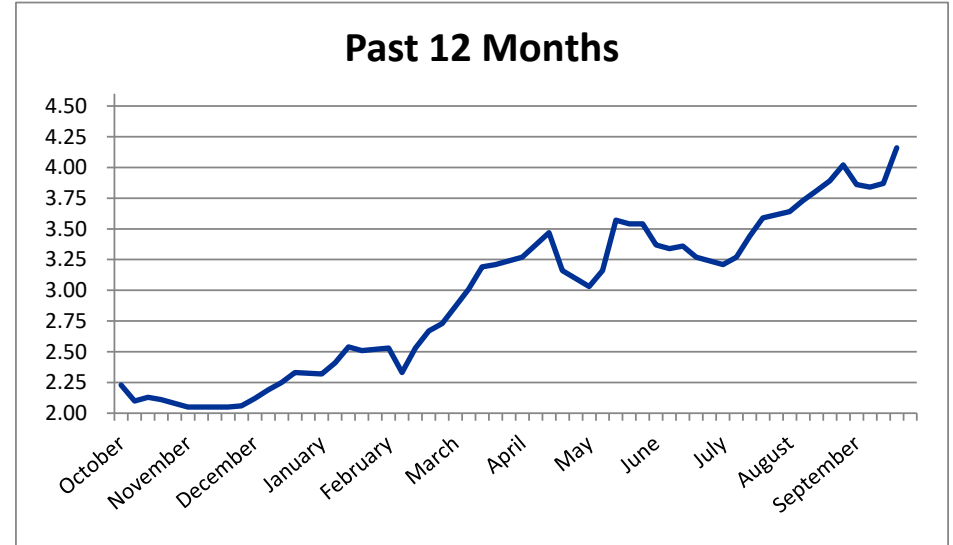
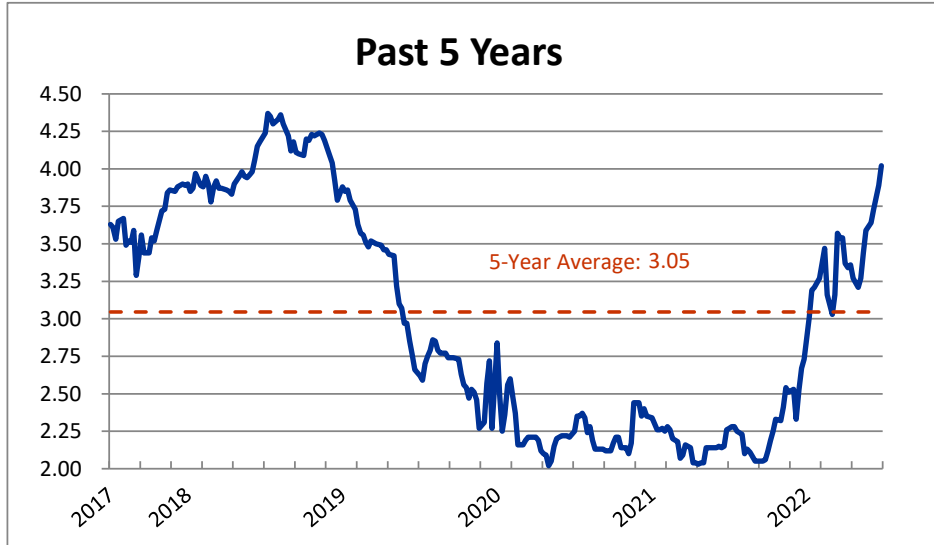


TEXAS BOND MARKET UPDATE - NOVEMBER 2022

BOND BUYER'S INDEX

(as detailed on reverse side)



REPRESENTATION OF RECENT TEXAS BOND SALES

(as reported to the Municipal Advisory Council of Texas)

Issuer	Issue Size (000's)	Sale Date	Bank Qualified?	S&P Rating	Credit Enhanced?	Call Date	Yield to Maturity for Bonds Maturing in:				
							2027	2032	2037	2042	2047
City of Deer Park	\$ 14,710	10/18/2022	No	AAA	No	3/15/2032	3.130%	3.420%	4.140%	4.382%	4.500%
Town of Fulshear	\$ 36,530	10/18/2022	No	AA+	No	4/15/2031	3.180%	3.592%	4.208%	4.410%	4.747%
City of Galveston	\$ 62,635	10/4/2022	No	Aa3*	No	5/1/2032	3.360%	3.630%	4.332%	4.678%	4.804%
Waller County	\$ 3,365	10/12/2022	Yes	AA	No	2/15/2031	3.130%	3.540%	4.000%	4.220%	n/a
Woodville ISD	\$ 47,685	10/19/2022	No	AAA	PSF	8/15/2031	3.140%	3.532%	4.195%	4.490%	4.620%
Huntsville ISD	\$ 36,465	10/4/2022	No	Aaa*	PSF	2/15/2031	3.170%	3.567%	4.160%	4.300%	4.453%
Richardson ISD	\$ 193,930	10/26/2022	No	AAA	PSF	2/15/2032	3.420%	3.640%	4.349%	4.631%	4.725%

