary

 The NYMEX price is based on delivery at the Henry Hub in Louisiana, the nexus of 16 intra- and interstate natural gas pipeline systems that draw supplies from the region's prolific gas deposits.

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.

Global trends

Oil

World oil production inclined from 2011 to 2015, with most of the growth in North America. In 2016, the North America and Europe oil production declined slightly, while all other regions saw essentially flat production from the previous year. This is indicative of the sharp decrease in drilling activity that gripped North America over the past year. Consumption did not keep pace with the growth in production and is most pronounced in North America. A change in trend occurred for net oil in the North America, Middle East, and Asia & Oceania regions. North America realized a drop in production levels to shift their trend, while the Middle East increased production bringing their net oil contribution higher. Asia & Oceania had a more significant increase in consumption than production and steepened their net oil draw from the global market.

All regions have remained very constant with their oil reserves throughout 2016.

World oil production



World oil reserves







Data source: US Energy Information Administration, International Energy Statistics, Petroleum

World gas production



World gas reserves







Data source: US Energy Information Administration, International Energy Statistics, Natural Gas

Gas

World gas production has also increased year over year since 2009, with the largest production growth in the Middle East and North America. This large increase has not been offset by growth in consumption, which has slowed in the last few years. Global production currently exceeds supply. Europe has seen the greatest shift in supply and demand over the last three years, largely driven by a reduction in consumption since peaking in 2012. Similarly, the Middle East has seen increases in production outpace consumption, while Asia has seen the opposite, with consumption growing faster than production over the last several years. With most of the world's gas reserves located in Europe and the Middle East, these trends are likely to continue into the future.

Storage

The United States natural gas storage levels remained at the five-year high even as storage would typically have been decreasing into the fall. A cold winter would go a long way to decreasing storage levels, which looks to have turned a corner in this last month.

Natural Gas



Source: Image adapted from US Energy Information Administration, Weekly Natural Gas Storage Report

United States



Sources: Data adapted from Baker Hughes Incorporated, International RIg Count

Rigs

Rig counts have levelled off in all relatively steady but dropped just the historic norm of 60-70 percent

