

# McDaniel & Associates Consultants Ltd.

## Summary of Price Forecasts

April 1, 2023

Year	Crude Oil Price Forecasts							Liquids Price Forecasts					Gas Price Forecasts							US/CAN Exchange Rate	
	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>																					
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	3.10	2.95	3.10	0.95	0.970
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	4.55	4.40	4.05	4.20	1.90	0.905
2015	48.80	52.35	57.75	46.10	44.80	39.55	51.45		6.60	36.50	60.30	2.60	2.80	2.60	2.60	3.00	2.70	2.00	2.10	1.10	0.785
2016	43.30	43.55	53.90	40.45	39.15	33.35	49.10		13.15	34.35	56.15	2.50	2.10	1.90	1.90	2.30	2.20	1.55	1.65	1.45	0.755
2017	50.90	54.25	62.85	52.00	50.70	45.20	59.85		28.90	44.60	66.85	3.00	2.40	2.20	2.20	2.85	2.40	1.80	1.95	1.60	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	3.00	1.60	1.20	1.40	2.25	0.770
2019	57.00	64.35	69.00	60.00	58.70	54.80	68.00		17.40	23.55	70.30	2.55	1.60	1.40	1.40	2.75	1.75	1.00	1.15	2.00	0.755
2020	39.25	41.75	45.00	36.50	35.40	30.70	43.75		16.40	22.15	49.15	2.05	2.25	2.05	2.05	2.30	2.45	2.05	2.20	0.75	0.745
2021	68.00	70.70	80.35	69.40	68.85	63.15	77.75		43.10	51.15	85.50	3.90	3.55	3.35	3.35	3.90	3.95	3.30	3.45	3.40	0.800
2022	94.80	100.80	120.75	99.25	99.10	90.95	114.30		50.30	61.15	123.00	6.40	5.55	5.35	5.35	6.70	5.85	5.00	5.15	6.75	0.770
2023 (3 mos)	76.35	81.60	99.35	70.00	69.60	56.55	87.40		33.50	52.80	108.00	2.70	4.35	4.15	4.15	4.60	4.30	3.75	3.90	5.45	0.740
<b>Forecast</b>																					
2023 (9 mos)	75.00	79.00	96.33	77.07	76.10	66.47	89.59	10.20	36.61	49.13	98.83	2.75	2.75	2.55	2.55	3.25	3.05	2.35	2.55	0.0	0.750
2024	73.95	78.03	93.84	76.01	75.07	64.75	87.27	12.44	35.66	47.86	96.90	3.32	3.32	3.11	3.11	3.83	3.62	2.91	3.11	2.0	0.750
2025	72.83	76.99	92.25	74.72	73.80	63.65	85.79	15.81	35.05	47.05	95.37	4.16	4.16	3.95	3.95	4.68	4.42	3.75	3.95	2.0	0.750
2026	74.28	78.53	94.09	76.22	75.28	64.92	87.51	16.13	35.76	47.99	97.28	4.24	4.24	4.03	4.03	4.78	4.51	3.82	4.03	2.0	0.750
2027	75.77	80.10	95.98	77.74	76.78	66.22	89.26	16.45	36.47	48.95	99.22	4.33	4.33	4.11	4.11	4.87	4.60	3.90	4.11	2.0	0.750
2028	77.29	81.70	97.90	79.30	78.32	67.55	91.04	16.78	37.20	49.93	101.21	4.42	4.42	4.20	4.20	4.97	4.69	3.97	4.20	2.0	0.750
2029	78.83	83.34	99.85	80.88	79.88	68.90	92.86	17.12	37.94	50.93	103.23	4.50	4.50	4.28	4.28	5.07	4.79	4.05	4.28	2.0	0.750
2030	80.41	85.00	101.85	82.50	81.48	70.28	94.72	17.46	38.70	51.94	105.30	4.59	4.59	4.37	4.37	5.17	4.88	4.14	4.37	2.0	0.750
2031	82.02	86.70	103.89	84.15	83.11	71.68	96.62	17.81	39.48	52.98	107.40	4.69	4.69	4.45	4.45	5.27	4.98	4.22	4.45	2.0	0.750
2032	83.66	88.44	105.96	85.83	84.77	73.12	98.55	18.17	40.27	54.04	109.55	4.78	4.78	4.54	4.54	5.38	5.08	4.30	4.54	2.0	0.750
2033	85.33	90.21	108.08	87.55	86.47	74.58	100.52	18.53	41.07	55.12	111.74	4.88	4.88	4.63	4.63	5.49	5.18	4.39	4.63	2.0	0.750
2034	87.04	92.01	110.25	89.30	88.20	76.07	102.53	18.90	41.89	56.23	113.98	4.97	4.97	4.72	4.72	5.60	5.28	4.48	4.72	2.0	0.750
2035	88.78	93.85	112.45	91.09	89.96	77.59	104.58	19.28	42.73	57.35	116.26	5.07	5.07	4.82	4.82	5.71	5.39	4.57	4.82	2.0	0.750
2036	90.55	95.73	114.70	92.91	91.76	79.14	106.67	19.66	43.59	58.50	118.58	5.17	5.17	4.92	4.92	5.82	5.50	4.66	4.92	2.0	0.750
2037	92.36	97.64	116.99	94.76	93.60	80.73	108.80	20.06	44.46	59.67	120.95	5.28	5.28	5.01	5.01	5.94	5.61	4.75	5.01	2.0	0.750
<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	0.750