*Moody's

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MONTH	WEEK	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
January	1	4.32	5.24	4.25	5.08	3.83	3.68	4.75	3.42	3.45	3.78	3.44	4.09	2.73	2.17	2.12
	2	4.21	5.02	4.31	5.39	3.62	3.60	4.68	3.29	3.45	3.72	3.54	4.20	2.63	2.21	2.19
	3	4.15	4.80	4.31	5.41	3.60	3.53	4.55	3.36	3.37	3.83	3.52	4.19	2.56	2.21	2.25
	4	4.29	5.13	4.30	5.25	3.68	3.54	4.50	3.36	3.38	3.87	3.59	4.23	2.54	2.14	2.33
	5		5.16	4.39			3.67	4.48					4.22	2.47		
February	1	4.39	4.96	4.36	5.25	3.60	3.68	4.46	3.49	3.30	3.87	3.72	4.23	2.53	2.14	2.32
	2	4.33	4.89	4.34	5.29	3.70	3.72	4.46	3.60	3.27	3.88	3.73	4.24	2.51	2.10	2.41
	3	4.47	4.89	4.38	5.10	3.65	3.74	4.44	3.62	3.27	3.94	3.84	4.23	2.46	2.17	2.54
	4	4.66	4.87	4.36	4.95	3.69	3.74	4.38	3.62	3.34	3.92	3.86	4.19	2.27	2.44	2.51
	5	5.11														
March	1	4.92	4.96	4.34	4.90	3.72	3.86	4.41	3.68	3.34	3.95	3.85	4.09	2.31	2.44	2.53
	2	4.94	5.03	4.33	4.91	3.84	4.00	4.47	3.62	3.42	4.02	3.88	4.04	2.57	2.35	2.33
	3	4.88	4.98	4.32	4.86	3.95	3.99	4.51	3.62	3.40	4.02	3.89	3.92	2.72	2.40	2.53
	4	4.96	5.00	4.44	4.91	4.01	3.99	4.43	3.52	3.38	3.91	3.90	3.79	2.27	2.35	2.67
	5					4.02					3.38	3.86	3.89			2.73
April	1	4.90	4.92	4.44	5.00	4.08	3.96	4.44	3.49	3.28	3.83	3.90	3.88	2.84	2.34	2.87
	2	4.61	4.92	4.45	5.04	3.97	3.93	4.32	3.49	3.30	3.77	3.85	3.85	2.49	2.30	3.01
	3	4.62	4.78	4.43	5.06	3.90	3.89	4.32	3.45	3.28	3.71	3.87	3.86	2.25	2.26	3.19
	4	4.68	4.57	4.37	4.98	3.86	3.90	4.33	3.52	3.32	3.82	3.97	3.79	2.36	2.26	3.21
	5				4.86				3.62					2.56	2.27	
May	1	4.63	4.70	4.37	4.69	3.81	3.77	4.33	3.74	3.32	3.82	3.89	3.73	2.60	2.25	3.27
	2	4.62	4.62	4.29	4.61	3.71	3.67	4.31	3.74	3.32	3.81	3.88	3.63	2.48	2.28	3.37
	3	4.53	4.54	4.32	4.55	3.75	3.61	4.26	3.81	3.26	3.73	3.95	3.57	2.37	2.26	3.47
	4	4.52	4.44	4.27	4.53	3.81	3.70	4.28	3.73	3.26	3.69	3.90	3.56	2.16	2.20	3.16
	5	4.62	4.61	4.28		3.77	3.84	4.29				3.78	3.51			
June	1	4.59	4.71	4.28	4.51	3.92	3.93	4.37	3.81	3.26	3.61	3.88	3.48	2.16	2.18	3.03
	2	4.69	4.86	4.37	4.49	3.95	4.16	4.37	3.87	3.03	3.53	3.92	3.52	2.19	2.07	3.16
	3	4.76	4.86	4.40	4.49	3.95	4.37	4.36	3.79	2.99	3.53	3.87	3.51	2.21	2.09	3.57
	4	4.83	4.79	4.40	4.46	3.95	4.63	4.29	3.80	2.90	3.53	3.87	3.50	2.21	2.16	3.54
	5									2.85	3.58					
July	1	4.67	4.81	4.38	4.59	3.94	4.39	4.31	3.85	2.80	3.60	3.86	3.49	2.21	2.14	3.37
	2	4.56	4.71	4.36	4.65	3.83	4.55	4.38	3.76	2.80	3.61	3.85	3.46	2.19	2.04	3.34
	3	4.65	4.68	4.37	4.51	3.75	4.52	4.36	3.82	2.87	3.51	3.83	3.46	2.12	2.04	3.36
	4	4.77	4.69	4.26	4.46	3.61	4.77	4.29	3.75	2.85	3.52	3.90	3.43	2.10	2.03	3.27
	5		4.69	4.21	4.47			4.33	3.75					2.09	2.04	
August	1	4.74	4.65	4.16	4.19	3.66	4.70	4.31	3.75	2.85	3.50	3.95	3.42	2.02	2.04	3.21
	2	4.75	4.65	4.06	3.97	3.75	4.73	4.24	3.69	2.85	3.52	3.98	3.22	2.05	2.14	3.27
	3	4.67	4.58	4.03	3.83	3.80	4.80	4.21	3.73	2.84	3.57	3.95	3.10	2.15	2.14	3.44
	4	4.64	4.53	3.88	4.09	3.76	4.91	4.17	3.79	2.84	3.53	3.94	3.07	2.20	2.14	3.59
	5	4.68				3.72	4.96				3.51	3.96	2.97			
September	1	4.62	4.37	3.86	4.14	3.73	5.03	4.09	3.82	2.84	3.49	3.98	2.97	2.22	2.14	3.64
	2	4.54	4.33	3.92	4.05	3.79	4.93	4.14	3.82	2.83	3.56	4.06	2.85	2.22	2.15	3.73
	3	5.03	4.20	3.89	4.07	3.72	4.66	4.17	3.78	2.96	3.60	4.15	2.76	2.22	2.14	3.81
	4	5.23	4.04	3.83	3.85	3.67	4.53	4.11	3.71	2.98	3.64	4.18	2.66	2.21	2.15	3.89
	5				3.93					3.06					2.26	4.02
October	1	5.36	3.94	3.84	4.14	3.61	4.53	4.11	3.67	3.20	3.63	4.24	2.62	2.25	2.27	3.86
	2	5.47	4.06	3.84	4.17	3.64	4.57	4.01	3.68	3.28	3.61	4.37	2.59	2.35	2.28	3.84
	3	6.01	4.32	3.82	4.08	3.68	4.68	3.87	3.68	3.28	3.53	4.35	2.70	2.35	2.28	3.87
	4	5.32	4.31	3.84	4.12	3.68	4.56	3.90	3.67	3.32	3.65	4.30	2.75	2.37	2.25	4.16
	5	5.35	4.39	3.96			4.48	3.90	3.66				2.79	2.34		
November	1	5.24	4.41	4.02	4.02	3.67	4.56	3.98	3.69	3.27	3.67	4.33	2.86	2.24	2.23	
	2	5.14	4.40	4.24	4.02	3.55	4.64	3.98	3.74	3.52	3.49	4.36	2.85	2.28	2.10	
	3	5.13	4.35	4.72	4.09	3.41	4.60	3.93	3.65	3.75	3.52	4.30	2.79	2.19	2.13	
	4	5.39	4.33	4.60	4.07	3.37	4.61	3.94	3.65	3.80	3.51	4.26	2.77	2.13	2.11	
	5					3.29					3.59	4.22				
December	1	5.58	4.24	4.65	4.12	3.27	4.70	3.83	3.57	4.03	3.29	4.12	2.77	2.13	2.05	
	2	5.85	4.19	4.86	3.93	3.44	4.74	3.65	3.57	3.78	3.41	4.18	2.74	2.13	2.05	
	3	5.46	4.18	5.15	3.92	3.64	4.73	3.65	3.57	3.88	3.56	4.11	2.74	2.12	2.05	
	4	5.33	4.21	5.00	3.92	3.58	4.73	3.65	3.57	3.83	3.44	4.10	2.74	2.12	2.05	
	5			4.95	3.88			3.56		3.78				2.12	2.06	

The Bond Buyer's 20-Bond Index is determined by a poll taken of several investment banks each week of the 20 year yield of outstanding general obligation bonds from a select group of municipalities across the nation with an average credit rating of "AA".

Weekly Commodity Sheet - Energy: November 4, 2022

HTS Commodities

Active Commodity Contracts

Source: Bloomberg

	11/4/22	10/28/22	Net Chg	11/4/21	YoY Net	
					Chg	YoY %Chg
RBOB Gasoline NYMEX (\$/gal)	2.735	2.907	-0.171	2.293	0.443	+19.31%
ULSD NYMEX (HO) (\$/gal)	3.911	4.550	-0.639	2.407	1.504	+62.50%
Natural Gas NYMEX (\$/mmbtu)	6.452	5.684	0.768	5.716	0.736	+12.88%
Crude Oil NYMEX (\$/barrel)	92.620	87.900	4.720	78.810	13.810	+17.52%

Fixed Price Projection¹

Source: Bloomberg

	1Q23	1Q23	2Q23	3Q23	4Q23
RBOB Gasoline NYMEX (\$/gal)	2.687	2.738	2.549	2.549	2.354
ULSD NYMEX (HO) (\$/gal)	3.460	3.184	3.069	3.069	2.911
Natural Gas NYMEX (\$/mmbtu)	6.435	5.045	5.124	5.124	5.537
Crude Oil NYMEX (\$/barrel)	88.410	85.110	82.490	82.490	78.580

Commentary

Another week has passed and the energy related headlines continue to provide fundamental support across the US energy futures complex. While the supply and demand related inputs did not directly translate to symmetric weekly gains across the futures markets, we believe that the recent data points reinforce the key independent variables that are critical for providing structural price support for crude and crude products. The NYMEX prompt WTI futures rose by \$4.1/bbl this week to over \$92/bbl on news that China is easing the country's strict COVID related lockdowns. After a scorching few weeks, NYMEX ULSD and RBOB futures faded and gave back some hefty gains. Prompt ULSD futures declined by 14% or \$0.65/gal and RBOB slid by 7% or \$0.21/gal.

Gasoline supplies on the US East Coast stumbled to an eight-year low, exacerbating a fuel shortage among wholesalers who threaten to further drive-up pump prices heading into the midterm election on Tuesday, 11/8. Aggregate US gasoline and distillate stockpiles are tight with no signs of building. While the recent EIA data shows a decline and a softening trend in aggregate domestic implied gasoline demand, weekly US exports continue to outperform and is stimulating disappearance. The latest data shows that US gasoline exports for week ending 10/28 was 837/kbd which is at the top of the 5-year range and just below the record for the week set in 2018. Total US refinery capacity utilization is at 90.6% which is a record for this time of year. With the aggressive export demand pulling down US stocks, domestic retail and wholesale rack prices have started to escalate. In particular, the East Coast states are experiencing some of the biggest price jumps. The national unleaded regular gasoline averaged \$3.765/gal which is the highest level recorded for this time of year.