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										
2006	0.017	0.017	0.867	\$64.41	\$61.96	\$71.30	\$68.59	\$50.61	\$51.71	\$37.10
2007	0.021	0.021	0.935	\$75.70	\$72.32	\$80.65	\$77.05	\$52.90	\$53.87	\$39.76
2008	0.024	0.024	0.943	\$102.31	\$99.57	\$105.62	\$102.80	\$82.95	\$83.90	\$73.08
2009	0.003	0.003	0.880	\$62.95	\$61.65	\$67.49	\$66.10	\$58.66	\$59.80	\$54.40
2010	0.018	0.018	0.971	\$83.24	\$79.40	\$81.58	\$77.80	\$67.22	\$68.18	\$60.62
2011	0.029	0.029	1.012	\$99.24	\$94.88	\$99.92	\$95.54	\$77.12	\$78.42	\$69.60
2012	0.015	0.015	1.001	\$96.47	\$94.11	\$88.74	\$86.57	\$73.10	\$74.41	\$64.07
2013	0.009	0.009	0.972	\$100.76	\$97.91	\$96.08	\$93.36	\$74.97	\$76.29	\$65.49
2014	0.019	0.019	0.906	\$96.15	\$93.26	\$96.91	\$94.00	\$81.06	\$81.49	\$73.70
2015	0.011	0.011	0.783	\$49.24	\$48.69	\$57.65	\$57.00	\$44.80	\$45.23	\$39.63
2016	1									
12 Months H	0.016	0.016	0.754	\$42.98	\$42.98	\$52.24	\$52.24	\$38.80	\$39.13	\$34.01
0 Months F	0.000	0.000		-	-	-	-	-	-	-
Avg.			0.754	\$42.98	\$42.98	\$52.24	\$52.24	\$38.80	\$39.13	\$34.01
Forecast	1									
2017	0.000	0.000	0.740	\$55.00	\$55.00	\$68.90	\$68.90	\$52.90	\$55.40	\$48.90
2018	0.020	0.020	0.760	\$57.00	\$58.15	\$69.75	\$71.15	\$54.85	\$57.40	\$50.75
2019	0.020	0.020	0.780	\$60.00	\$62.40	\$71.80	\$74.70	\$58.05	\$60.65	\$53.90
2020	0.020	0.020	0.810	\$65.00	\$69.00	\$75.30	\$79.90	\$62.95	\$65.60	\$58.70
2021	0.020	0.020	0.850	\$70.00	\$75.75	\$77.65	\$84.05	\$66.75	\$69.45	\$62.40
2022	0.020	0.020	0.850	\$75.00	\$82.80	\$83.55	\$92.25	\$74.60	\$77.35	\$70.15
2023	0.020	0.020	0.850	\$75.00	\$84.45	\$83.55	\$94.10	\$76.05	\$78.90	\$71.55
2024	0.020	0.020	0.850	\$75.00	\$86.15	\$83.55	\$95.95	\$77.60	\$80.45	\$73.00
2025	0.020	0.020	0.850	\$75.00	\$87.85	\$83.55	\$97.90	\$79.15	\$82.05	\$74.45
2026	0.020	0.020	0.850	\$75.00	\$89.65	\$83.55	\$99.85	\$80.75	\$83.70	\$75.95
2027	0.020	0.020	0.850	\$75.00	\$91.40	\$83.55	\$101.85	\$82.35	\$85.40	\$77.45
2028	0.020	0.020	0.850	\$75.00	\$93.25	\$83.55	\$103.90	\$84.00	\$87.10	\$79.00
2029	0.020	0.020	0.850	\$75.00	\$95.10	\$83.55	\$105.95	\$85.65	\$88.85	\$80.60
2030	0.020	0.020	0.850	\$75.00	\$97.00	\$83.55	\$108.10	\$87.40	\$90.60	\$82.20
2031	0.020	0.020	0.850	\$75.00	\$98.95	\$83.55	\$110.25	\$89.15	\$92.45	\$83.85
2032	0.020	0.020	0.850	\$75.00	\$100.95	\$83.55	\$112.45	\$90.90	\$94.30	\$85.55
2033	0.020	0.020	0.850	\$75.00	\$102.95	\$83.55	\$114.70	\$92.75	\$96.15	\$87.25
2034	0.020	0.020	0.850	\$75.00	\$105.00	\$83.55	\$117.00	\$94.60	\$98.10	\$89.00
2035	0.020	0.020	0.850	\$75.00	\$107.10	\$83.55	\$119.35	\$96.50	\$100.05	\$90.75
2036	0.020	0.020	0.850	\$75.00	\$109.25	\$83.55	\$121.70	\$98.40	\$102.05	\$92.60
2036+	0.020	0.020	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)
Real prices listed in 2016 dollars with no escalation considered