(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. 2022 historical prices: 7A \$5.56/MMBTU, 5A \$5.34/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 - 2023 \$)

April 1, 2023

Year	Crude Oil Price Forecasts							Liquids Price Forecasts					Gas Price Forecasts							US/CAN Exchange Rate	
	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)								
<b>History</b>																					
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	3.10	2.95	3.10	0.95	0.970
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	4.55	4.40	4.05	4.20	1.90	0.905
2015	48.80	52.35	57.75	46.10	44.80	39.55	51.45		6.60	36.50	60.30	2.60	2.80	2.60	2.60	3.00	2.70	2.00	2.10	1.10	0.785
2016	43.30	43.55	53.90	40.45	39.15	33.35	49.10		13.15	34.35	56.15	2.50	2.10	1.90	1.90	2.30	2.20	1.55	1.65	1.45	0.755
2017	50.90	54.25	62.85	52.00	50.70	45.20	59.85		28.90	44.60	66.85	3.00	2.40	2.20	2.20	2.85	2.40	1.80	1.95	1.60	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	3.00	1.60	1.20	1.40	2.25	0.770
2019	57.00	64.35	69.00	60.00	58.70	54.80	68.00		17.40	23.55	70.30	2.55	1.60	1.40	1.40	2.75	1.75	1.00	1.15	2.00	0.755
2020	39.25	41.75	45.00	36.50	35.40	30.70	43.75		16.40	22.15	49.15	2.05	2.25	2.05	2.05	2.30	2.45	2.05	2.20	0.75	0.745
2021	68.00	70.70	80.35	69.40	68.85	63.15	77.75		43.10	51.15	85.50	3.90	3.55	3.35	3.35	3.90	3.95	3.30	3.45	3.40	0.800
2022	94.80	100.80	120.75	99.25	99.10	90.95	114.30		50.30	61.15	123.00	6.40	5.55	5.35	5.35	6.70	5.85	5.00	5.15	6.75	0.770
2023 (3 mos)	76.35	81.60	99.35	70.00	69.60	56.55	87.40		33.50	52.80	108.00	2.70	4.35	4.15	4.15	4.60	4.30	3.75	3.90	5.45	0.740
<b>Forecast</b>																					
2023 (9 mos)	75.00	79.00	96.33	77.07	76.10	66.47	89.59	10.20	36.61	49.13	98.83	2.75	2.75	2.55	2.55	3.25	3.05	2.35	2.55	0.0	0.750
2024	72.50	76.50	92.00	74.52	73.60	63.48	85.56	12.20	34.96	46.92	95.00	3.25	3.25	3.05	3.05	3.75	3.55	2.85	3.05	2.0	0.750
2025	70.00	74.00	88.67	71.82	70.93	61.18	82.46	15.20	33.69	45.22	91.67	4.00	4.00	3.80	3.80	4.50	4.25	3.60	3.80	2.0	0.750
2026	70.00	74.00	88.67	71.82	70.93	61.18	82.46	15.20	33.69	45.22	91.67	4.00	4.00	3.80	3.80	4.50	4.25	3.60	3.80	2.0	0.750
2027	70.00	74.00	88.67	71.82	70.93	61.18	82.46	15.20	33.69	45.22	91.67	4.00	4.00	3.80	3.80	4.50	4.25	3.60	3.80	2.0	0.750
2028	70.00	74.00	88.67	71.82	70.93	61.18	82.46	15.20	33.69	45.22	91.67	4.00	4.00	3.80	3.80	4.50	4.25	3.60	3.80	2.0	0.750
2029	70.00	74.00	88.67	71.82	70.93	61.18	82.46	15.20	33.69	45.22	91.67	4.00	4.00	3.80	3.80	4.50	4.25	3.60	3.80	2.0	0.750
2030	70.00	74.00	88.67	71.82	70.93	61.18	82.46	15.20	33.69	45.22	91.67	4.00	4.00	3.80	3.80	4.50	4.25	3.60	3.80	2.0	0.750
2031	70.00	74.00	88.67	71.82	70.93	61.18	82.46	15.20	33.69	45.22	91.67	4.00	4.00	3.80	3.80	4.50	4.25	3.60	3.80	2.0	0.750
2032	70.00	74.00	88.67	71.82	70.93	61.18	82.46	15.20	33.69	45.22	91.67	4.00	4.00	3.80	3.80	4.50	4.25	3.60	3.80	2.0	0.750
2033	70.00	74.00	88.67	71.82	70.93	61.18	82.46	15.20	33.69	45.22	91.67	4.00	4.00	3.80	3.80	4.50	4.25	3.60	3.80	2.0	0.750
2034	70.00	74.00	88.67	71.82	70.93	61.18	82.46	15.20	33.69	45.22	91.67	4.00	4.00	3.80	3.80	4.50	4.25	3.60	3.80	2.0	0.750
2035	70.00	74.00	88.67	71.82	70.93	61.18	82.46	15.20	33.69	45.22	91.67	4.00	4.00	3.80	3.80	4.50	4.25	3.60	3.80	2.0	0.750
2036	70.00	74.00	88.67	71.82	70.93	61.18	82.46	15.20	33.69	45.22	91.67	4.00	4.00	3.80	3.80	4.50	4.25	3.60	3.80	2.0	0.750
2037	70.00	74.00	88.67	71.82	70.93	61.18	82.46	15.20	33.69	45.22	91.67	4.00	4.00	3.80	3.80	4.50	4.25	3.60	3.80	2.0	0.750