As the Chinese reopening narrative starts to build momentum and the EU's deadline for banning Russian energy imports approaches, our sentiments about the price direction of crude and products have not changed. We continue to view the fundamental construct through a lens of optimism and believe that breaks in the distillate and gasoline futures markets represent opportunities to assess and establish long hedges.

US natural gas experienced another week of volatility as the warm weather started to abate and more seasonal temperatures are helping to improve aggregate demand. Despite the \$0.647/mmBtu, or +11% move higher, the NYMEX prompt contract experienced some acute volatility this week. The Freeport LNG, a Texas liquefied natural gas export terminal, failed to submit a restart plan to federal regulators which spooked the market. This administrative maneuver is stoking speculation that the plant won't resume operations this month. The Freeport terminal experienced a fire earlier this year which reduced export LNG capacity and helped increase domestic stocks. Overall, the market's thin cushion of supply at home and abroad is whipsawing prices ahead of the winter demand. Domestic stocks keep building which is encouraging but the buffer headed into winter remains thin. Despite the bearish sentiments and fundamentals, we believe that the medium-term US gas market fundamentals possess upside risks. Between uncertainty in Europe, low US stocks and robust LNG exports, we see the NYMEX trade containing more catalysts that can cause futures prices to spike higher.

(1) Indications only, valuation as of 11/4/2022; includes \$0.00 in customary and transaction expenses; assumes equal monthly volumes.

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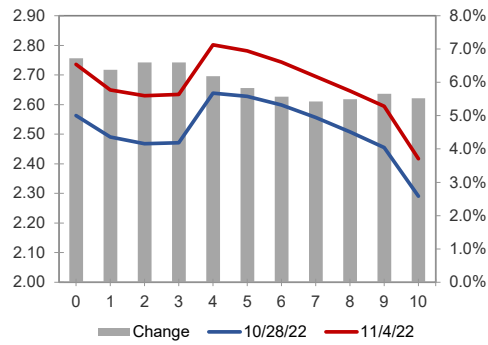
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RBOB Gasoline NYMEX

	11/4/22	10/28/22	Net Chg	%Change
DEC 22	2.74	2.56	0.17	+6.73%
JAN 23	2.65	2.49	0.16	+6.38%
FEB 23	2.63	2.47	0.16	+6.60%
MAR 23	2.63	2.47	0.16	+6.60%
APR 23	2.80	2.64	0.16	+6.19%
MAY 23	2.78	2.63	0.15	+5.83%
JUN 23	2.74	2.60	0.14	+5.57%
JUL 23	2.69	2.56	0.14	+5.43%
AUG 23	2.65	2.51	0.14	+5.49%
SEP 23	2.59	2.46	0.14	+5.65%
OCT 23	2.42	2.29	0.13	+5.53%

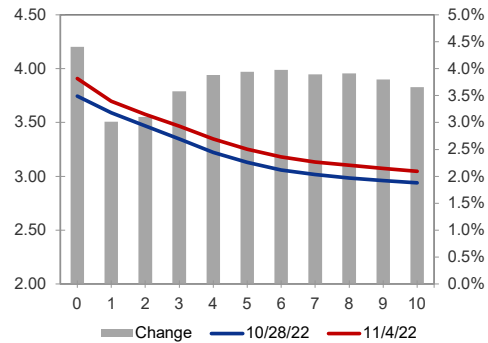
Source: Bloomberg



ULSD NYMEX (formerly Heating Oil)

	11/4/22	10/28/22	Net Chg	%Change
DEC 22	3.91	3.75	0.16	+4.40%
JAN 23	3.70	3.59	0.11	+3.02%
FEB 23	3.58	3.47	0.11	+3.10%
MAR 23	3.47	3.35	0.12	+3.58%
APR 23	3.35	3.22	0.13	+3.88%
MAY 23	3.25	3.13	0.12	+3.94%
JUN 23	3.18	3.06	0.12	+3.98%
JUL 23	3.13	3.02	0.12	+3.89%
AUG 23	3.10	2.99	0.12	+3.91%
SEP 23	3.07	2.96	0.11	+3.80%
OCT 23	3.05	2.94	0.11	+3.66%

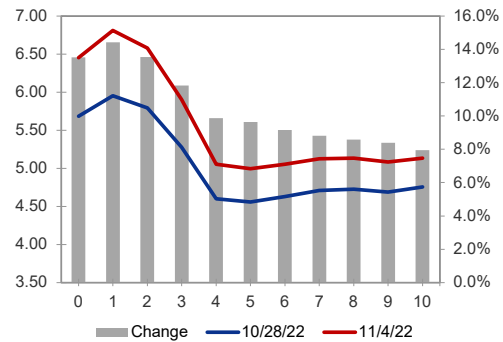
Source: Bloomberg



Natural Gas NYMEX

	11/4/22	10/28/22	Net Chg	%Change
DEC 22	6.45	5.68	0.77	+13.51%
JAN 23	6.81	5.95	0.86	+14.41%
FEB 23	6.58	5.79	0.78	+13.53%
MAR 23	5.90	5.28	0.62	+11.83%
APR 23	5.06	4.60	0.45	+9.87%
MAY 23	5.00	4.56	0.44	+9.64%
JUN 23	5.05	4.63	0.42	+9.16%
JUL 23	5.12	4.71	0.42	+8.81%
AUG 23	5.13	4.73	0.41	+8.59%
SEP 23	5.08	4.69	0.39	+8.38%
OCT 23	5.13	4.76	0.38	+7.95%

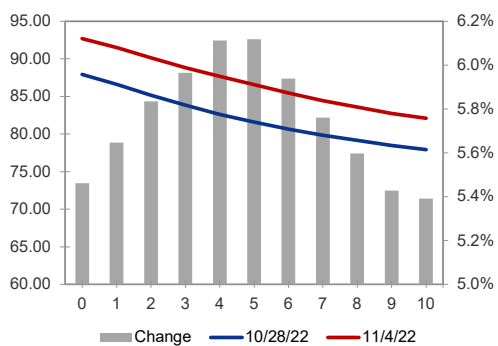
Source: Bloomberg



Crude Oil NYMEX

	11/4/22	10/28/22	Net Chg	%Change
DEC 22	92.70	87.90	4.80	+5.46%
JAN 23	91.50	86.61	4.89	+5.65%
FEB 23	90.14	85.17	4.97	+5.84%
MAR 23	88.83	83.83	5.00	+5.96%
APR 23	87.67	82.62	5.05	+6.11%
MAY 23	86.56	81.57	4.99	+6.12%
JUN 23	85.45	80.66	4.79	+5.94%
JUL 23	84.45	79.85	4.60	+5.76%
AUG 23	83.57	79.14	4.43	+5.60%
SEP 23	82.75	78.49	4.26	+5.43%
OCT 23	82.10	77.90	4.20	+5.39%

Source: Bloomberg



(1) Indications only, valuation as of 11/4/2022; includes \$0.00 in customary and transaction expenses; assumes equal monthly volumes.

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Weekly Rate Summary: November 04, 2022

Weekly Summary and Highlights

- (1) We're approaching the June 30, 2023 deadline for LIBOR cessation. Please reach out to your financial advisor to discuss.
- (2) 1YR U.S. Treasury yield above 4.75%, last occurrence was March of 2001.
- (3) Many providers are beginning to show interest in investment agreements. May be beneficial for project funds, debt service and debt service reserve funds.

