

**CHAPMAN PETROLEUM ENGINEERING LTD.  
CRUDE OIL  
HISTORICAL, CONSTANT, CURRENT AND FUTURE PRICES**

January 1, 2019

Date	WTI [1] \$US/STB	Brent Spot (ICE)[2] \$US/STB	AB Synthetic Crude Price [3] \$CDN/STB	Western Canada Select [4] \$CDN/STB	Exchange Rate \$US/\$CDN
<b>HISTORICAL PRICES</b>					
2004	41.51	38.26	52.89	37.52	0.77
2005	56.64	54.57	69.16	43.25	0.83
2006	66.05	65.16	72.88	50.40	0.88
2007	72.34	72.44	75.57	53.17	0.94
2008	99.67	96.94	102.98	83.88	0.94
2009	61.95	61.74	76.77	53.04	0.88
2010	79.48	79.61	80.56	66.58	0.97
2011	94.88	111.26	102.45	77.43	1.01
2012	94.05	111.63	92.56	71.70	1.00
2013	97.98	108.56	100.17	75.76	0.97
2014	93.12	99.43	101.07	82.07	0.91
2015	48.69	53.32	62.17	46.23	0.78
2016	43.17	45.06	57.98	38.90	0.76
2017	50.86	54.75	67.75	49.63	0.77
2018	64.92	71.64	75.06	50.17	0.77
<b>CONSTANT PRICES (The average of the first-day-of-the-month price for the preceding 12 months-SEC)</b>					
	65.61	72.16	75.41	49.91	0.78
<b>FORECAST PRICES</b>					
2019	65.00	71.50	75.35	50.48	0.77
2020	66.00	72.60	74.47	55.86	0.79
2021	69.30	76.23	77.56	58.17	0.80
2022	72.77	80.04	80.76	60.57	0.81
2023	74.22	81.64	81.44	61.08	0.82
2024	75.70	83.28	82.14	61.61	0.83
2025	77.22	84.94	83.96	62.97	0.83
2026	78.76	86.64	85.83	64.37	0.83
2027	80.34	88.37	87.72	65.79	0.83
2028	81.95	90.14	89.66	67.24	0.83
2029	83.58	91.94	91.63	68.73	0.83
2030	85.26	93.78	93.65	70.24	0.83
2031	86.96	95.66	95.70	71.78	0.83
2032	88.70	97.57	97.80	73.35	0.83
2033	90.47	99.52	99.93	74.95	0.83
2034	92.28	101.51	102.12	76.45	0.83

**Escalated 2% thereafter**

- Notes:
- [1] West Texas Intermediate quality (D2/S2) crude (40API) landed in Cushing, Oklahoma.
  - [2] The Brent Spot price is estimated based on historic data.
  - [3] Equivalent price for Light Sweet Crude (D2/S2) & Synthetic Crude landed in Edmonton.
  - [4] Western Canada Select (20.5API), spot price for B.C., Alberta, Saskatchewan, and Manitoba.

**CHAPMAN PETROLEUM ENGINEERING LTD.  
NATURAL GAS & BY-PRODUCTS  
HISTORICAL, CONSTANT, CURRENT AND FUTURE PRICES**

January 1, 2019

Date	Alberta GRP [1]		AECO Spot Gas[2]	Henry Hub Gas[3]	Propane C3 [4]	Butane C4 [4]	Condensate (Pentanes Plus) C5+[5]
	\$CDN/MMBTU	\$CDN/GJ	\$CDN/MMBTU	\$US/MMBTU	\$CDN/BBL	\$CDN/BBL	\$CDN/BBL
<b>HISTORICAL PRICES</b>							
2009	3.85	3.65	3.99	3.94	38.34	49.34	67.52
2010	3.93	3.73	4.02	4.39	44.40	57.99	77.51
2011	3.46	3.28	3.63	3.99	50.17	70.93	97.21
2012	2.25	2.13	2.39	2.70	47.40	64.48	96.26
2013	2.98	2.82	3.17	3.84	50.09	91.43	100.72
2014	4.22	4.00	4.51	4.36	46.85	62.26	108.28
2015	2.62	2.48	2.71	2.69	6.17	36.81	59.14
2016	2.03	1.93	2.18	3.31	6.71	29.81	55.62
2017	2.05	1.94	2.50	3.85	25.55	39.62	67.15
2018	1.38	1.31	1.51	4.11	30.47	48.97	77.19
<b>CONSTANT PRICES (The average of the first-day-of-the-month price for the preceding 12 months-SEC)</b>							
	1.41	1.34	1.55	2.95	32.11	48.82	81.85
<b>FORECAST PRICES</b>							
2019	1.69	1.61	1.86	3.51	28.69	29.99	70.82
2020	1.97	1.86	2.16	3.81	30.17	39.67	70.01
2021	2.24	2.12	2.46	4.11	32.90	46.89	72.90
2022	2.35	2.23	2.58	4.23	35.58	53.15	75.92
2023	2.47	2.34	2.71	4.36	36.39	54.42	76.56
2024	2.59	2.46	2.85	4.50	36.82	54.90	77.21
2025	2.72	2.58	2.99	4.64	37.68	56.18	78.93
2026	2.86	2.71	3.14	4.79	38.60	57.43	80.68
2027	2.91	2.76	3.20	4.85	39.52	58.72	82.46
2028	2.97	2.82	3.27	4.92	40.48	60.05	84.28
2029	3.03	2.88	3.33	4.98	41.44	61.39	86.14
2030	3.09	2.93	3.40	5.05	42.37	62.72	88.03
2031	3.15	2.99	3.47	5.12	43.30	64.09	89.96
2032	3.22	3.05	3.54	5.19	44.22	65.52	91.93
2033	3.28	3.11	3.61	5.26	45.20	66.93	93.94
2034	3.35	3.17	3.68	5.33	46.11	68.27	95.82

Escalated 2% thereafter

- Notes:
- [1] Alberta Gas Reference Price (GRP) represents the average of all system and direct (spot and firm) sales.
  - [2] The AECO C Spot price, which is the Alberta gas trading price
  - [3] Henry Hub Spot is natural gas traded on the New York Mercantile Exchange (NYMEX).
  - [4] Alberta average field price for Propane and Butane purchased at field locations.
  - [5] Edmonton condensate from GMPFirstEnergy.