

McDaniel & Associates Consultants Ltd.

Summary of Price Forecasts

January 1, 2022

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)								
History																					
2011	95.10	111.25	95.05	78.55	77.10	67.90	89.05		55.15	76.50	104.20	4.00	3.70	3.50	3.75	3.50	3.55	3.30	3.40	2.90	1.010
2012	94.20	111.65	86.10	74.35	73.10	63.65	82.10		28.60	69.55	100.80	2.75	2.45	2.25	2.25	2.30	2.30	2.25	2.40	1.55	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	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	(0.10)	0.745
2021	67.95	70.65	80.25	69.35	68.80	63.10	77.70		43.10	51.15	85.45	3.90	3.55	3.35	3.35	3.90	3.95	3.30	3.45	1.35	0.800
Forecast																					
2022	72.50	75.00	86.25	72.88	72.02	60.38	81.94	12.80	43.13	56.06	91.25	3.75	3.40	3.20	3.20	3.65	3.65	3.15	3.30	0.0	0.800
2023	67.32	69.87	77.90	65.83	65.05	54.53	74.01	11.83	38.95	50.64	83.00	3.32	3.16	2.96	2.96	3.42	3.42	2.91	3.06	2.0	0.800
2024	65.03	67.63	74.91	63.30	62.55	52.43	71.16	11.03	37.45	48.69	80.11	3.12	2.97	2.76	2.76	3.23	3.23	2.71	2.86	2.0	0.800
2025	66.33	68.98	76.40	64.56	63.80	53.48	72.58	11.25	38.20	49.66	81.71	3.18	3.02	2.81	2.81	3.29	3.29	2.76	2.92	2.0	0.800
2026	67.65	70.36	77.93	65.85	65.07	54.55	74.04	11.47	38.97	50.66	83.34	3.25	3.08	2.87	2.87	3.36	3.36	2.81	2.98	2.0	0.800
2027	69.01	71.77	79.49	67.17	66.38	55.64	75.52	11.70	39.75	51.67	85.01	3.31	3.15	2.93	2.93	3.42	3.42	2.87	3.04	2.0	0.800
2028	70.39	73.20	81.08	68.51	67.70	56.76	77.03	11.94	40.54	52.70	86.71	3.38	3.21	2.98	2.98	3.49	3.49	2.93	3.10	2.0	0.800
2029	71.79	74.66	82.70	69.88	69.06	57.89	78.57	12.18	41.35	53.76	88.45	3.45	3.27	3.04	3.04	3.56	3.56	2.99	3.16	2.0	0.800
2030	73.23	76.16	84.36	71.28	70.44	59.05	80.14	12.42	42.18	54.83	90.21	3.51	3.34	3.10	3.10	3.63	3.63	3.05	3.22	2.0	0.800
2031	74.69	77.68	86.04	72.71	71.85	60.23	81.74	12.67	43.02	55.93	92.02	3.59	3.41	3.17	3.17	3.70	3.70	3.11	3.29	2.0	0.800
2032	76.19	79.23	87.76	74.16	73.28	61.44	83.38	12.92	43.88	57.05	93.86	3.66	3.47	3.23	3.23	3.78	3.78	3.17	3.35	2.0	0.800
2033	77.71	80.82	89.52	75.64	74.75	62.66	85.04	13.18	44.76	58.19	95.74	3.73	3.54	3.29	3.29	3.85	3.85	3.23	3.42	2.0	0.800
2034	79.27	82.44	91.31	77.16	76.24	63.92	86.74	13.44	45.66	59.35	97.65	3.80	3.61	3.36	3.36	3.93	3.93	3.30	3.49	2.0	0.800
2035	80.85	84.08	93.14	78.70	77.77	65.20	88.48	13.71	46.57	60.54	99.60	3.88	3.69	3.43	3.43	4.01	4.01	3.36	3.56	2.0	0.800
2036	82.47	85.77	95.00	80.27	79.32	66.50	90.25	13.99	47.50	61.75	101.60	3.96	3.76	3.50	3.50	4.09	4.09	3.43	3.63	2.0	0.800
Thereafter	+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) 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

McDaniel & Associates Consultants Ltd.