Year	Natural Gas Liqu Edmonton Par p	uids pricing rices			Natural Gas pricing						Sulphur
Tear	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\$/lt
	Current	Current	Current	Current	Current	Real	Current	Current	Real	Current	Current
Historical					1						1
2006	\$22.05	\$42.50	\$50.71	\$75.96	\$7.44	\$7.46	\$7.18	\$7.76	\$7.00	\$6.73	\$10.90
2007	\$18.42	\$49.75	\$59.35	\$81.60	\$6.20	\$6.75	\$6.45	\$6.40	\$7.30	\$6.98	\$38.02
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	\$2.72	\$2.69	\$1.81	\$2.66	\$2.63	\$107.45
2016											
12 Months H	\$6.14	\$8.23	\$30.75	\$52.21	\$1.96	\$2.20	\$2.20	\$1.77	\$2.50	\$2.50	\$48.39
0 Months F		-	-	-	-	-		-	-	-	-
Avg.	\$6.14	\$8.23	\$30.75	\$52.21	\$1.96	\$2.20	\$2.20	\$1.77	\$2.50	\$2.50	\$48.39
Forecast											
2017	\$9.10	\$13.80	\$41.35	\$68.90	\$3.05	\$3.25	\$3.25	\$2.75	\$3.30	\$3.30	\$50.00
2018	\$9.45	\$21.35	\$42.70	\$71.15	\$3.15	\$3.30	\$3.35	\$2.85	\$3.35	\$3.40	\$51.00
2019	\$9.80	\$29.85	\$44.85	\$74.70	\$3.30	\$3.35	\$3.50	\$2.95	\$3.40	\$3.55	\$52.00
2020	\$10.00	\$31.95	\$47.95	\$79.90	\$3.35	\$3.35	\$3.55	\$3.00	\$3.45	\$3.65	\$53.05
2021	\$10.30	\$33.60	\$50.45	\$84.05	\$3.45	\$3.40	\$3.70	\$3.15	\$3.50	\$3.80	\$54.10
2022	\$11.00	\$36.90	\$55.35	\$92.25	\$3.70	\$3.55	\$3.90	\$3.35	\$3.60	\$3.95	\$55.20
2023	\$11.65	\$37.60	\$56.50	\$94.10	\$3.95	\$3.70	\$4.15	\$3.60	\$3.75	\$4.20	\$56.30
2024	\$12.50	\$38.35	\$57.60	\$95.95	\$4.25	\$3.90	\$4.50	\$3.90	\$3.90	\$4.50	\$57.45
2025	\$13.10	\$39.15	\$58.75	\$97.90	\$4.45	\$4.00	\$4.70	\$4.10	\$4.00	\$4.70	\$58.60
2026	\$13.55	\$39.90	\$59.95	\$99.85	\$4.60	\$4.05	\$4.85	\$4.25	\$4.05	\$4.85	\$59.75
2027	\$14.00	\$40.70	\$61.15	\$101.85	\$4.75	\$4.10	\$5.00	\$4.40	\$4.10	\$5.00	\$60.95
2028	\$14.30	\$41.55	\$62.35	\$103.90	\$4.85	\$4.10	\$5.10	\$4.50	\$4.10	\$5.10	\$62.15
2029	\$14.60	\$42.35	\$63.60	\$105.95	\$4.95	\$4.10	\$5.20	\$4.55	\$4.10	\$5.20	\$63.40
2030	\$14.90	\$43.20	\$64.85	\$108.10	\$5.05	\$4.10	\$5.30	\$4.65	\$4.10	\$5.30	\$64.70
2031	\$15.15	\$44.05	\$66.15	\$110.25	\$5.15	\$4.10	\$5.40	\$4.75	\$4.10	\$5.40	\$65.95
2032	\$15.50	\$44.95	\$67.50	\$112.45	\$5.25	\$4.10	\$5.50	\$4.85	\$4.10	\$5.50	\$67.30
2033	\$15.80	\$45.85	\$68.85	\$114.70	\$5.35	\$4.10	\$5.65	\$4.95	\$4.10	\$5.65	\$68.65
2034	\$16.10	\$46.75	\$70.20	\$117.00	\$5.45	\$4.10	\$5.75	\$5.05	\$4.10	\$5.75	\$70.00
2035	\$16.40	\$47.70	\$71.65	\$119.35	\$5.55	\$4.10	\$5.85	\$5.15	\$4.10	\$5.85	\$71.40
2036	\$16.75	\$48.65	\$73.05	\$121.70	\$5.70	\$4.10	\$5.95	\$5.25	\$4.10	\$5.95	\$72.85
2036+	2.00%	2.00%	2.00%	2.00%	2.00%	0.00%	2.00%	2.00%	0.00%	2.00%	2.00%

Notes

 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 2016 dollars with no escalation considered

 Alberta gas prices, except AECO, include an average cost of service to the plant gate

