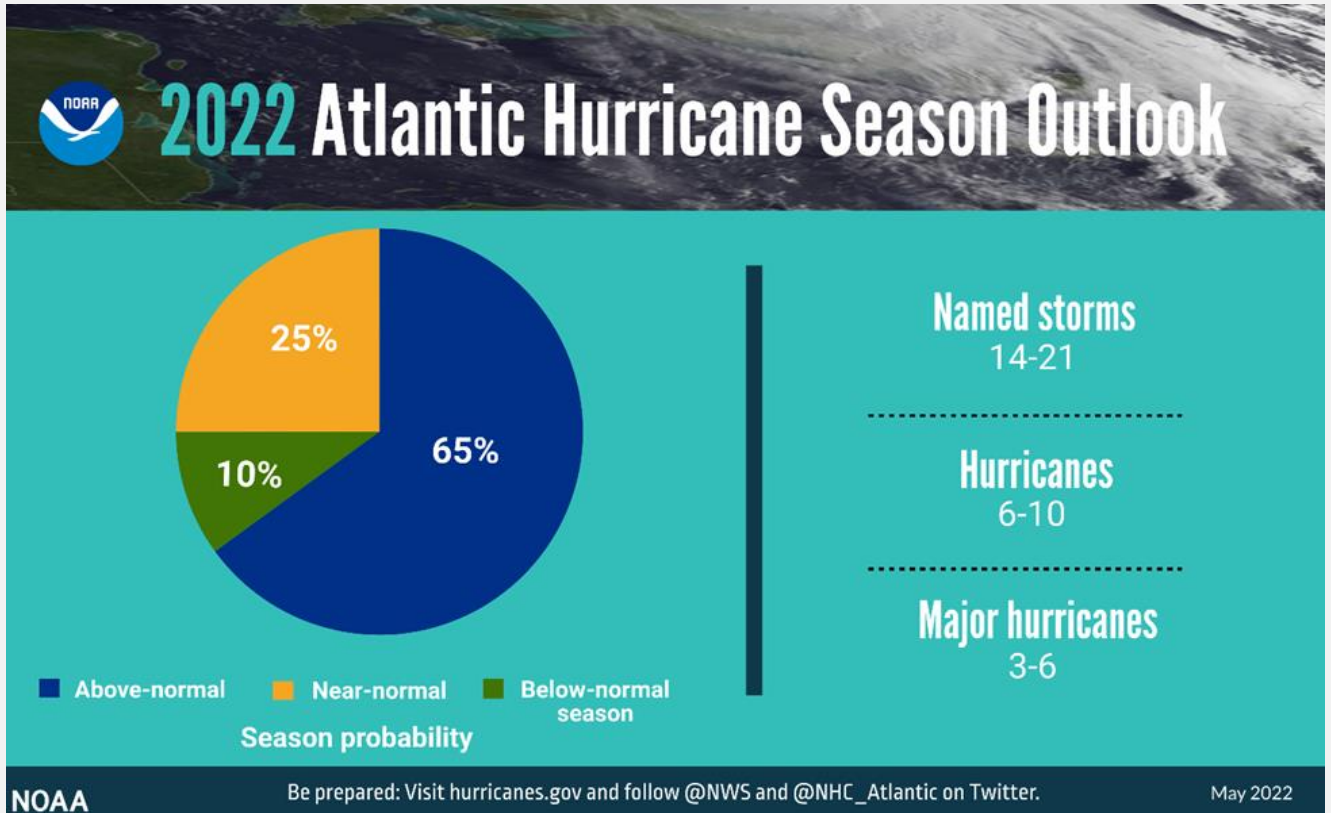














This week we start with an update on the upcoming hurricane season. NOAA predicts an above-normal 2022 Atlantic Hurricane Season. This would be the 7th consecutive above-average hurricane season. The increased activity anticipated this hurricane season is attributed to several climate factors including the ongoing La Niña that is likely to persist throughout the hurricane season.

La Nina conditions are representative of:

- a warmer-than-avg sea surface temperatures in the Atlantic Ocean and the Caribbean Sea,
- a weaker tropical Atlantic trade winds, and
- an enhanced west African monsoon (the enhanced west African monsoon supports stronger African Easterly waves, which seed many of the strongest and longest-lived hurricanes during most seasons)



Maxar Weather reported similar activity for this upcoming hurricane season. Here is their most current season forecast:

	Named Storms	Hurricanes	Major Hurricanes
Maxar Outlook			
2021 Actuals			
10Y Average (2012-2021)			
30Y Normal (1991-2020)			

(posted on enelyst.com)

For the energy markets, hurricanes can have both a supply and demand impact. Four main factors can lead to various scenarios:

- 1. Path** – Gulf of Mexico can disrupt production while the up the East Coast has a higher probability of reducing demand (destruction of power infrastructure and cooler temps)
- 2. Intensity** – wind speeds which are rated in terms of Cat 1 to 5. The Saffir-Simpson Hurricane Scale defines hurricane strength by categories. A Category 1 storm is the weakest hurricane (winds 74-95 mph or 64-82 kt); a Category 5 hurricane is the strongest (winds greater than 155 mph or 135 kt).
- 3. Speed** - A hurricane's forward speed averages around 15-20 mph. However, some hurricanes stall, often causing destructive heavy rain and storm surge.
- 4. Landfall** – massive impact to demand where heavy winds, heavy rains/flooding can damage power infrastructure and reduce onshore infrastructure (including refineries, gas processing, petrochemical plants, and LNG export facilities).

We will be keeping a close eye on hurricane season. Here are a couple of important links:

This NOAA page shows upcoming disturbances, TS, and active hurricanes:

[National Hurricane Center \(noaa.gov\)](https://www.noaa.gov/hurricane)

The BSEE track rig/platform evacuations and oil and gas production outages during GoM storm events:

