

# McDaniel & Associates Consultants Ltd.

## Summary of Price Forecasts October 1, 2019

Year	Crude Oil Price Forecasts							Liquids Price Forecasts					Gas Price Forecasts							US/CAN Exchange Rate \$US/\$CAN	
	WTI Crude Oil \$/bbl (1)	Brent Crude Oil \$/bbl (2)	Edmonton Light Crude Oil \$/bbl (3)	Alberta Bow River Hardisty Crude Oil \$/bbl (4)	Western Canadian Select Crude Oil \$/bbl (5)	Alberta Heavy Crude Oil \$/bbl (6)	Sask Cromer Medium Crude Oil \$/bbl (7)	Edmonton Ethane \$/bbl	Edmonton Propane \$/bbl	Edmonton Butanes \$/bbl	Edmonton Cond. & Natural Gasolines \$/bbl	U.S. Henry Hub Gas Price \$/MMBtu	Alberta AECO Spot Price \$/MMBtu	Alberta Average Plantgate \$/MMBtu	Alberta Aggregator Plantgate \$/MMBtu	Empress \$/MMBtu	Sask. Prov. Gas Plantgate \$/MMBtu	British Columbia Average Plantgate \$/MMBtu	British Columbia Station 2 \$/MMBtu		Inflation %
<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		0.880	
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		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		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		1.000	
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	0.971	
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	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	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	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	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	0.770	
2019 (9 mos)	56.75	64.60	68.70	61.15	59.90	56.55	68.30		14.10	17.85	69.80	2.60	1.35	1.15	1.15	2.75	1.50	0.80	0.95	0.750	
<b>Forecast</b>																					
2019 (3 mos)	55.00	61.00	67.30	55.90	55.20	48.10	64.60	6.60	19.00	24.70	71.30	2.50	1.85	1.65	1.65	2.25	1.75	1.25	1.40	0.0	0.750
2020	60.00	64.00	71.40	59.30	58.50	51.10	67.50	7.00	20.20	31.40	75.40	2.75	1.95	1.75	1.75	2.40	1.85	1.35	1.50	0.0	0.775
2021	63.80	66.90	74.80	62.10	61.30	53.50	69.60	8.60	24.50	38.40	78.90	2.95	2.35	2.15	2.15	2.80	2.25	1.85	2.00	2.0	0.800
2022	67.60	69.70	79.40	65.90	65.10	56.80	73.80	9.60	30.80	46.50	83.60	3.25	2.60	2.40	2.40	2.75	2.50	2.20	2.36	2.0	0.800
2023	69.00	71.10	81.00	67.20	66.40	57.90	75.30	9.80	31.40	50.40	85.20	3.30	2.65	2.45	2.45	2.80	2.55	2.25	2.41	2.0	0.800
2024	70.40	72.60	82.70	68.60	67.80	59.10	76.90	10.00	32.10	51.50	87.00	3.40	2.70	2.50	2.50	2.85	2.60	2.30	2.46	2.0	0.800
2025	71.80	74.00	84.30	70.00	69.10	60.30	78.40	10.20	32.70	52.50	88.70	3.45	2.75	2.55	2.55	2.90	2.65	2.35	2.52	2.0	0.800
2026	73.20	75.50	86.00	71.40	70.50	61.50	80.00	10.20	33.30	53.60	90.50	3.50	2.80	2.55	2.55	2.95	2.65	2.30	2.47	2.0	0.800
2027	74.70	77.00	87.70	72.80	71.90	62.70	81.60	10.40	33.90	54.60	92.30	3.60	2.85	2.60	2.60	3.00	2.70	2.35	2.52	2.0	0.800
2028	76.20	78.50	89.50	74.30	73.40	64.00	83.20	10.60	34.60	55.70	94.20	3.65	2.90	2.65	2.65	3.10	2.75	2.40	2.58	2.0	0.800
2029	77.70	80.10	91.30	75.80	74.90	65.30	84.90	11.00	35.40	56.90	96.10	3.75	3.00	2.75	2.75	3.20	2.85	2.50	2.68	2.0	0.800
2030	79.20	81.60	93.00	77.20	76.30	66.50	86.50	11.20	36.00	57.90	97.90	3.80	3.05	2.80	2.80	3.25	2.90	2.55	2.73	2.0	0.800
2031	80.80	83.30	94.90	78.80	77.80	67.90	88.30	11.40	36.80	59.10	99.90	3.90	3.10	2.85	2.85	3.30	2.95	2.60	2.79	2.0	0.800
2032	82.40	84.90	96.80	80.30	79.40	69.20	90.00	11.60	37.50	60.30	101.90	3.95	3.15	2.90	2.90	3.35	3.05	2.65	2.84	2.0	0.800
2033	84.10	86.70	98.80	82.00	81.00	70.60	91.90	12.00	38.30	61.50	104.00	4.05	3.25	3.00	3.00	3.45	3.15	2.75	2.94	2.0	0.800
<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	0.800

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