Disclaime

Additional Crude Reference Prices

	Crude Oil pricing					Natural Gas
Year	Lt. Sour (35° API) Cromer, SK	MSO (31° API) Hardisty	Heavy Oil (12° API)	Synbit (AWB) 70% Bitumen 30% Cond. (21° API)	Delivered to Sarnia MSW	Ontario Dawr Ref. Poin
	C\$/bbl	C\$/bbl	C\$/bbl	C\$/bbl	C\$/bbl	C\$/mc
	Current	Current	Current	Current	Current	Curren
Historical						
2006	\$61.51	\$60.64	\$37.10	\$48.76	\$70.60	\$9.04
2007	\$70.06	\$64.87	\$39.76	\$52.32	\$78.48	\$7.4
2008	\$95.28	\$92.40	\$73.08	\$84.08	\$109.21	\$9.8
2009	\$64.04	\$63.76	\$54.40	\$58.92	\$69.29	\$4.8
2010	\$76.40	\$72.32	\$60.62	\$67.64	\$81.48	\$4.7
2011	\$92.13	\$83.39	\$69.60	\$80.29	\$99.26	\$4.3
2012	\$84.27	\$77.53	\$64.07	\$74.75	\$90.36	\$3.1
2013	\$91.76	\$82.65	\$65.49	\$76.90	\$97.33	\$4.1
2014	\$92.91	\$89.39	\$73.70	\$82.03	\$98.19	\$5.7
2015	\$55.46	\$54.70	\$39.63	\$44.28	\$63.84	\$3.7
2016						
12 Months H	\$51.28	\$48.47	\$34.01	\$39.47	\$58.58	\$3.4
0 Months F	-					
Avg.	\$51.28	\$48.47	\$34.01	\$39.47	\$58.58	\$3.4
Forecast						
2017	\$67.40	\$64.90	\$48.90	\$54.90	\$74.90	\$4.7
2018	\$69.60	\$67.05	\$50.75	\$56.85	\$77.25	\$4.7
2019	\$73.15	\$70.55	\$53.90	\$60.15	\$80.95	\$4.8
2020	\$78.30	\$75.65	\$58.70	\$65.05	\$86.30	\$4.8
2021	\$82.45	\$79.70	\$62.40	\$68.90	\$90.55	\$4.7
2022	\$90.60	\$87.85	\$70.15	\$76.80	\$98.85	\$4.9
2023	\$92.40	\$89.60	\$71.55	\$78.30	\$100.85	\$5.2
2024	\$94.25	\$91.40	\$73.00	\$79.90	\$102.85	\$5.5
2025	\$96.15	\$93.20	\$74.45	\$81.50	\$104.90	\$5.8
2026	\$98.05	\$95.05	\$75.95	\$83.10	\$107.00	\$6.0
2027	\$100.00	\$96.95	\$77.45	\$84.80	\$109.15	\$6.1
2028	\$102.00	\$98.90	\$79.00	\$86.50	\$111.35	\$6.3
2029	\$104.05	\$100.90	\$80.60	\$88.20	\$113.55	\$6.4
2030	\$106.15	\$102.90	\$82.20	\$89.95	\$115.85	\$6.5
2031	\$108.25	\$104.95	\$83.85	\$91.75	\$118.15	\$6.6
2032	\$110.45	\$107.05	\$85.55	\$93.60	\$120.50	\$6.8
2033	\$112.65	\$109.20	\$87.25	\$95.50	\$122.95	\$6.9
2034	\$114.90	\$111.40	\$89.00	\$97.40	\$125.40	\$7.0
2035	\$117.20	\$113.60	\$90.75	\$99.35	\$127.90	\$7.2
2036	\$119.55	\$115.90	\$92.60	\$101.30	\$130.45	\$7.3
2036+	2.00%	2.00%	2.00%	2.00%	2.00%	2.00

Notes

cless are in Canadian dollars except WTI and NYMEX gas which are in US dollars Edmonton city gate prices based on historical light oil par prices posted by the government of Alberta and Net Energy differential futures (40 Deg. API < 0.5% Sulphur) 1 Mcf is equivalent to 1 mmbtu Real prices listed in 2016 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) :

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Disclaime

International price tables

	Crude Oil prid	ing														
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	\$55.00	\$46.00	\$50.00	\$52.50	\$53.00	\$50.00	\$49.00	\$56.00	\$50.00	\$54.00	\$47.00	\$56.40	\$53.50	\$48.50	\$54.50	\$53.00
2018	\$57.00	\$48.00	\$52.00	\$54.50	\$55.00	\$52.00	\$51.00	\$58.00	\$52.00	\$56.00	\$49.00	\$58.40	\$55.50	\$50.50	\$56.50	\$55.00
2019	\$60.00	\$51.00	\$55.00	\$57.50	\$58.00	\$55.00	\$54.00	\$61.00	\$55.00	\$59.00	\$52.00	\$61.40	\$58.50	\$53.50	\$59.50	\$58.00
2020	\$65.00	\$56.00	\$60.00	\$62.50	\$63.00	\$60.00	\$59.00	\$66.00	\$60.00	\$64.00	\$57.00	\$66.40	\$63.50	\$58.50	\$64.50	\$63.00
2021	\$70.00	\$61.00	\$65.00	\$67.50	\$68.00	\$65.00	\$64.00	\$71.00	\$65.00	\$69.00	\$62.00	\$71.40	\$68.50	\$63.50	\$69.50	\$68.00
2022	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2023	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2024	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2025	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2026	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2027	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2028	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2029	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2030	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2031	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2032	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2033	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2034	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2035	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2036	\$75.00	\$66.00	\$70.00	\$72.50	\$73.00	\$70.00	\$69.00	\$76.00	\$70.00	\$74.00	\$67.00	\$76.40	\$73.50	\$68.50	\$74.50	\$73.00
2036+	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Notes

