

# McDaniel & Associates Consultants Ltd.

## Summary of Price Forecasts

January 1, 2020

Year	Crude Oil Price Forecasts							Liquids Price Forecasts					Gas Price Forecasts							US/CAN Exchange Rate \$US/\$CAN	
	WTI Crude Oil	Brent Crude Oil	Edmonton Light Crude Oil	Alberta Bow River Hardisty Crude Oil	Western Canadian Select Crude Oil	Alberta Heavy Crude Oil	Sask Cromer Medium Crude Oil	Edmonton Ethane	Edmonton Propane	Edmonton Butanes	Edmonton Cond. & Natural Gasolines	U.S. Henry Hub Gas Price	Alberta AECO Spot Price	Alberta Average Plantgate	Alberta Aggregator Plantgate	Empress	Sask. Prov. Gas Plantgate	British Columbia Average Plantgate	British Columbia Station 2		Inflation %
	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/MMBtu	\$/MMBtu	\$/MMBtu	\$/MMBtu	\$/MMBtu	\$/MMBtu	\$/MMBtu	\$/MMBtu		%
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	
<b>History</b>																					
2009	61.80	61.60	65.90	60.30	58.58	55.30	62.80		38.60	49.25	68.15	3.95	4.20	3.95	3.90		3.87	4.05		0.3	0.880
2010	79.50	79.90	77.50	68.50	67.23	61.45	73.80		46.70	66.05	84.25	4.40	4.15	3.90	3.85		3.96	3.90		1.8	0.971
2011	95.10	111.25	95.00	78.55	77.10	67.90	88.90		55.15	76.50	104.20	4.00	3.70	3.50	3.75		3.56	3.30		2.9	1.012
2012	94.20	111.65	86.10	74.35	73.08	63.65	82.10		28.60	69.55	100.80	2.75	2.45	2.25	2.25		2.31	2.25		1.5	1.000
2013	97.95	108.60	93.05	76.55	75.25	65.25	88.25		38.90	69.40	104.65	3.75	3.20	3.00	3.00		3.10	2.90	3.08	0.9	0.971
2014	93.00	99.00	93.50	80.40	79.10	71.20	87.80		45.05	69.60	102.40	4.35	4.40	4.20	4.20	4.53	4.40	4.10	4.20	1.9	0.906
2015	48.80	52.35	57.75	46.10	44.80	39.55	51.45		6.65	35.55	60.30	2.60	2.80	2.55	2.55	3.00	2.70	2.00	2.10	1.1	0.780
2016	43.30	43.55	53.85	40.30	39.00	33.35	48.95		13.15	34.35	56.20	2.50	2.10	1.90	1.90	2.31	2.20	1.55	1.68	1.4	0.760
2017	50.90	54.25	62.85	52.00	50.70	45.20	59.85		28.90	44.60	66.85	2.95	2.40	2.15	2.15	2.83	2.35	1.75	1.88	1.6	0.770
2018	64.95	71.05	69.65	51.25	49.95	40.00	70.20		27.55	32.80	79.20	3.05	1.55	1.35	1.35	2.85	1.60	1.20	1.40	2.2	0.770
2019	56.95	64.15	68.65	59.30	58.10	54.50	67.60		17.40	23.55	70.85	2.55	1.60	1.40	1.40	2.70	1.65	0.95	1.10	2.0	0.750
<b>Forecast</b>																					
2020	61.00	67.00	72.37	55.72	55.00	47.40	69.47	7.20	25.33	39.80	76.37	2.65	2.00	1.80	1.80	2.50	1.90	1.40	1.55	0.0	0.760
2021	63.24	67.83	75.64	62.78	62.02	54.08	71.48	8.57	26.47	45.38	79.72	2.86	2.35	2.14	2.14	2.80	2.24	1.73	1.89	2.0	0.770
2022	65.55	69.19	79.41	65.91	65.12	56.78	73.85	9.16	31.77	49.63	83.57	3.02	2.50	2.29	2.29	2.95	2.39	1.98	2.13	2.0	0.775
2023	67.39	70.57	81.69	67.80	66.98	58.41	75.97	9.55	32.67	51.05	85.93	3.18	2.60	2.39	2.39	2.76	2.49	2.18	2.33	2.0	0.775
2024	68.73	71.98	83.32	69.16	68.32	59.57	77.49	9.96	33.33	52.07	87.65	3.25	2.71	2.49	2.49	2.87	2.60	2.27	2.44	2.0	0.775
2025	70.11	73.42	84.99	70.54	69.69	60.77	79.04	10.16	33.99	53.12	89.40	3.31	2.76	2.54	2.54	2.93	2.65	2.32	2.48	2.0	0.775
2026	71.51	74.89	86.69	71.95	71.08	61.98	80.62	10.36	34.67	54.18	91.19	3.38	2.82	2.59	2.59	2.98	2.70	2.36	2.53	2.0	0.775
2027	72.94	76.39	88.42	73.39	72.50	63.22	82.23	10.57	35.37	55.26	93.01	3.45	2.87	2.64	2.64	3.04	2.76	2.41	2.58	2.0	0.775
2028	74.40	77.92	90.19	74.86	73.95	64.48	83.87	10.78	36.08	56.37	94.87	3.51	2.93	2.69	2.69	3.10	2.81	2.46	2.64	2.0	0.775
2029	75.89	79.47	91.99	76.35	75.43	65.77	85.55	10.99	36.80	57.49	96.77	3.59	2.99	2.75	2.75	3.17	2.87	2.51	2.69	2.0	0.775
2030	77.41	81.06	93.83	77.88	76.94	67.09	87.26	11.21	37.53	58.64	98.71	3.66	3.05	2.80	2.80	3.23	2.93	2.56	2.74	2.0	0.775
2031	78.95	82.68	95.71	79.44	78.48	68.43	89.01	11.44	38.28	59.82	100.68	3.73	3.11	2.86	2.86	3.29	2.98	2.61	2.80	2.0	0.775
2032	80.53	84.34	97.62	81.03	80.05	69.80	90.79	11.67	39.05	61.01	102.70	3.80	3.17	2.92	2.92	3.36	3.04	2.66	2.85	2.0	0.775
2033	82.14	86.02	99.57	82.65	81.65	71.20	92.60	11.90	39.83	62.23	104.75	3.88	3.23	2.98	2.98	3.43	3.10	2.72	2.91	2.0	0.775
2034	83.79	87.75	101.57	84.30	83.28	72.62	94.46	12.14	40.63	63.48	106.84	3.96	3.30	3.03	3.03	3.50	3.17	2.77	2.97	2.0	0.775
<b>Thereafter</b>	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	+2%/yr	2.0	0.775