(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. 2022 historical prices: 7A \$5.56/MMBTU, 5A \$5.34/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 International Price Forecasts

April 1, 2023

### US and Europe Crude Oil and Natural Gas Price Forecasts

Year	Exchange Rates		US Crude Oil		US Natural Gas					Europe Crude Oil		Europe Natural Gas	
	\$US to GBP £	\$US to EUR €	WTI Oil \$US/bbl	LLS Oil \$US/bbl	Henry Hub Gas \$US/MMBtu	CIG Gas \$US/MMBtu	Chicago Gas \$US/MMBtu	Houston Ship Gas \$US/MMBtu	San Juan Gas \$US/MMBtu	UK Brent Crude Oil \$US/bbl	UK Forties Oil \$US/bbl	UK NBP Gas \$US/MMBtu	Dutch TTF Gas \$US/MMBtu
<b>Forecast</b>													
2023 (9 mos)	1.25	1.08	75.00	78.00	2.75	2.30	2.40	2.40	2.50	79.00	79.00	14.50	15.00
2024	1.25	1.08	73.95	77.01	3.32	2.85	2.95	2.95	3.05	78.03	78.03	16.50	17.50
2025	1.25	1.08	72.83	75.95	4.16	3.70	3.80	3.80	3.90	76.99	76.99	16.83	17.85
2026	1.25	1.08	74.28	77.47	4.24	3.75	3.85	3.85	4.00	78.53	78.53	17.17	18.21
2027	1.25	1.08	75.77	79.02	4.33	3.85	3.95	3.95	4.05	80.10	80.10	17.51	18.57
2028	1.25	1.08	77.29	80.60	4.42	3.90	4.05	4.05	4.15	81.70	81.70	17.86	18.94
2029	1.25	1.08	78.83	82.21	4.50	4.00	4.10	4.10	4.20	83.34	83.34	18.22	19.32
2030	1.25	1.08	80.41	83.85	4.59	4.10	4.20	4.20	4.30	85.00	85.00	18.58	19.71
2031	1.25	1.08	82.02	85.53	4.69	4.15	4.30	4.30	4.40	86.70	86.70	18.95	20.10
2032	1.25	1.08	83.66	87.24	4.78	4.25	4.35	4.35	4.50	88.44	88.44	19.33	20.50
2033	1.25	1.08	85.33	88.99	4.88	4.35	4.45	4.45	4.55	90.21	90.21	19.72	20.91
2034	1.25	1.08	87.04	90.77	4.97	4.40	4.55	4.55	4.65	92.01	92.01	20.11	21.33
2035	1.25	1.08	88.78	92.58	5.07	4.50	4.65	4.65	4.75	93.85	93.85	20.52	21.76
2036	1.25	1.08	90.55	94.43	5.17	4.60	4.70	4.70	4.85	95.73	95.73	20.93	22.19