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

Disclaimer

			Natural Gas pricing								Ethanol
Year	USD to GBP Exchange	USD to EUR Exchange	NYMEX Henry Hub	Permian Waha	San Juan Ignacio	Gulf Coast (onshore)	Louisiana East Texas	Rocky Mtn. Opal	UK NBP	India Domestic Gas	US CBOT Ethanol
			US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/Mcf	US\$/gal.	US\$/bbl	US\$/bbl
	Rate	Rate	Real	Real	Real	Real	Real	Real	Real	Real	Real
Forecast											
2017	1.250	1.050	\$3.30	\$3.10	\$3.10	\$3.20	\$3.20	\$3.05	\$5.30	\$2.45	\$1.50
2018	1.250	1.050	\$3.35	\$3.15	\$3.15	\$3.25	\$3.25	\$3.10	\$5.35	\$3.15	\$1.50
2019	1.250	1.050	\$3.40	\$3.20	\$3.20	\$3.30	\$3.30	\$3.15	\$5.40	\$3.20	\$1.50
2020	1.250	1.050	\$3.45	\$3.25	\$3.25	\$3.35	\$3.35	\$3.20	\$5.45	\$3.25	\$1.50
2021	1.250	1.050	\$3.50	\$3.30	\$3.30	\$3.40	\$3.40	\$3.25	\$5.50	\$3.30	\$1.50
2022	1.250	1.050	\$3.60	\$3.40	\$3.40	\$3.50	\$3.50	\$3.35	\$5.60	\$3.35	\$1.50
2023	1.250	1.050	\$3.75	\$3.55	\$3.55	\$3.65	\$3.65	\$3.50	\$5.75	\$3.45	\$1.50
2024	1.250	1.050	\$3.90	\$3.70	\$3.70	\$3.80	\$3.80	\$3.65	\$5.90	\$3.60	\$1.50
2025	1.250	1.050	\$4.00	\$3.80	\$3.80	\$3.90	\$3.90	\$3.75	\$6.00	\$3.75	\$1.50
2026	1.250	1.050	\$4.05	\$3.85	\$3.85	\$3.95	\$3.95	\$3.80	\$6.05	\$3.85	\$1.50
2027	1.250	1.050	\$4.10	\$3.90	\$3.90	\$4.00	\$4.00	\$3.85	\$6.10	\$3.90	\$1.50
2028	1.250	1.050	\$4.10	\$3.90	\$3.90	\$4.00	\$4.00	\$3.85	\$6.10	\$3.95	\$1.50
2029	1.250	1.050	\$4.10	\$3.90	\$3.90	\$4.00	\$4.00	\$3.85	\$6.10	\$3.95	\$1.50
2030	1.250	1.050	\$4.10	\$3.90	\$3.90	\$4.00	\$4.00	\$3.85	\$6.10	\$3.95	\$1.50
2031	1.250	1.050	\$4.10	\$3.90	\$3.90	\$4.00	\$4.00	\$3.85	\$6.10	\$3.95	\$1.50
2032	1.250	1.050	\$4.10	\$3.90	\$3.90	\$4.00	\$4.00	\$3.85	\$6.10	\$3.95	\$1.50
2033	1.250	1.050	\$4.10	\$3.90	\$3.90	\$4.00	\$4.00	\$3.85	\$6.10	\$3.95	\$1.50
2034	1.250	1.050	\$4.10	\$3.90	\$3.90	\$4.00	\$4.00	\$3.85	\$6.10	\$3.95	\$1.50
2035	1.250	1.050	\$4.10	\$3.90	\$3.90	\$4.00	\$4.00	\$3.85	\$6.10	\$3.95	\$1.50
2036	1.250	1.050	\$4.10	\$3.90	\$3.90	\$4.00	\$4.00	\$3.85	\$6.10	\$3.95	\$1.50
2036+	1.300	1.100	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Disclaimer

Price Forecast December 31, 2016 | Pricing philosophy



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.



Lloydminster Blend Crude Oil

Liquefied Natural Gas

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 Board
ASCI	Argus Sour Crude Oil	NIT	Nova Inventory Transfer
AWB	Access Western Blend - Canadian	NYMEX	New York Mercantile Exchange
	condensate/bitumen mix	OECD	Organization of Economic
BR	Bow River Crude Oil		Cooperation and Development
CAPP	Canadian Association of Petroleum	OPEC	Organization of Petroleum
	Producers		Exporting Countries
CBOT	Chicago Board Of Trade	PADD	Petroleum Administration Defense
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 Crude Oil
	Commission	WTI	West Texas Intermediate
FOB	Free on Board (shipper term)	WTS	West Texas Sour
IEA	International Energy Administration		

LLB

LNG

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