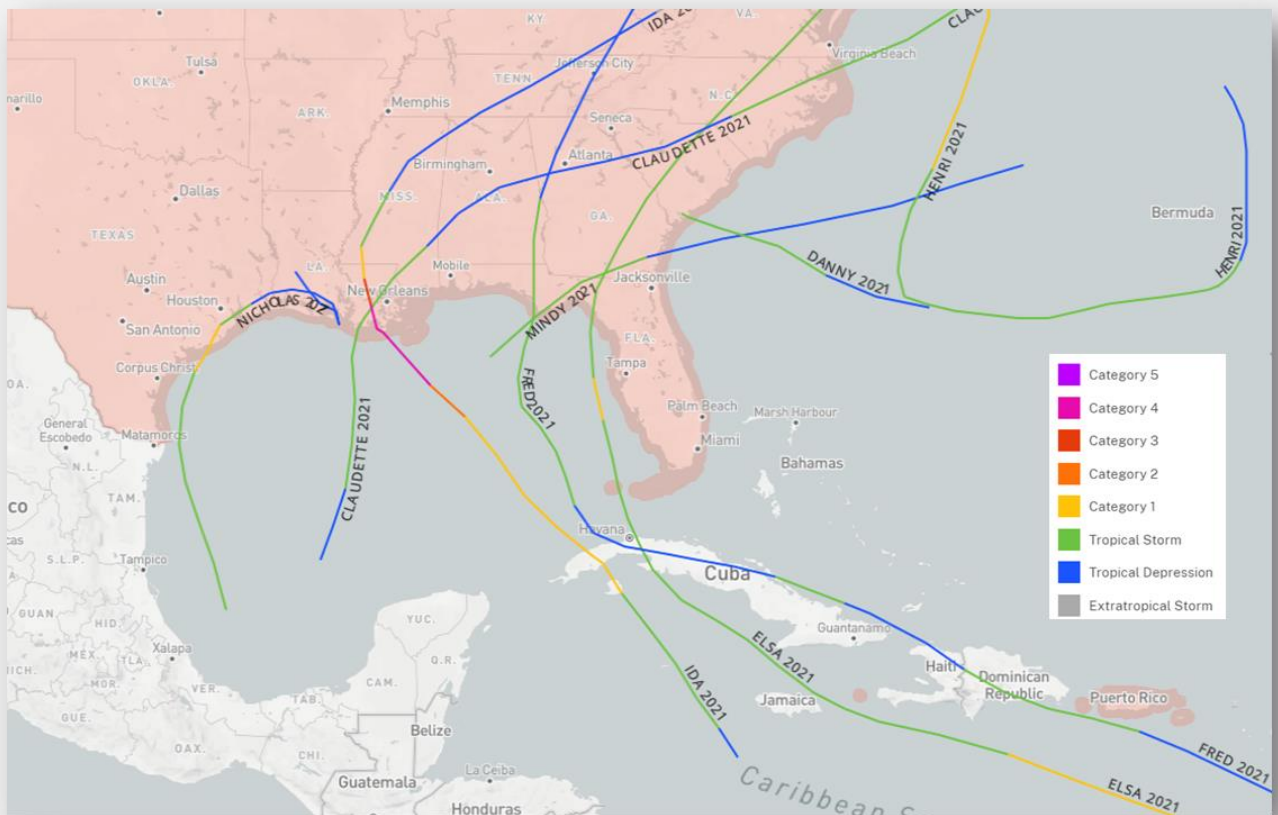
[Activity Statistics Update | Bureau of Safety and Environmental Enforcement \(bsee.gov\)](https://www.bsee.gov/activity-statistics-update)

Here is a map of all energy infrastructure that is in the path of a hurricane:

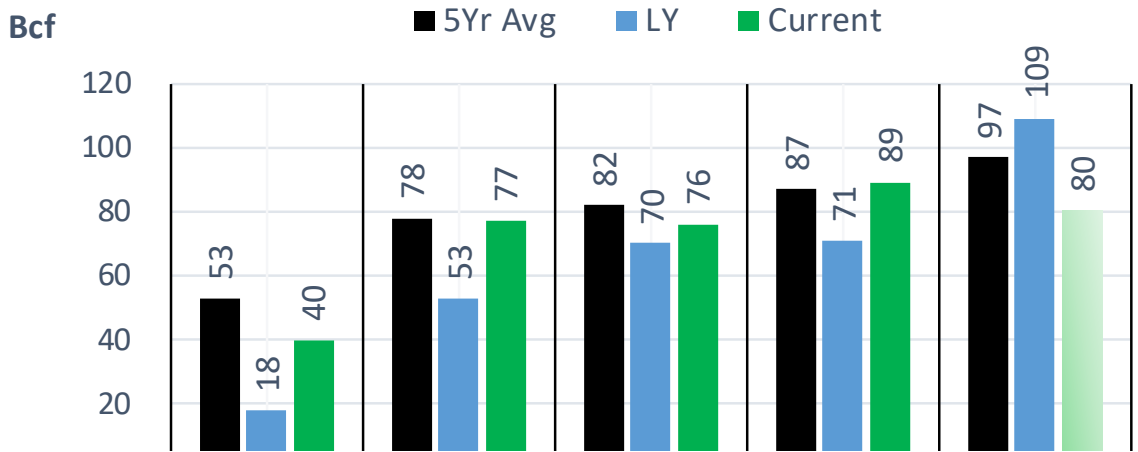
[Hurricanes, Cyclones, and Typhoons | U.S. Energy Atlas \(eia.gov\)](https://www.eia.gov/hurricanes-cyclones-and-typhoons)

This NOAA tool allows you to track any historical storm:

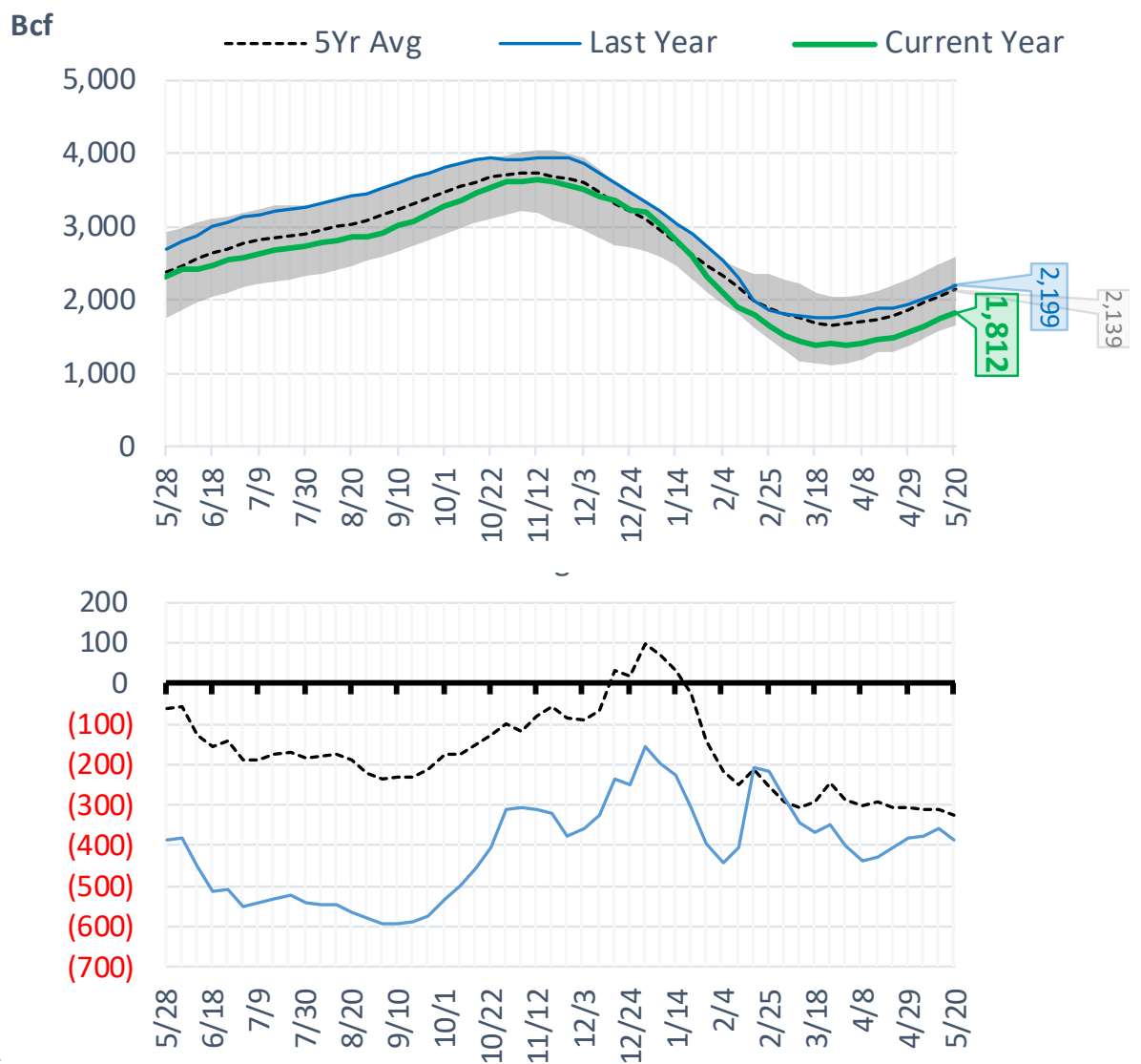
<https://oceanservice.noaa.gov/news/historical-hurricanes/>