2037	1.25	1.08	92.36	96.32	5.28	4.70	4.80	4.80	4.95	97.64	97.64	21.34	22.64

### Other International Crude Oil Price Forecasts

Year	Africa and Middle East							Asia		Latin America		Russia
	Nigeria Bonny Light Oil	Algeria Saharan Blend Oil	Kuwait Oil	Saudi Light Oil	Saudi Heavy Oil	UAE Fateh Oil	Iran Light Oil	Indonesia Minas Oil	Malaysia Tapis Oil	Mexico Maya Oil	Columbia Vasconia Oil	Urals Oil
	\$US/bbl	\$US/bbl	\$US/bbl	\$US/bbl	\$US/bbl	\$US/bbl	\$US/bbl	\$US/bbl	\$US/bbl	\$US/bbl	\$US/bbl	\$US/bbl
<b>Forecast</b>												
2023 (9 mos)	77.25	77.25	75.00	74.63	72.75	75.75	75.75	75.38	79.50	69.00	75.75	54.75
2024	76.17	76.17	73.95	73.58	71.73	74.69	74.69	74.32	78.39	68.03	74.69	53.98
2025	75.01	75.01	72.83	72.46	70.64	73.56	73.56	73.19	77.20	67.00	73.56	53.16
2026	76.51	76.51	74.28	73.91	72.06	75.03	75.03	74.66	78.74	68.34	75.03	54.23
2027	78.04	78.04	75.77	75.39	73.50	76.53	76.53	76.15	80.32	69.71	76.53	55.31
2028	79.60	79.60	77.29	76.90	74.97	78.06	78.06	77.67	81.92	71.10	78.06	56.42
2029	81.20	81.20	78.83	78.44	76.47	79.62	79.62	79.23	83.56	72.52	79.62	57.55
2030	82.82	82.82	80.41	80.01	78.00	81.21	81.21	80.81	85.23	73.98	81.21	58.70
2031	84.48	84.48	82.02	81.61	79.56	82.84	82.84	82.43	86.94	75.45	82.84	59.87
2032	86.17	86.17	83.66	83.24	81.15	84.49	84.49	84.07	88.68	76.96	84.49	61.07
2033	87.89	87.89	85.33	84.90	82.77	86.18	86.18	85.76	90.45	78.50	86.18	62.29
2034	89.65	89.65	87.04	86.60	84.43	87.91	87.91	87.47	92.26	80.07	87.91	63.54
2035	91.44	91.44	88.78	88.33	86.11	89.66	89.66	89.22	94.10	81.67	89.66	64.81
2036	93.27	93.27	90.55	90.10	87.84	91.46	91.46	91.01	95.99	83.31	91.46	66.10
2037	95.13	95.13	92.36	91.90	89.59	93.29	93.29	92.83	97.91	84.97	93.29	67.43