Short-Term Interest Rates

Source: Bloomberg

	11/4/22	10/28/22	WoW Chg (bps)	11/4/21	YoY Chg (bps)
SIFMA	2.380%	2.240%	14.0	0.040%	234
SOFR	3.800%	3.050%	75.0	0.050%	375
BSBY (O/N)	3.223%	3.103%	12.0	0.067%	316
Ameribor (O/N)	4.034%	3.321%	71.3	0.092%	394
Fed Funds Effec.	3.830%	3.080%	75.0	0.080%	375
Prime	7.000%	6.250%	75.0	3.250%	375

Interest Rate Forecast Survey

Source: Bloomberg

	Current	Q422	Q123	Q223	Q323
Target Fed Funds	4.000%	4.50%	4.85%	4.75%	4.60%
3MO Term SOFR	4.207%	4.26%	4.51%	4.40%	4.17%
2YR T-Note	4.646%	4.41%	4.36%	4.15%	3.88%
10YR T-Note	4.150%	3.86%	3.83%	3.72%	3.59%
30YR T-Note	4.240%	3.88%	3.89%	3.82%	3.73%

Variable Rate Term Structure

Source: Bloomberg

	11/4/22	10/28/22	WoW Chg (bps)	11/4/21	YoY Chg (bps)
1MO Term SOFR	3.807%	3.744%	6.3	0.042%	376
3MO Term SOFR	4.207%	4.088%	11.8	0.046%	416
1MO BSBY	3.840%	3.615%	22.5	0.059%	378
3MO BSBY	4.413%	4.257%	15.6	0.129%	428
1MO LIBOR	3.858%	3.768%	9.0	0.090%	377
3MO LIBOR	4.550%	4.440%	11.1	0.144%	441

SOFR Forward Swap Rates

Source: Bloomberg

Tenor	Current	3Mo Fwd	6Mo Fwd	1Yr Fwd	2Yr Fwd
5YR	4.117%	4.087%	4.016%	3.854%	3.653%
7YR	3.984%	3.962%	3.909%	3.789%	3.650%
10YR	3.905%	3.893%	3.859%	3.778%	3.687%
20YR	3.783%	3.765%	3.734%	3.666%	3.568%
30YR	3.497%	3.477%	3.449%	3.386%	3.291%

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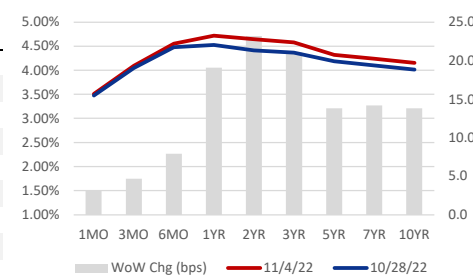
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U.S. Treasury Yields

Source: Bloomberg

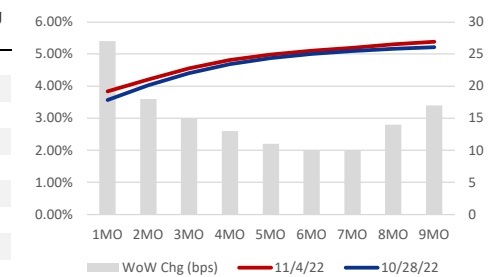
	11/4/22	10/28/22	WoW Chg (bps)
1MO	3.508%	3.477%	3.1
3MO	4.093%	4.046%	4.7
6MO	4.555%	4.476%	7.9
1YR	4.720%	4.529%	19.1
2YR	4.646%	4.414%	23.2
3YR	4.577%	4.366%	21.1
5YR	4.322%	4.184%	13.8
7YR	4.240%	4.098%	14.2
10YR	4.150%	4.012%	13.8



CP (A1/P1) Indicative Rates

Source: Bloomberg

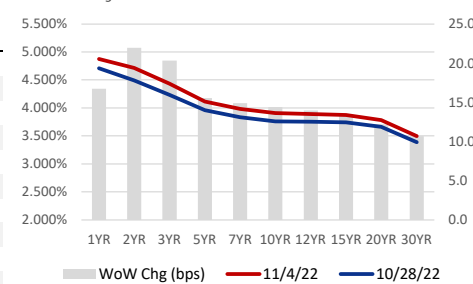
	11/4/22	10/28/22	WoW Chg (bps)
1MO	3.84%	3.57%	27
2MO	4.21%	4.03%	18
3MO	4.56%	4.41%	15
4MO	4.81%	4.68%	13
5MO	4.98%	4.87%	11
6MO	5.10%	5.00%	10
7MO	5.19%	5.09%	10
8MO	5.30%	5.16%	14
9MO	5.39%	5.22%	17



SOFR Swap Rates

Source: Bloomberg

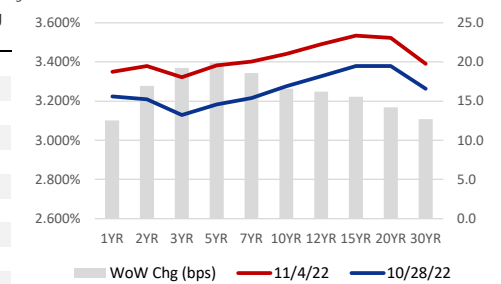
	11/4/22	10/28/22	WoW Chg (bps)
1YR	4.876%	4.709%	16.8
2YR	4.714%	4.494%	22.0
3YR	4.435%	4.232%	20.3
5YR	4.117%	3.961%	15.6
7YR	3.984%	3.835%	14.9
10YR	3.905%	3.761%	14.4
12YR	3.891%	3.751%	14.0
15YR	3.876%	3.741%	13.5
20YR	3.783%	3.661%	12.2
30YR	3.497%	3.390%	10.7



Tax Exempt Swap Rates

Source: Bloomberg

	11/4/22	10/28/22	WoW Chg (bps)
1YR	3.350%	3.224%	12.5
2YR	3.379%	3.209%	16.9
3YR	3.323%	3.130%	19.2
5YR	3.382%	3.183%	19.9
7YR	3.402%	3.216%	18.6
10YR	3.442%	3.276%	16.6
12YR	3.490%	3.328%	16.2
15YR	3.534%	3.379%	15.6
20YR	3.522%	3.380%	14.2
30YR	3.390%	3.263%	12.7



Data as of November 04, 2022 1:58 PM Central Time.

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Weekly Commodity Sheet - Energy: November 11, 2022

HTS Commodities

Active Commodity Contracts

Source: Bloomberg

	11/11/22	11/4/22	Net Chg	11/11/21	YoY Net	
					Chg	YoY %Chg
RBOB Gasoline NYMEX (\$/gal)	2.616	2.735	-0.119	2.318	0.298	+12.85%
ULSD NYMEX (HO) (\$/gal)	3.564	3.915	-0.351	2.447	1.117	+45.65%
Natural Gas NYMEX (\$/mmbtu)	5.870	6.400	-0.530	5.149	0.721	+14.00%
Crude Oil NYMEX (\$/barrel)	88.980	92.610	-3.630	81.590	7.390	+9.06%

Fixed Price Projection¹

Source: Bloomberg

	1Q23	1Q23	2Q23	3Q23	4Q23
RBOB Gasoline NYMEX (\$/gal)	2.607	2.688	2.518	2.518	2.319
ULSD NYMEX (HO) (\$/gal)	3.276	3.058	2.964	2.964	2.824
Natural Gas NYMEX (\$/mmbtu)	5.871	4.725	4.840	4.840	5.348
Crude Oil NYMEX (\$/barrel)	85.870	83.040	80.590	80.590	76.830

Commentary

Despite the US WTI crude and crude product futures markets closing lower this week, all three futures markets enjoyed a China re-opening rally on Friday. The prompt NYMEX WTI futures contract was trading -\$4.13/bbl on the week, but was +\$2/bbl from Thursday. While the noise about China relaxing their stringent zero-COVID tolerance has been building over the last two/three weeks, the most recent domestic mainland policy recalibration helped give the listed US crude and products futures a shot in the arm. Thoughts about increasing Chinese demand and a recalibration of the global supply structure that can result in reduced Middle East exports to the EU and enhanced US exports amid slowing OPEC+ production helped support prices. The EIA's Short-Term Energy Outlook (STEO) was released this week. The EIA estimates that 2023 US crude production will rise by .48 mmbd to 12.31 mmbd which represented a negative price tone for the 2023 futures contracts.