(1) West Texas Intermediate at Cushing Oklahoma 40 degrees API, 0.5% sulphur

(2) North Sea Brent Blend 37 degrees API, 1.0% sulphur

(3) Edmonton Light Sweet 40 degrees API, 0.3% sulphur

(4) Bow River at Hardisty, Alberta (Heavy stream)

(5) Western Canadian Select at Hardisty, Alberta

(6) Heavy crude oil 12 degrees API at Hardisty, Alberta (after deduction of blending costs to reach pipeline quality)

(7) Midale Cromer crude oil 29 degrees API, 2.0% sulphur

(8) Historical prices based on AECO 7A (near month prices). 5A (daily price) expected to be equal to 7A over long term. 2019 historical prices: 7A \$1.60/MMBTU, 5A \$1.75/MMBTU

(9) This forecast also applies to direct sales contracts and the Alberta gas reference price used in the Crown royalty calculations

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## Summary of Price Forecasts (Real Prices - 2019 \$)

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	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/bbl	\$/MMBtu	\$/MMBtu	\$/MMBtu	\$/MMBtu	\$/MMBtu	\$/MMBtu	\$/MMBtu	\$/MMBtu		%
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2014	93.00	99.00	93.50	80.40	79.10	71.20	87.80		45.05	69.60	102.40	4.35	4.40	4.20	4.20	4.53	4.40	4.10	4.20	1.92	0.906
2015	48.80	52.35	57.75	46.10	44.80	39.55	51.45		6.65	35.55	60.30	2.60	2.80	2.55	2.55	3.00	2.70	2.00	2.10	1.12	0.780
2016	43.30	43.55	53.85	40.30	39.00	33.35	48.95		13.15	34.35	56.20	2.50	2.10	1.90	1.90	2.31	2.20	1.55	1.68	1.44	0.760
2017	50.90	54.25	62.85	52.00	50.70	45.20	59.85		28.90	44.60	66.85	2.95	2.40	2.15	2.15	2.83	2.35	1.75	1.88	1.6	0.770
2018	64.95	71.05	69.65	51.25	49.95	40.00	70.20		27.55	32.80	79.20	3.05	1.55	1.35	1.35	2.85	1.60	1.20	1.40	2.24	0.770
2019	56.95	64.15	68.65	59.30	58.10	54.50	67.60		17.40	23.55	70.85	2.55	1.60	1.40	1.40	2.70	1.65	0.95	1.10	2.01	0.750
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2020	61.00	67.00	72.37	55.72	55.00	47.40	69.47	7.20	25.33	39.80	76.37	2.65	2.00	1.80	1.80	2.50	1.90	1.40	1.55	0.0	0.760
2021	62.00	66.50	74.15	61.55	60.81	53.02	70.07	8.40	25.95	44.49	78.15	2.80	2.30	2.10	2.10	2.74	2.20	1.70	1.85	2.0	0.770
2022	63.00	66.50	76.33	63.35	62.59	54.58	70.99	8.80	30.53	47.71	80.33	2.90	2.40	2.20	2.20	2.83	2.30	1.90	2.05	2.0	0.775
2023	63.50	66.50	76.97	63.89	63.12	55.04	71.59	9.00	30.79	48.11	80.97	3.00	2.45	2.25	2.25	2.60	2.35	2.05	2.20	2.0	0.775
2024	63.50	66.50	76.97	63.89	63.12	55.04	71.59	9.20	30.79	48.11	80.97	3.00	2.50	2.30	2.30	2.65	2.40	2.10	2.25	2.0	0.775
2025	63.50	66.50	76.97	63.89	63.12	55.04	71.59	9.20	30.79	48.11	80.97	3.00	2.50	2.30	2.30	2.65	2.40	2.10	2.25	2.0	0.775
2026	63.50	66.50	76.97	63.89	63.12	55.04	71.59	9.20	30.79	48.11	80.97	3.00	2.50	2.30	2.30	2.65	2.40	2.10	2.25	2.0	0.775
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