Total Lower 48 YoY Weekly Change



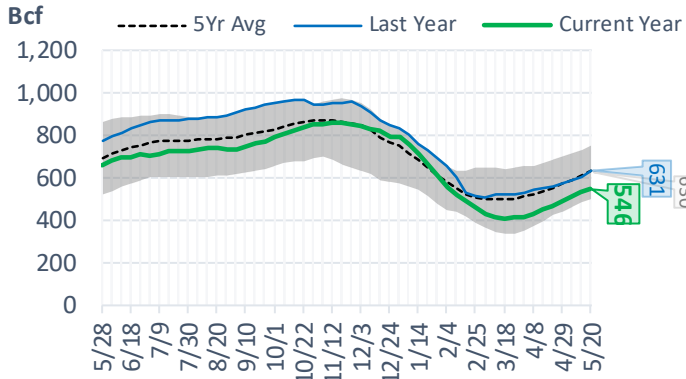
Total Lower 48 Storage Levels



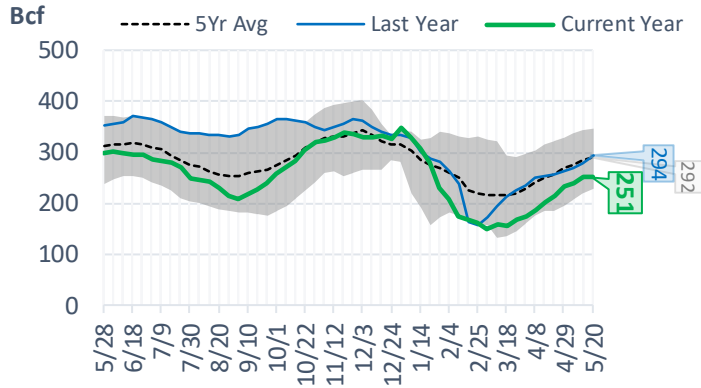
Natural Gas Storage Stats - Last 5 Weeks

Week Ending	Current 20-May	Week - 1 13-May	Week - 2 6-May	Week - 3 29-Apr	Week - 4 22-Apr	Week - 5 15-Apr
Total Lower 48 Storage Level	1812	1732	1643	1567	1490	1450
Weekly Change	+80	+89	+76	+77	+40	+53
vs LY	-387	-358	-376	-382	-406	-428
vs 5Yr Avg	-327	-310	-312	-306	-305	-292
S. Central Salt Storage Level	251	251	241	233	215	201
Weekly Change	0	+10	+8	+18	+14	+15
vs LY	-43	-27	-27	-30	-43	-54
vs 5Yr Avg	-41	-33	-35	-35	-42	-48
S. Central NonSalt Storage Level	546	531	507	489	467	449
Weekly Change	+15	+24	+18	+22	+18	+18
vs LY	-85	-74	-79	-81	-90	-104
vs 5Yr Avg	-84	-77	-82	-81	-83	-87
Midwest Storage Level	391	364	342	324	309	304
Weekly Change	+27	+22	+18	+15	+5	+11
vs LY	-104	-106	-114	-116	-117	-116
vs 5Yr Avg	-76	-77	-77	-77	-76	-72
East Storage Level	325	296	274	253	238	238
Weekly Change	+29	+22	+21	+15	0	+9
vs LY	-56	-60	-71	-77	-82	-85
vs 5Yr Avg	-63	-67	-67	-66	-63	-52
Mountain Storage Level	109	103	96	92	90	89
Weekly Change	+6	+7	+4	+2	+1	-1
vs LY	-34	-31	-34	-31	-29	-29
vs 5Yr Avg	-19	-18	-19	-18	-15	-13
Pacific Storage Level	190	187	183	176	171	169
Weekly Change	+3	+4	+7	+5	+2	0
vs LY	-65	-58	-50	-47	-45	-40
vs 5Yr Avg	-45	-38	-32	-29	-26	-21