The domestic gasoline and diesel narratives did not change and both markets remain structurally tight. The prompt NYMEX ULSD and RBOB futures were softer this week as the prompt contracts fell by 9% WoW and 5% WoW respectively. The STEO estimates that US heating oil and diesel prices will continue to average "more than \$5/gal" for the balance of 2022. The STEO's assessment of domestic heating oil demand for the '22/'23 winter remains unchanged and is estimating higher prices and consumption. Similar to our estimates, the STEO forecasts that US distillate stocks will remain constrained in 2023 as EU imports will decline. While the STEO cites that slowing economic conditions can suppress both distillate and gasoline demand in 2023, we see the combination of tight domestic stocks along with limited refining capacity, lack of imports and robust US exports as catalysts that will limit downside moves in the cash and futures markets and support prices.

NYMEX natural gas futures had another volatile week as both supply and demand variables inflicted heightened intraday volatility on the prompt contract. Despite trading down 8% WoW to \$5.85/mmBtu, on Monday the December contract traded in a 11% range. On Monday, 11/7/22 the intraday price action of the December'22 contract moved 12.8% higher from the previous close and then traded in a \$.65/mmBtu, or 10% intraday range. On Tuesday, 11/8/22 the same contract fell by 11% from the 11/7/22 close and traded in a \$.76/mmBtu or 12.5% intraday range. The intraday price ranges on 11/7 and 11/8 were the third and first largest since early September.

The short-run natural gas narrative continues to rotate around bullish weather inputs and bearish supply news involving the delayed opening of Freeport's LNG export terminal. The STEO estimates that by March 2023 domestic natural gas stocks will be -8% below the 5-year average. The EIA is forecasting that Q1'23 prices will start to soften and that CY 2023 prices will decline as annual production is expected to rise. The STEO also estimates that 2023 LNG exports will increase by 13% YoY and 2023 production will increase by +1.2% YoY. We believe that these estimates are credible, but we also see the opportunity that lower prices could increase LNG export demand which can limit the 2023 price depreciation. We expect Q1'23 prices to remain volatile as headline news from the US and the EU along with China can reshape the demand landscape.

(1) Indications only, valuation as of 11/11/2022; includes \$0.00 in customary and transaction expenses; assumes equal monthly volumes.

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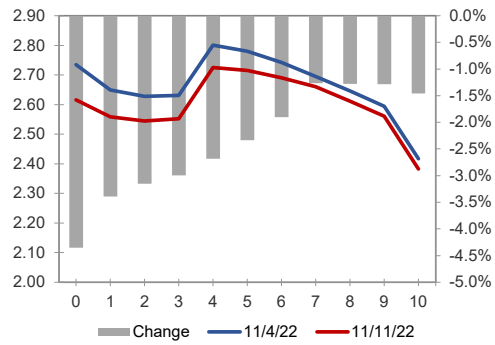
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RBOB Gasoline NYMEX

	11/11/22	11/4/22	Net Chg	%Change
DEC 22	2.62	2.73	-0.12	-4.35%
JAN 23	2.56	2.65	-0.09	-3.39%
FEB 23	2.54	2.63	-0.08	-3.15%
MAR 23	2.55	2.63	-0.08	-2.99%
APR 23	2.73	2.80	-0.08	-2.68%
MAY 23	2.72	2.78	-0.06	-2.33%
JUN 23	2.69	2.74	-0.05	-1.90%
JUL 23	2.66	2.69	-0.03	-1.27%
AUG 23	2.61	2.65	-0.03	-1.28%
SEP 23	2.56	2.59	-0.03	-1.28%
OCT 23	2.38	2.42	-0.04	-1.46%

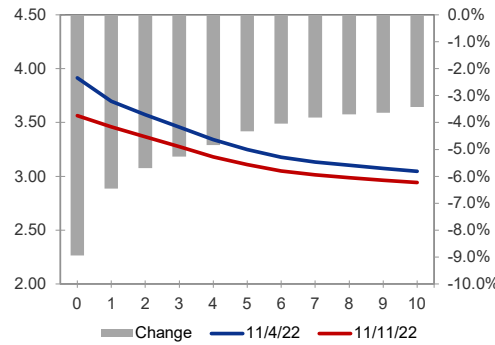
Source: Bloomberg



ULSD NYMEX (formerly Heating Oil)

	11/11/22	11/4/22	Net Chg	%Change
DEC 22	3.56	3.91	-0.35	-8.94%
JAN 23	3.46	3.70	-0.24	-6.46%
FEB 23	3.37	3.57	-0.20	-5.69%
MAR 23	3.28	3.46	-0.18	-5.26%
APR 23	3.18	3.34	-0.16	-4.84%
MAY 23	3.11	3.25	-0.14	-4.33%
JUN 23	3.05	3.18	-0.13	-4.04%
JUL 23	3.01	3.13	-0.12	-3.82%
AUG 23	2.99	3.10	-0.11	-3.69%
SEP 23	2.96	3.07	-0.11	-3.64%
OCT 23	2.94	3.05	-0.10	-3.43%

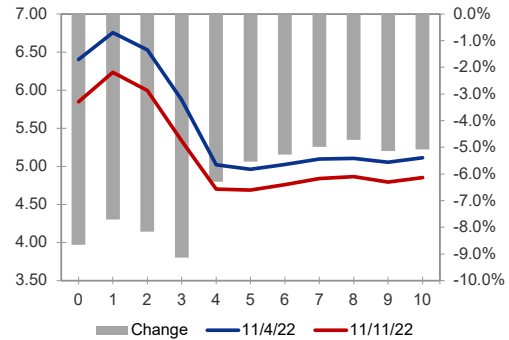
Source: Bloomberg



Natural Gas NYMEX

	11/11/22	11/4/22	Net Chg	%Change
DEC 22	5.85	6.40	-0.55	-8.66%
JAN 23	6.23	6.75	-0.52	-7.71%
FEB 23	6.00	6.53	-0.53	-8.16%
MAR 23	5.34	5.87	-0.54	-9.14%
APR 23	4.70	5.02	-0.32	-6.30%
MAY 23	4.69	4.96	-0.28	-5.54%
JUN 23	4.76	5.03	-0.27	-5.27%
JUL 23	4.84	5.09	-0.25	-4.99%
AUG 23	4.87	5.11	-0.24	-4.72%
SEP 23	4.80	5.06	-0.26	-5.14%
OCT 23	4.85	5.11	-0.26	-5.09%

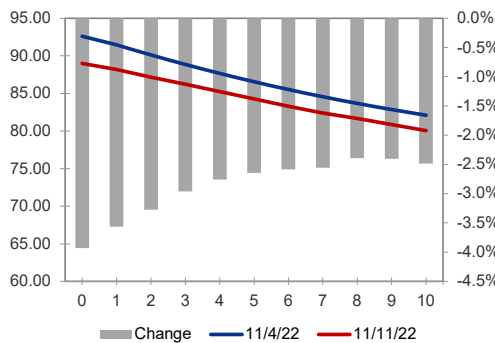
Source: Bloomberg



Crude Oil NYMEX

	11/11/22	11/4/22	Net Chg	%Change
DEC 22	88.97	92.61	-3.64	-3.93%
JAN 23	88.19	91.45	-3.26	-3.56%
FEB 23	87.17	90.12	-2.95	-3.27%
MAR 23	86.20	88.83	-2.63	-2.96%
APR 23	85.23	87.65	-2.42	-2.76%
MAY 23	84.25	86.54	-2.29	-2.65%
JUN 23	83.29	85.50	-2.21	-2.58%
JUL 23	82.39	84.55	-2.16	-2.55%
AUG 23	81.65	83.65	-2.00	-2.39%
SEP 23	80.86	82.85	-1.99	-2.40%
OCT 23	80.06	82.10	-2.04	-2.48%

Source: Bloomberg



(1) Indications only, valuation as of 11/11/2022; includes \$0.00 in customary and transaction expenses; assumes equal monthly volumes.