Summary of Price Forecasts (Real Prices - 2022 \$)

January 1, 2022

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	\$/MMBtu		%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)					(8)	(9)									
History																						
2011	95.10	111.25	95.05	78.55	77.10	67.90	89.05		55.15	76.50	104.20	4.00	3.70	3.50	3.75	3.50	3.55	3.30	3.40	2.90	1.010	
2012	94.20	111.65	86.10	74.35	73.10	63.65	82.10		28.60	69.55	100.80	2.75	2.45	2.25	2.25	2.30	2.30	2.25	2.40	1.55	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	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	(0.10)	0.745	
2021	67.95	70.65	80.25	69.35	68.80	63.10	77.70		43.10	51.15	85.45	3.90	3.55	3.35	3.35	3.90	3.95	3.30	3.45	1.35	0.800	
Forecast																						
2022	72.50	75.00	86.25	72.88	72.02	60.38	81.94		12.80	43.13	56.06	91.25	3.75	3.40	3.20	3.20	3.65	3.65	3.15	3.30	0.0	0.800
2023	66.00	68.50	76.37	64.53	63.77	53.46	72.55		11.60	38.19	49.64	81.37	3.25	3.10	2.90	2.90	3.35	3.35	2.85	3.00	2.0	0.800
2024	62.50	65.00	72.00	60.84	60.12	50.40	68.40		10.60	36.00	46.80	77.00	3.00	2.85	2.65	2.65	3.10	3.10	2.60	2.75	2.0	0.800
2025	62.50	65.00	72.00	60.84	60.12	50.40	68.40		10.60	36.00	46.80	77.00	3.00	2.85	2.65	2.65	3.10	3.10	2.60	2.75	2.0	0.800
2026	62.50	65.00	72.00	60.84	60.12	50.40	68.40		10.60	36.00	46.80	77.00	3.00	2.85	2.65	2.65	3.10	3.10	2.60	2.75	2.0	0.800
2027	62.50	65.00	72.00	60.84	60.12	50.40	68.40		10.60	36.00	46.80	77.00	3.00	2.85	2.65	2.65	3.10	3.10	2.60	2.75	2.0	0.800
2028	62.50	65.00	72.00	60.84	60.12	50.40	68.40		10.60	36.00	46.80	77.00	3.00	2.85	2.65	2.65	3.10	3.10	2.60	2.75	2.0	0.800
2029	62.50	65.00	72.00	60.84	60.12	50.40	68.40		10.60	36.00	46.80	77.00	3.00	2.85	2.65	2.65	3.10	3.10	2.60	2.75	2.0	0.800
2030	62.50	65.00	72.00	60.84	60.12	50.40	68.40		10.60	36.00	46.80	77.00	3.00	2.85	2.65	2.65	3.10	3.10	2.60	2.75	2.0	0.800
2031	62.50	65.00	72.00	60.84	60.12	50.40	68.40		10.60	36.00	46.80	77.00	3.00	2.85	2.65	2.65	3.10	3.10	2.60	2.75	2.0	0.800
2032	62.50	65.00	72.00	60.84	60.12	50.40	68.40		10.60	36.00	46.80	77.00	3.00	2.85	2.65	2.65	3.10	3.10	2.60	2.75	2.0	0.800
2033	62.50	65.00	72.00	60.84	60.12	50.40	68.40		10.60	36.00	46.80	77.00	3.00	2.85	2.65	2.65	3.10	3.10	2.60	2.75	2.0	0.800
2034	62.50	65.00	72.00	60.84	60.12	50.40	68.40		10.60	36.00	46.80	77.00	3.00	2.85	2.65	2.65	3.10	3.10	2.60	2.75	2.0	0.800
2035	62.50	65.00	72.00	60.84	60.12	50.40	68.40		10.60	36.00	46.80	77.00	3.00	2.85	2.65	2.65	3.10	3.10	2.60	2.75	2.0	0.800
2036	62.50	65.00	72.00	60.84	60.12	50.40	68.40		10.60	36.00	46.80	77.00	3.00	2.85	2.65	2.65	3.10	3.10	2.60	2.75	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) 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