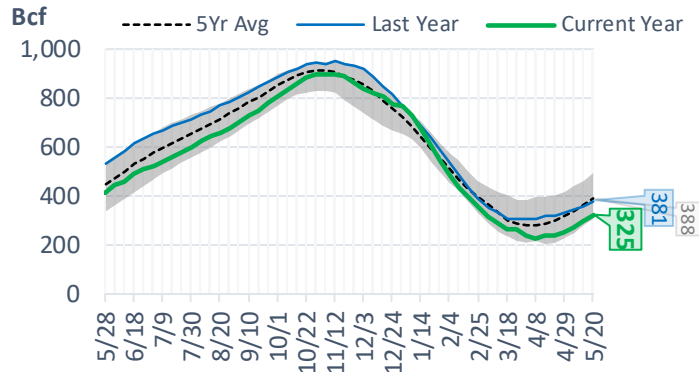
NonSalt Storage Levels



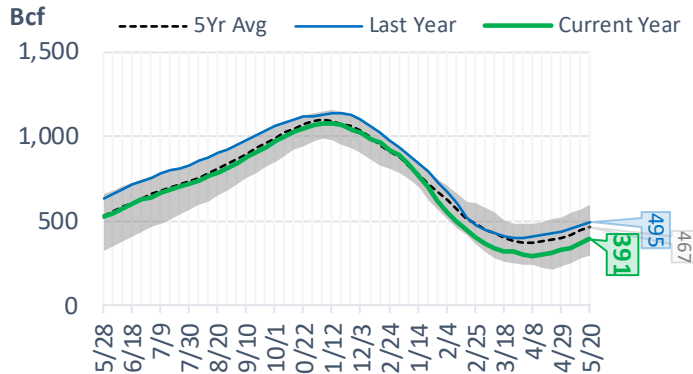
Salt Storage Levels



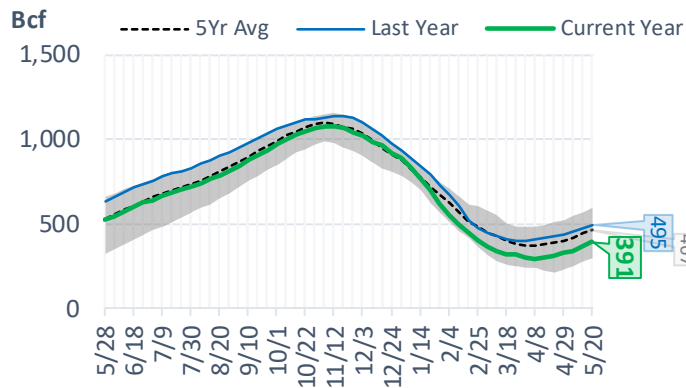
East Storage Levels



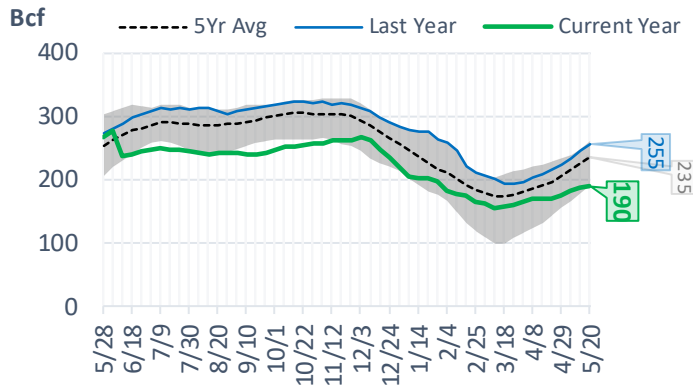
Midwest Storage Levels



Midwest Storage Levels



Pacific Storage Levels



EIA Storage Week Balances

	22-Apr	29-Apr	6-May	13-May	20-May	27-May	WoW	vs. 4W
Lower 48 Dry Production	96.8	95.8	95.7	95.9	94.9	95.9	▲ 1.0	▲ 0.3
Canadian Imports	5.8	6.1	5.9	5.2	4.9	4.9	▼ 0.0	▼ -0.7
L48 Power	25.1	24.9	26.2	26.8	30.4	29.9	▼ -0.5	▲ 2.8
L48 Residential & Commercial	24.1	18.5	16.6	14.2	9.9	11.4	▲ 1.6	▼ -3.4
L48 Industrial	21.8	22.0	21.6	21.3	21.6	21.5	▼ -0.1	▼ -0.1
L48 Lease and Plant Fuel	5.3	5.2	5.2	5.2	5.1	5.2	▲ 0.1	▲ 0.0
L48 Pipeline Distribution	2.7	2.4	2.4	2.3	2.3	2.3	▲ 0.1	▼ 0.0
L48 Regional Gas Consumption	79.0	73.0	72.0	69.8	69.3	70.3	▲ 1.0	▼ -0.7
Net LNG Exports	12.1	12.2	12.2	12.2	12.2	13.0	▲ 0.8	▲ 0.8
Total Mexican Exports	6.7	6.9	6.9	7.0	7.0	7.0	▼ 0.0	▼ 0.0
Implied Daily Storage Activity	4.7	9.8	10.6	12.0	11.3	10.5	-0.9	
EIA Reported Daily Storage Activity	5.7	11.0	10.9	12.7	11.4			
Daily Model Error	-1.0	-1.2	-0.3	-0.7	-0.1			

Monthly Balances

	2Yr Ago	LY	MTD					MoM	vs. LY
	May-20	May-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22		
Lower 48 Dry Production	87.0	93.0	93.4	92.6	94.9	96.2	95.6	▼ -0.6	▲ 2.6
Canadian Imports	3.9	4.5	6.7	6.6	5.2	5.8	5.2	▼ -0.7	▲ 0.7
L48 Power	26.9	26.5	31.5	28.9	25.6	24.8	28.7	▲ 3.9	▲ 2.2
L48 Residential & Commercial	12.8	12.8	49.1	44.4	30.7	22.2	12.7	▼ -9.5	▼ -0.1
L48 Industrial	19.4	20.9	24.7	22.5	21.8	22.0	21.5	▼ -0.5	▲ 0.6
L48 Lease and Plant Fuel	4.7	5.0	5.1	5.1	5.2	5.2	5.2	▼ -0.1	▲ 0.1
L48 Pipeline Distribution	2.2	2.2	3.8	3.6	2.9	2.6	2.3	▼ -0.2	▲ 0.1
L48 Regional Gas Consumption	65.9	67.5	114.3	104.4	86.2	76.8	70.4	▼ -6.3	▲ 3.0
Net LNG Exports	6.7	10.8	12.4	12.4	12.9	12.3	12.4	▲ 0.2	▲ 1.6
Total Mexican Exports	4.8	6.8	6.3	6.2	6.5	6.7	7.0	▲ 0.2	▲ 0.2
Implied Daily Storage Activity	13.6	12.4	-32.9	-23.7	-5.5	6.2	10.9		
EIA Reported Daily Storage Activity									
Daily Model Error									