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Weekly Rate Summary: November 11, 2022

Weekly Summary and Highlights

- (1) ISDA Fallback Rates for USD LIBOR: 1-mo LIBOR -> SOFR (daily) + 0.11448%; 3-mo LIBOR -> SOFR (daily) + 0.26161%
- (2) 6-mo CP (A1/P1 rated) is yielding 60+ bps over T-bills; could be an option for short-term investment if it is permitted
- (3) Lower than expected CPI print created large rally in the US Treasuries on Thursday

Short-Term Interest Rates

Source: Bloomberg

	11/10/22	11/4/22	WoW Chg (bps)	11/10/21	YoY Chg (bps)
SIFMA	2.190%	2.380%	-19.0	0.040%	215
SOFR	3.780%	3.800%	-2.0	0.050%	373
BSBY (O/N)	3.868%	3.223%	64.6	0.068%	380
Ameribor (O/N)	3.978%	3.991%	-1.4	0.081%	390
Fed Funds Effec.	3.830%	3.830%	0.0	0.080%	375
Prime	7.000%	7.000%	0.0	3.250%	375

Interest Rate Forecast Survey

Source: Bloomberg

	Current	Q422	Q123	Q223	Q323
Target Fed Funds	4.000%	4.50%	4.85%	4.75%	4.60%
3MO Term SOFR	4.265%	4.26%	4.51%	4.40%	4.17%
2YR T-Note	4.332%	4.41%	4.36%	4.15%	3.88%
10YR T-Note	3.813%	3.86%	3.83%	3.72%	3.59%
30YR T-Note	4.051%	3.88%	3.89%	3.82%	3.73%

Variable Rate Term Structure

Source: Bloomberg

	11/10/22	11/4/22	WoW Chg (bps)	11/10/21	YoY Chg (bps)
1MO Term SOFR	3.794%	3.807%	-1.2	0.043%	375
3MO Term SOFR	4.265%	4.207%	5.9	0.046%	422
1MO BSBY	3.830%	3.840%	-1.0	0.059%	377
3MO BSBY	4.470%	4.413%	5.7	0.141%	433
1MO LIBOR	3.875%	3.858%	1.7	0.089%	379
3MO LIBOR	4.606%	4.550%	5.6	0.154%	445

SOFR Forward Swap Rates

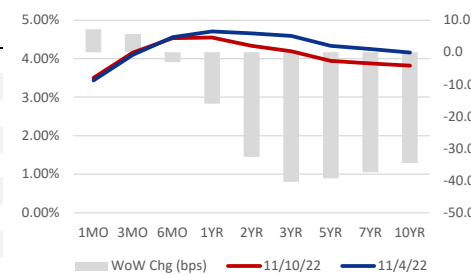
Source: Bloomberg

Tenor	Current	3Mo Fwd	6Mo Fwd	1Yr Fwd	2Yr Fwd
5YR	3.706%	3.650%	3.564%	3.388%	3.215%
7YR	3.577%	3.538%	3.477%	3.351%	3.251%
10YR	3.527%	3.506%	3.468%	3.391%	3.334%
20YR	3.493%	3.472%	3.443%	3.381%	3.315%
30YR	3.280%	3.258%	3.230%	3.170%	3.094%

U.S. Treasury Yields

Source: Bloomberg

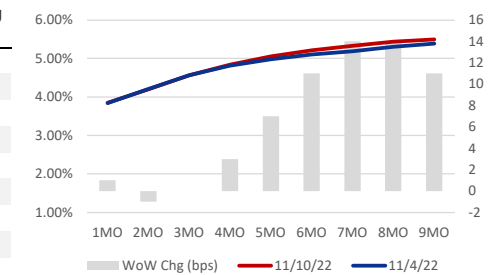
	11/10/22	11/4/22	WoW Chg (bps)
1MO	3.508%	3.436%	7.2
3MO	4.157%	4.100%	5.7
6MO	4.529%	4.560%	-3.1
1YR	4.549%	4.709%	-16.0
2YR	4.332%	4.658%	-32.6
3YR	4.187%	4.591%	-40.4
5YR	3.938%	4.331%	-39.3
7YR	3.876%	4.250%	-37.4
10YR	3.813%	4.158%	-34.5



CP (A1/P1) Indicative Rates

Source: Bloomberg

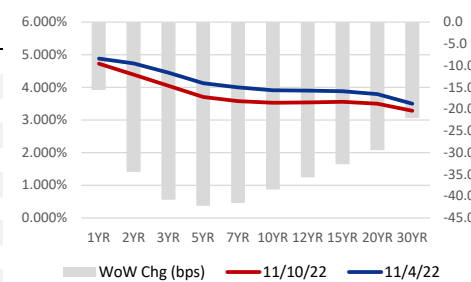
	11/10/22	11/4/22	WoW Chg (bps)
1MO	3.85%	3.84%	1
2MO	4.20%	4.21%	-1
3MO	4.56%	4.56%	0
4MO	4.84%	4.81%	3
5MO	5.05%	4.98%	7
6MO	5.21%	5.10%	11
7MO	5.33%	5.19%	14
8MO	5.44%	5.30%	14
9MO	5.50%	5.39%	11



SOFR Swap Rates

Source: Bloomberg

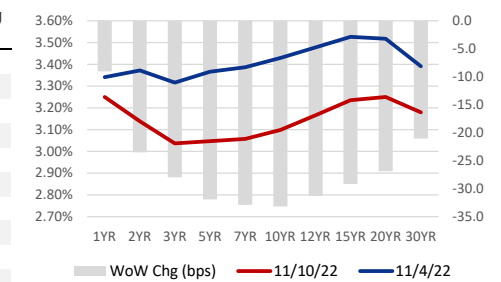
	11/10/22	11/4/22	WoW Chg (bps)
1YR	4.727%	4.883%	-15.6
2YR	4.384%	4.728%	-34.5
3YR	4.043%	4.451%	-40.8
5YR	3.706%	4.128%	-42.2
7YR	3.577%	3.993%	-41.6
10YR	3.527%	3.912%	-38.5
12YR	3.539%	3.896%	-35.7
15YR	3.554%	3.881%	-32.7
20YR	3.493%	3.787%	-29.4
30YR	3.280%	3.502%	-22.1



Tax Exempt Swap Rates

Source: Bloomberg

	11/10/22	11/4/22	WoW Chg (bps)
1YR	3.250%	3.340%	-9.0
2YR	3.138%	3.373%	-23.5
3YR	3.037%	3.317%	-28.0
5YR	3.048%	3.367%	-31.9
7YR	3.058%	3.386%	-32.9
10YR	3.098%	3.430%	-33.2
12YR	3.165%	3.478%	-31.3
15YR	3.235%	3.527%	-29.2
20YR	3.249%	3.518%	-26.9
30YR	3.180%	3.390%	-21.1



Data as of November 11, 2022 2:00 PM Central Time.

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Weekly Commodity Sheet - Energy: November 18, 2022

HTS Commodities

Active Commodity Contracts

Source: Bloomberg

	11/18/22	11/11/22	Net Chg	11/18/21	YoY Net	
					Chg	YoY %Chg
RBOB Gasoline NYMEX (\$/gal)	2.420	2.610	-0.190	2.294	0.126	+5.47%
ULSD NYMEX (HO) (\$/gal)	3.515	3.555	-0.041	2.384	1.131	+47.42%
Natural Gas NYMEX (\$/mmbtu)	6.361	5.879	0.482	4.902	1.459	+29.76%
Crude Oil NYMEX (\$/barrel)	80.230	88.960	-8.730	79.010	1.220	+1.54%

Fixed Price Projection¹

Source: Bloomberg

	1Q23	1Q23	2Q23	3Q23	4Q23
RBOB Gasoline NYMEX (\$/gal)	2.409	2.514	2.367	2.367	2.196
ULSD NYMEX (HO) (\$/gal)	3.201	2.966	2.883	2.883	2.753
Natural Gas NYMEX (\$/mmbtu)	6.335	4.791	4.921	4.921	5.431
Crude Oil NYMEX (\$/barrel)	79.570	78.290	76.740	76.740	73.900

Commentary

This week the crude oil and crude products futures markets moved lower as the fundamental and macroeconomic data were the bearish inputs. The prompt WTI futures contract was trading at \$80.12/bbl down 9%, or -\$8.84/bbl from the close on Friday, November 11. At one point during Friday's session the contract traded down to \$77.84/bbl which was the lowest price since September 28, 2022.