Source: Bloomberg, analytix.ai

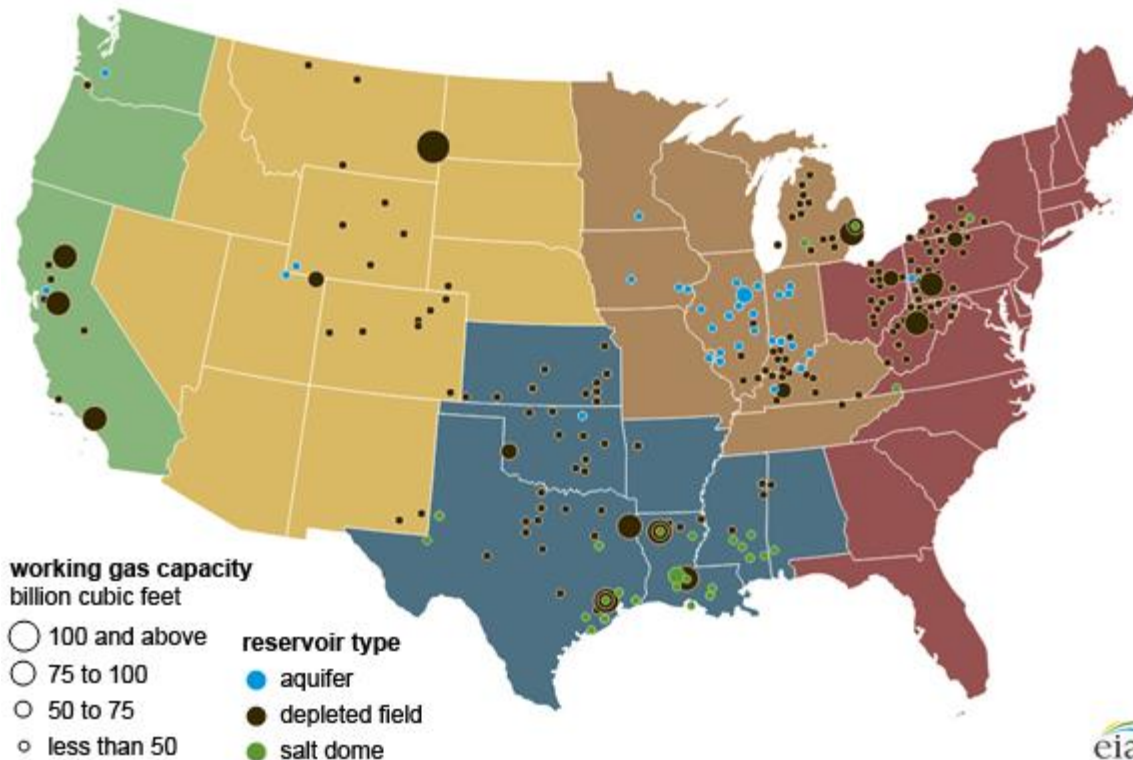
Regional S/D Models Storage Projection

Week Ending 27-May

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	11.3	-0.3	11.1	78
East	2.2	2.5	4.7	33
Midwest	4.6	-0.9	3.7	26
Mountain	4.2	-3.8	0.4	3
South Central	-1.2	2.7	1.4	10
Pacific	1.6	-0.7	0.9	6

*Adjustment Factor is calculated based on historical regional deltas

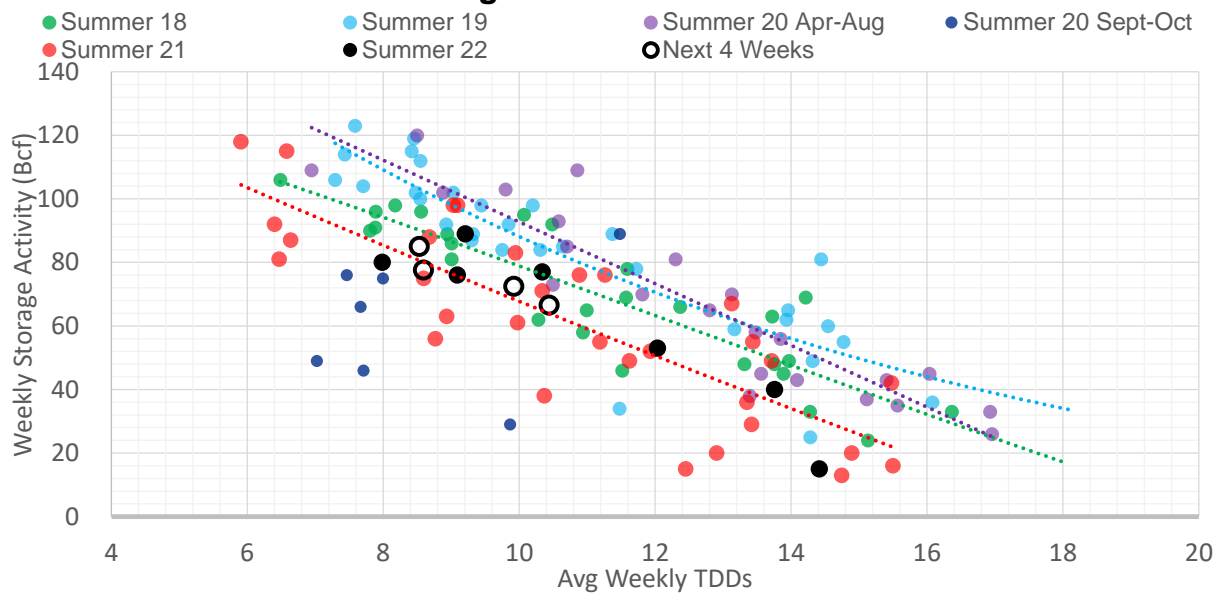
U.S. underground natural gas storage facilities by type (July 2015)



Weather Model Storage Projection

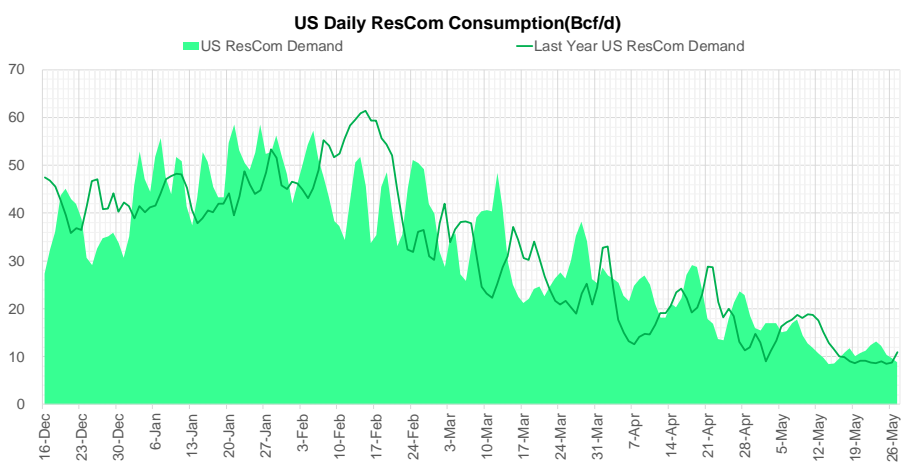
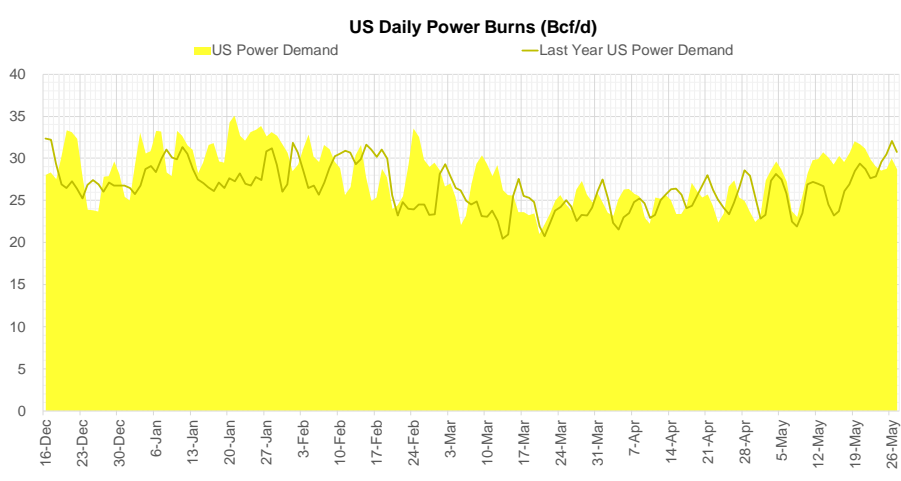
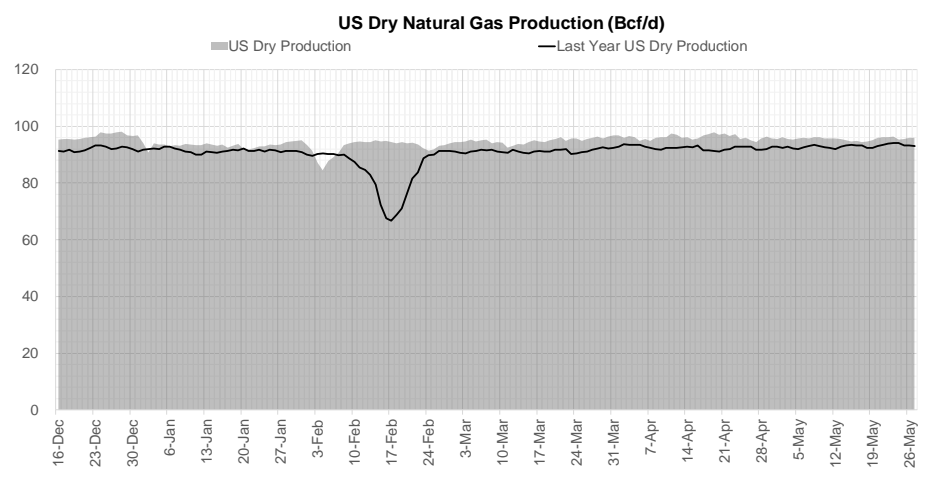
Next report and beyond		
Week Ending	TDDs	Week Storage Projection
27-May	8.6	78
03-Jun	9.9	72
10-Jun	8.5	85
17-Jun	10.4	67

Weather Storage Model - Next 4 Week Forecast



Note: this is not our official end of season forecast. This chart signifies where storage levels end with 10-year normal weather and current market tightness relative to last year

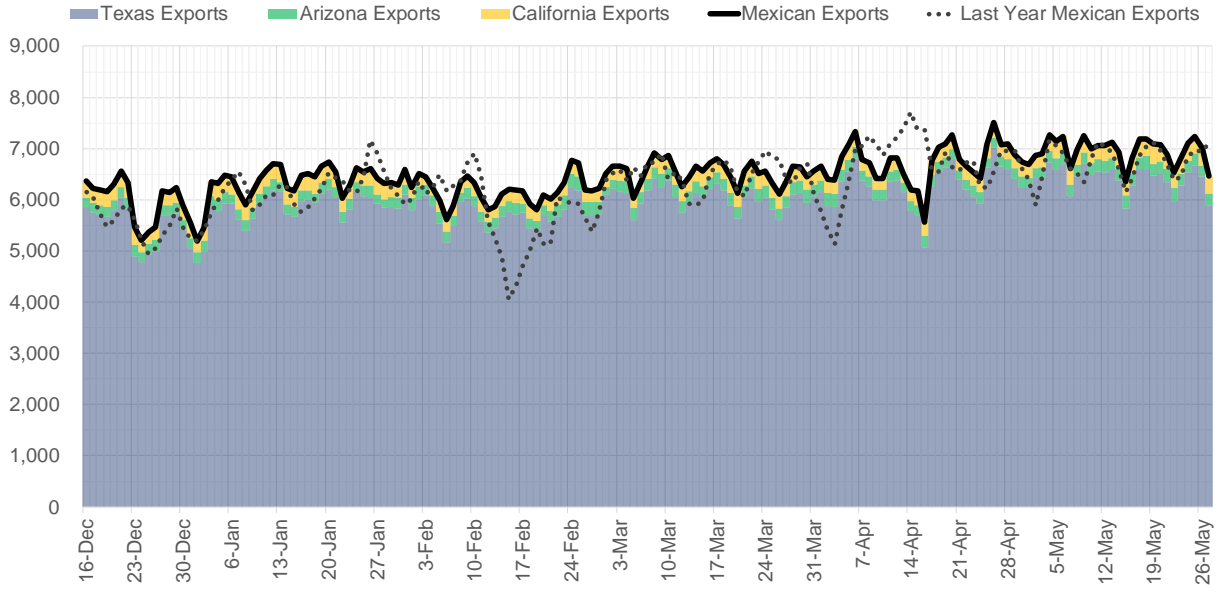
Supply – Demand Trends



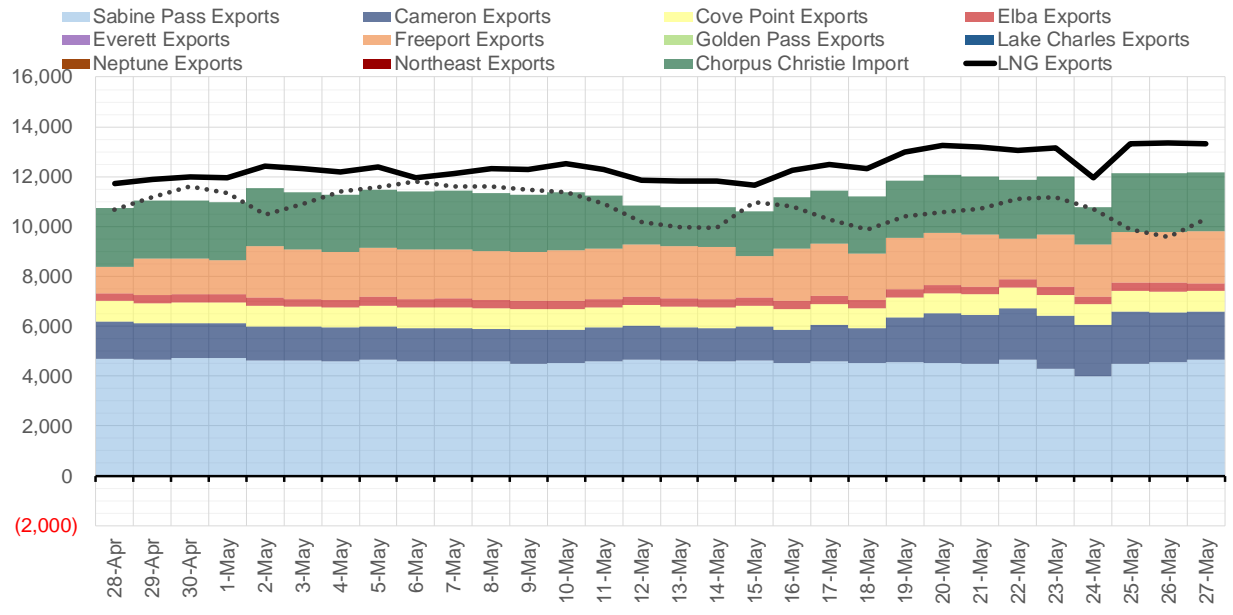
Source: Bloomberg

The risk of trading futures and options and other derivatives involves a substantial risk of loss and is not suitable for all persons. Each person must consider whether a particular trade, combination of trades, or strategy is suitable for that person's financial means and objectives. Past results are not necessarily indicative of future results. This communication may contain links to third party websites which are not under the control of and are not maintained by ION Energy Group, and ION Energy Group is not responsible for their content.