This week the negative price action in the crude complex was attributed to the increasingly challenging US/global economic outlook, fresh hawkish comments by various Fed presidents, and spiking COVID cases in China. While these are the same independent variables that have been driving the crude oil narrative over the last 90 days, their intensity was amplified this week. Questions about future energy demand were stoked by St. Louis Fed President James Bullard who commented that the overnight lending rate should rise to 5% to 5.25% as "a minimum level." San Francisco President Mary Daly commented that the overnight rates should be "somewhere from 4.75% to 5.25% as a "reasonable place". New daily COVID cases in major Chinese cities are surging to record highs, and the country continues to extend strict economic crimping restrictions. Also contributing to Friday's plunge was the expiry of options contracts on the December-January spread. There are almost 13 million barrels of put options that would profit if the spread expires with the December below January.

The diesel and the gasoline futures markets were softer as weakening domestic economic outlook, increasing diesel imports and incremental stocks growth were bearish inputs. The prompt NYMEX ULSD futures contract was trading at \$35.191/gal which was -\$0.362/gal from last Friday's close. This week an estimated 280k/bbl of distillate arrived by ship in New York harbor and another 500k/bbl is expected to arrive next week. These increased supplies helped pressure the front part of the ULSD futures curve.

The White House continues searching for ways to grow domestic fuel inventories and this week President Biden discussed a plan that would require oil companies to store more fuel inside the US. East Coast distillates inventories, which include diesel and heating oil, are the lowest on record for this time of year. In New England, where more people burn fuel to heat their homes than anywhere else in the country, stocks are at the bottom of the 20-year range. So far in 2022, legislation to expand the government's 1 million-barrel Northeast Home Heating Oil Reserve is already pending on Capitol Hill and the Administration has been weighing a ban on exporting liquid fuels. Despite this week's bearish supply narrative, we continue to be supportive of diesel prices and see room for price appreciation. Historically low diesel and heating oil stocks in key regions of the US combined with seasonal winter demand and slowing imports are each structurally bullish inputs that can help keep futures and cash prices in an upward trend.

NYMEX natural gas futures were higher this week. The prompt NYMEX natural gas futures contract was trading +\$0.48/mmBtu at \$6.34/mmBtu from last Friday. Colder than normal weather throughout much of the lower 48 states through November 21, was a bullish short term price input. The medium range forecast, through November 26, is "significantly colder" for the eastern half of the US and temperatures are expected be "below average" which can keep futures prices elevated.

Last week US gas inventories rose by 65 bcf. The stocks build is a record for this time of the calendar year. At 3,644 bcf total, US gas stocks are still below the 5-year average but are incrementally, +<.5%, +26 bcf above 2021 levels. The EIA's Rig Productivity Report estimates that new well gas production in December will rise by 36,000 cubic feet/day from November. We see this as a bearish input for futures prices. We view US natural gas prices experiencing fundamental driven volatility over the next 30-60 days with bullish and bearish inputs. As the 2023 domestic and global supply and demand structure gains more clarity, we see NYMEX gas futures trading in a tight range.

(1) Indications only, valuation as of 11/18/2022; includes \$0.00 in customary and transaction expenses; assumes equal monthly volumes.

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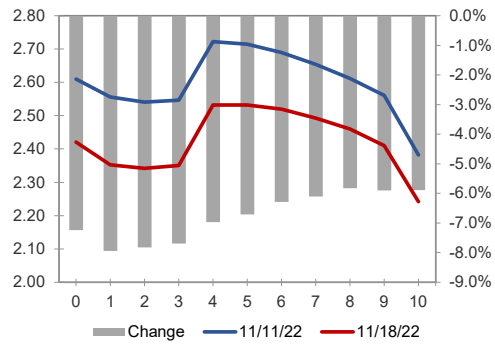
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RBOB Gasoline NYMEX

	11/18/22	11/11/22	Net Chg	%Change
DEC 22	2.42	2.61	-0.19	-7.24%
JAN 23	2.35	2.56	-0.20	-7.94%
FEB 23	2.34	2.54	-0.20	-7.83%
MAR 23	2.35	2.55	-0.20	-7.70%
APR 23	2.53	2.72	-0.19	-6.97%
MAY 23	2.53	2.71	-0.18	-6.71%
JUN 23	2.52	2.69	-0.17	-6.29%
JUL 23	2.49	2.65	-0.16	-6.11%
AUG 23	2.46	2.61	-0.15	-5.82%
SEP 23	2.41	2.56	-0.15	-5.90%
OCT 23	2.24	2.38	-0.14	-5.89%

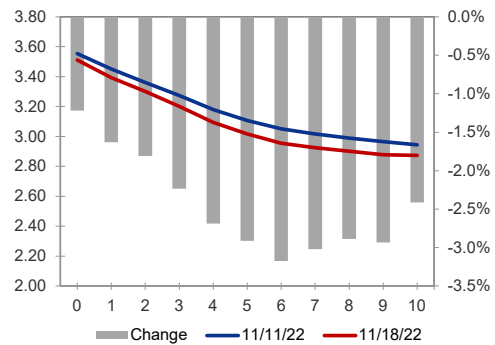
Source: Bloomberg



ULSD NYMEX (formerly Heating Oil)

	11/18/22	11/11/22	Net Chg	%Change
DEC 22	3.51	3.56	-0.04	-1.22%
JAN 23	3.39	3.45	-0.06	-1.63%
FEB 23	3.30	3.36	-0.06	-1.81%
MAR 23	3.20	3.27	-0.07	-2.24%
APR 23	3.09	3.18	-0.09	-2.69%
MAY 23	3.02	3.11	-0.09	-2.91%
JUN 23	2.95	3.05	-0.10	-3.18%
JUL 23	2.93	3.02	-0.09	-3.02%
AUG 23	2.90	2.99	-0.09	-2.89%
SEP 23	2.88	2.97	-0.09	-2.93%
OCT 23	2.87	2.94	-0.07	-2.41%

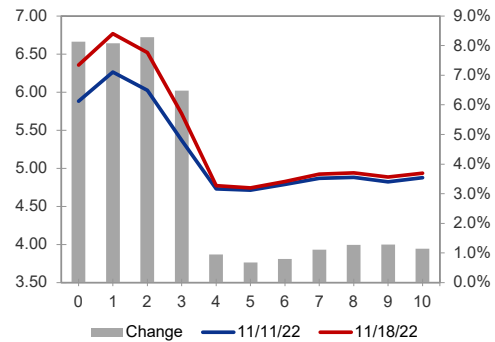
Source: Bloomberg



Natural Gas NYMEX

	11/18/22	11/11/22	Net Chg	%Change
DEC 22	6.36	5.88	0.48	+8.13%
JAN 23	6.77	6.26	0.51	+8.08%
FEB 23	6.52	6.02	0.50	+8.29%
MAR 23	5.72	5.37	0.35	+6.48%
APR 23	4.77	4.73	0.04	+0.95%
MAY 23	4.74	4.71	0.03	+0.68%
JUN 23	4.83	4.79	0.04	+0.79%
JUL 23	4.92	4.87	0.05	+1.11%
AUG 23	4.94	4.88	0.06	+1.27%
SEP 23	4.89	4.82	0.06	+1.29%
OCT 23	4.94	4.88	0.06	+1.15%