Mexican Exports (MMcf/d)



Net LNG Exports - Last 30 days (MMcf/d)



Source: Bloomberg

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Nat Gas Options Volume and Open Interest CME and ICE data combined

CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
8	2022	P	7.00	5916	8	2022	C	10.00	49176
7	2022	P	7.50	4962	8	2022	C	10.50	37807
7	2022	C	11.00	4924	10	2022	C	6.00	35395
7	2022	C	10.00	4573	7	2022	C	11.00	28398
8	2022	C	18.00	4313	8	2022	C	12.00	28067
7	2022	P	8.00	4213	10	2022	C	5.00	24089
7	2022	P	7.00	4065	9	2022	C	6.00	23663
3	2023	C	20.00	4001	7	2022	C	10.00	21126
3	2023	C	20.50	4000	10	2022	P	3.00	21052
8	2022	C	10.00	3693	7	2022	C	9.00	20809
7	2022	C	14.00	3347	10	2022	P	6.00	20597
8	2022	P	6.50	3271	10	2022	P	3.50	20474
7	2022	C	20.00	2755	9	2022	C	10.00	20275
7	2022	P	6.50	2664	8	2022	C	12.10	20001
7	2022	C	12.00	2566	7	2022	C	11.10	20000
8	2022	C	12.00	2354	10	2022	P	2.50	19868
10	2022	C	15.00	2070	8	2022	C	6.00	19483
9	2022	C	12.00	1682	7	2022	C	6.00	18942
8	2022	P	6.00	1674	8	2022	C	7.00	18255
11	2022	C	15.00	1550	12	2022	C	5.00	18221
11	2022	C	20.00	1550	7	2022	C	8.00	18147
8	2022	C	10.50	1411	9	2022	C	7.00	18091
7	2022	C	9.00	1407	7	2022	C	7.00	17662
7	2022	C	13.00	1399	10	2022	P	2.00	17558
7	2022	P	8.50	1361	7	2022	P	3.25	17344
7	2022	C	10.50	1331	8	2022	C	9.00	16997
7	2022	C	15.00	1246	10	2022	P	4.00	16901
8	2022	C	15.00	1200	7	2022	P	6.00	16666
8	2022	C	13.00	1163	5	2023	P	2.00	16336
9	2022	C	15.00	1146	1	2023	C	10.00	16330
9	2022	C	12.10	1000	2	2023	C	10.00	16024
9	2022	P	7.50	951	7	2022	P	5.00	15324
9	2022	P	6.80	950	9	2022	P	2.50	15291
8	2022	P	8.00	904	10	2022	P	3.25	14892
10	2022	C	20.00	904	9	2022	P	2.75	14883
3	2023	C	10.00	900	10	2022	C	10.00	14693
9	2022	C	10.00	893	7	2022	P	7.00	14654
10	2022	C	10.00	883	9	2022	P	3.00	14626
7	2022	C	10.10	852	3	2023	C	10.00	14611
4	2023	C	7.00	850	7	2022	P	3.50	14604
5	2023	C	7.00	850	10	2022	C	8.00	14556
6	2023	C	7.00	850	8	2022	P	3.00	14553
7	2023	C	7.00	850	11	2022	P	4.00	14494
8	2023	C	7.00	850	7	2022	P	3.00	14491
9	2023	C	7.00	850	8	2022	C	8.00	14380
10	2023	C	7.00	850	12	2022	C	6.00	13934
7	2022	P	8.25	847	10	2023	P	2.00	13680
10	2022	P	7.00	794	7	2022	P	4.00	13495
7	2022	C	11.50	752	7	2022	C	3.00	13231
					8	2022	C	3	13226