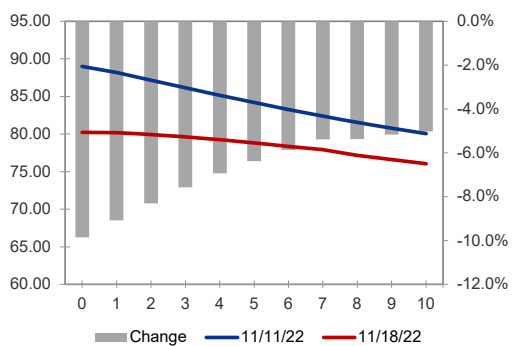
Source: Bloomberg



Crude Oil NYMEX

	11/18/22	11/11/22	Net Chg	%Change
DEC 22	80.20	88.96	-8.76	-9.85%
JAN 23	80.16	88.16	-8.00	-9.07%
FEB 23	79.93	87.17	-7.24	-8.31%
MAR 23	79.61	86.14	-6.53	-7.58%
APR 23	79.24	85.14	-5.90	-6.93%
MAY 23	78.81	84.18	-5.37	-6.38%
JUN 23	78.36	83.25	-4.89	-5.87%
JUL 23	77.93	82.37	-4.44	-5.39%
AUG 23	77.16	81.54	-4.38	-5.37%
SEP 23	76.59	80.77	-4.18	-5.18%
OCT 23	76.04	80.06	-4.02	-5.02%

Source: Bloomberg



(1) Indications only, valuation as of 11/18/2022; includes \$0.00 in customary and transaction expenses; assumes equal monthly volumes.

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Weekly Rate Summary: November 18, 2022

Weekly Summary and Highlights

- (1) ISDA Fallback Rates for USD LIBOR: 1-mo LIBOR -> SOFR (daily) + 0.11448%; 3-mo LIBOR -> SOFR (daily) + 0.26161%
- (2) 1MO and 3MO Term SOFR swaps might be available as an alternative reference rate to daily SOFR.
- (3) HAPPY THANKSGIVING!!! Wishing you and your family safe travels this holiday season.

Short-Term Interest Rates

Source: Bloomberg

	11/18/22	11/10/22	WoW Chg (bps)	11/18/21	YoY Chg (bps)
SIFMA	2.040%	2.190%	-15.0	0.040%	200
SOFR	3.800%	3.780%	2.0	0.050%	375
BSBY (O/N)	3.869%	3.868%	0.0	0.073%	380
Ameribor (O/N)	3.992%	3.978%	1.4	0.088%	390
Fed Funds Effec.	3.830%	3.830%	0.0	0.080%	375
Prime	7.000%	7.000%	0.0	3.250%	375

Interest Rate Forecast Survey

Source: Bloomberg

	Current	Q422	Q123	Q223	Q323
Target Fed Funds	4.000%	4.50%	5.00%	5.00%	4.90%
3MO Term SOFR	4.284%	4.46%	4.81%	4.79%	4.64%
2YR T-Note	4.452%	4.56%	4.56%	4.36%	4.08%
10YR T-Note	3.766%	4.03%	4.01%	3.89%	3.74%
30YR T-Note	3.875%	3.88%	3.89%	3.82%	3.73%

Variable Rate Term Structure

Source: Bloomberg

	11/18/22	11/10/22	WoW Chg (bps)	11/18/21	YoY Chg (bps)
1MO Term SOFR	3.932%	3.794%	13.7	0.047%	388
3MO Term SOFR	4.301%	4.265%	3.5	0.053%	425
1MO BSBY	3.854%	3.830%	2.4	0.056%	380
3MO BSBY	4.461%	4.470%	-0.9	0.151%	431
1MO LIBOR	3.957%	3.873%	8.4	0.091%	387
3MO LIBOR	4.665%	4.650%	1.5	0.160%	451

SOFR Forward Swap Rates

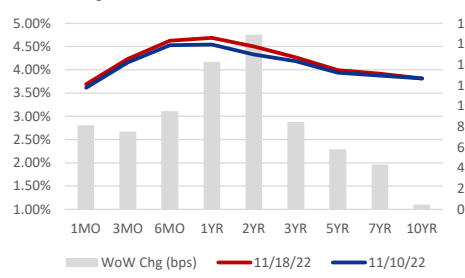
Source: Bloomberg

Tenor	Current	3Mo Fwd	6Mo Fwd	1Yr Fwd	2Yr Fwd
5YR	3.760%	3.694%	3.600%	3.399%	3.183%
7YR	3.601%	3.554%	3.486%	3.340%	3.197%
10YR	3.515%	3.485%	3.442%	3.348%	3.261%
20YR	3.448%	3.422%	3.388%	3.316%	3.230%
30YR	3.206%	3.181%	3.150%	3.084%	2.997%

U.S. Treasury Yields

Source: Bloomberg

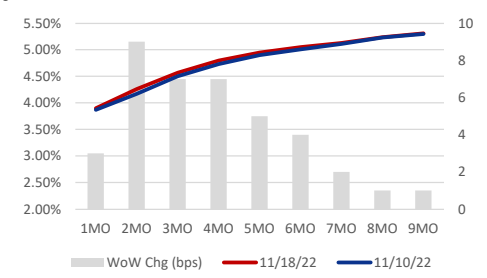
	11/18/22	11/10/22	WoW Chg (bps)
1MO	3.696%	3.615%	8.1
3MO	4.232%	4.157%	7.5
6MO	4.624%	4.529%	9.5
1YR	4.692%	4.549%	14.3
2YR	4.501%	4.332%	16.9
3YR	4.272%	4.187%	8.5
5YR	3.996%	3.938%	5.8
7YR	3.919%	3.876%	4.3
10YR	3.818%	3.813%	0.5



CP (A1/P1) Indicative Rates

Source: Bloomberg

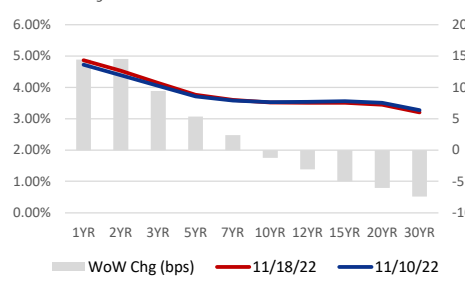
	11/18/22	11/10/22	WoW Chg (bps)
1MO	3.90%	3.87%	3
2MO	4.26%	4.17%	9
3MO	4.57%	4.50%	7
4MO	4.80%	4.73%	7
5MO	4.95%	4.90%	5
6MO	5.05%	5.01%	4
7MO	5.13%	5.11%	2
8MO	5.24%	5.23%	1
9MO	5.31%	5.30%	1



SOFR Swap Rates

Source: Bloomberg

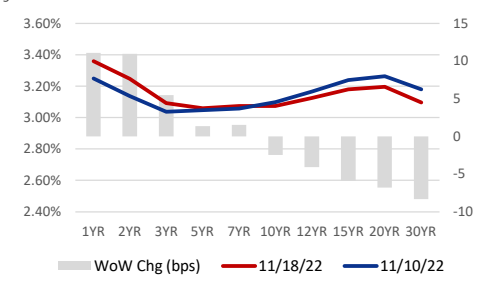
	11/18/22	11/10/22	WoW Chg (bps)
1YR	4.870%	4.726%	14.4
2YR	4.529%	4.383%	14.5
3YR	4.138%	4.044%	9.4
5YR	3.760%	3.706%	5.3
7YR	3.601%	3.577%	2.4
10YR	3.515%	3.527%	-1.2
12YR	3.509%	3.540%	-3.1
15YR	3.508%	3.558%	-5.0
20YR	3.448%	3.509%	-6.1
30YR	3.206%	3.280%	-7.4



Tax Exempt Swap Rates

Source: Bloomberg

	11/18/22	11/10/22	WoW Chg (bps)
1YR	3.360%	3.249%	11.1
2YR	3.247%	3.137%	11.0
3YR	3.092%	3.037%	5.5
5YR	3.061%	3.048%	1.3
7YR	3.073%	3.057%	1.5
10YR	3.073%	3.098%	-2.5
12YR	3.125%	3.166%	-4.1
15YR	3.180%	3.239%	-5.9
20YR	3.196%	3.264%	-6.8
30YR	3.096%	3.179%	-8.3



Data as of November 18, 2022 12:50 PM Central Time.

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