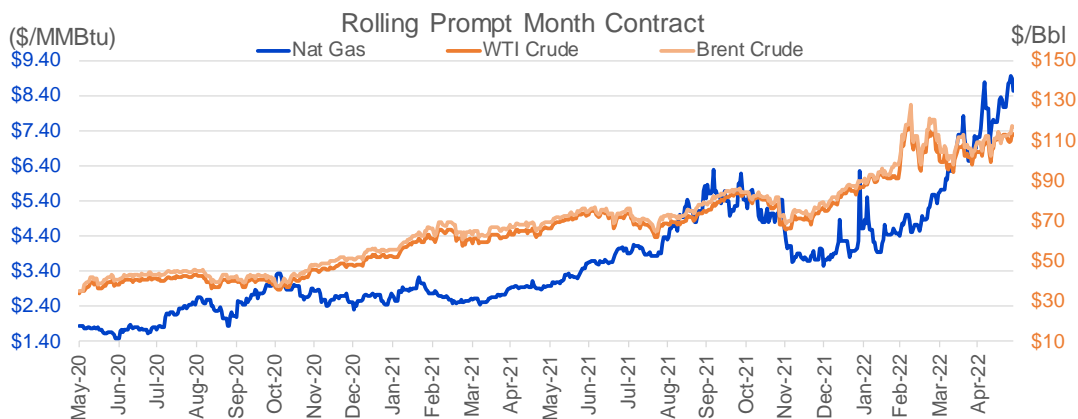
Source: CME, ICE

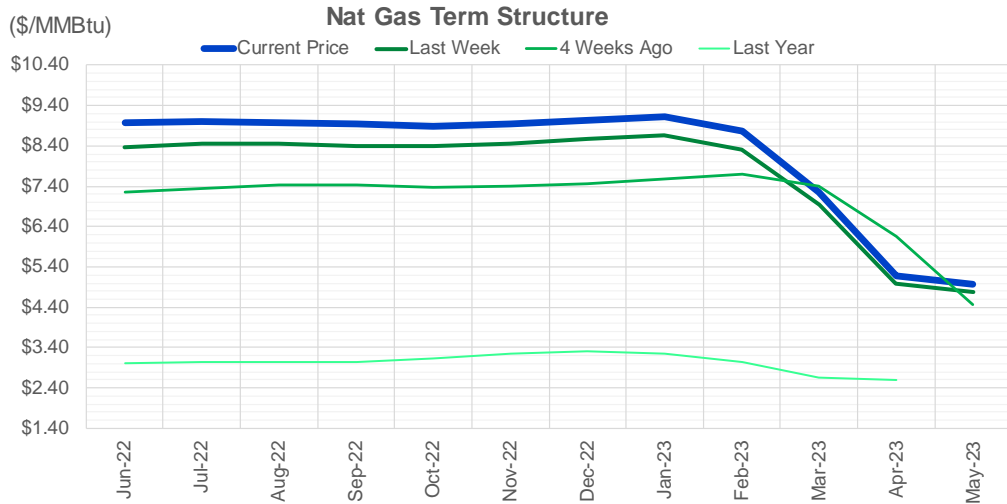
Nat Gas Futures Open Interest

CME and ICE data combined

CME Henry Hub Futures (10,000 MMBtu)				ICE Henry Hub Futures Contract Equivalent (10,000 MM			
	Current	Prior	Daily Change		Current	Prior	Daily Change
JUL 22	210179	211617	-1438	JUL 22	87447	84485	2962
AUG 22	67801	64681	3120	AUG 22	93141	90552	2589
SEP 22	104530	99575	4955	SEP 22	59659	60542	-883
OCT 22	92768	94643	-1875	OCT 22	64072	64482	-410
NOV 22	49558	49442	116	NOV 22	74227	74079	148
DEC 22	49644	50683	-1039	DEC 22	59011	59622	-611
JAN 23	64103	63946	157	JAN 23	61903	62741	-839
FEB 23	27745	28104	-359	FEB 23	64547	65054	-507
MAR 23	39069	39454	-385	MAR 23	55939	56546	-608
APR 23	59962	60503	-541	APR 23	54439	55269	-831
MAY 23	60969	60942	27	MAY 23	52353	52569	-216
JUN 23	26302	26510	-208	JUN 23	52280	52305	-25
JUL 23	23663	23592	71	JUL 23	45754	45336	418
AUG 23	15194	14918	276	AUG 23	43458	43530	-72
SEP 23	19082	18369	713	SEP 23	43568	43563	6
OCT 23	37924	37060	864	OCT 23	42431	42634	-204
NOV 23	12864	12894	-30	NOV 23	49392	49405	-13
DEC 23	14456	14592	-136	DEC 23	43583	43552	31
JAN 24	20036	20407	-371	JAN 24	39459	39381	79
FEB 24	6108	6099	9	FEB 24	39823	39412	411
MAR 24	13985	14136	-151	MAR 24	26628	26576	52
APR 24	12121	12147	-26	APR 24	31020	30934	86
MAY 24	6541	6509	32	MAY 24	27266	27216	50
JUN 24	1824	1782	42	JUN 24	26034	25950	83
JUL 24	2003	1962	41	JUL 24	22383	22309	75
AUG 24	2983	2942	41	AUG 24	22619	22484	135
SEP 24	1330	1332	-2	SEP 24	22654	22571	84
OCT 24	6847	6846	1	OCT 24	22034	21967	68
NOV 24	4459	4416	43	NOV 24	24838	24729	109
DEC 24	0	0	0	DEC 24	23162	23147	15

Source: CME, ICE






	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23
Current Price	\$8.971	\$8.993	\$8.972	\$8.929	\$8.898	\$8.936	\$9.032	\$9.125	\$8.773	\$7.257	\$5.178	\$4.969
Last Week	\$8.368	\$8.455	\$8.444	\$8.402	\$8.383	\$8.441	\$8.559	\$8.655	\$8.306	\$6.955	\$4.977	\$4.788
vs. Last Week	\$0.603	\$0.538	\$0.528	\$0.527	\$0.515	\$0.495	\$0.473	\$0.470	\$0.467	\$0.302	\$0.201	\$0.181
4 Weeks Ago	\$7.267	\$7.339	\$7.436	\$7.435	\$7.385	\$7.387	\$7.456	\$7.589	\$7.692	\$7.405	\$6.165	\$4.470
vs. 4 Weeks Ago	\$1.704	\$1.654	\$1.536	\$1.494	\$1.513	\$1.549	\$1.576	\$1.536	\$1.081	-\$0.148	-\$0.987	\$0.499
Last Year	\$2.984	\$3.027	\$3.045	\$3.040	\$3.057	\$3.122	\$3.241	\$3.319	\$3.246	\$3.051	\$2.656	\$2.606
vs. Last Year	\$5.987	\$5.966	\$5.927	\$5.889	\$5.841	\$5.814	\$5.791	\$5.806	\$5.527	\$4.206	\$2.522	\$2.363

	Units	Current Price	vs. Last Week	vs. 4 Weeks Ago	vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224	▲ 0.000	▲ 0.000	▲ 2.191
NatGas Oct21/Nov21	\$/MMBtu	0.361	▲ 0.000	▲ 0.000	▲ 0.295
NatGas Oct21/Jan22	\$/MMBtu	-1.817	▲ 0.000	▲ 0.000	▼ -2.086
NatGas Apr22/Oct22	\$/MMBtu	3.466	▲ 0.473	▲ 1.843	▲ 3.425
WTI Crude	\$/Bbl	114.09	▲ 1.880	▲ 8.730	▲ 47.240
Brent Crude	\$/Bbl	117.40	▲ 5.360	▲ 9.810	▲ 47.940
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	▲ 0.000	▲ 0.000	▲ 0.000
Heating Oil	cents/Gallon	396.80	▲ 17.600	▼ -116.740	▲ 191.160
Propane, Mt. Bel	cents/Gallon	1.24	▲ 0.000	▼ -0.072	▲ 0.412
Ethane, Mt. Bel	cents/Gallon	0.60	▲ 0.006	▲ 0.093	▲ 0.341
Coal, PRB	\$/MTon	12.30	▲ 0.000	▲ 0.000	▲ 0.000
Coal, PRB	\$/MMBtu	0.70			

Source: CME, Bloomberg

Baker Hughes Rig Counts

Rotary Rig Count						Baker Hughes 
5/27/2022						
U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago	
Oil	574	-2	576	215	359	
Gas	151	1	150	53	98	
Miscellaneous	2	0	2	2	0	
Directional	36	-3	39	9	27	
Horizontal	666	2	664	251	415	
Vertical	25	0	25	10	15	
Canada Breakout	This Week	+/-	Last Week	+/-	Year Ago	
Oil	55	15	40	27	28	
Gas	48	0	48	14	34	
Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago	
Ardmore Woodford	2	0	2	1	1	
Arkoma Woodford	4	1	3	3	1	
Barnett	4	0	4	3	1	
Cana Woodford	28	1	27	13	15	
DJ-Niobrara	16	1	15	10	6	
Eagle Ford	66	1	65	33	33	
Granite Wash	2	-1	3	-1	3	
Haynesville	69	-1	70	22	47	
Marcellus	39	0	39	11	28	
Mississippian	2	1	1	2	0	
Permian	342	-1	343	109	233	
Utica	12	0	12	2	10	
Williston	38	0	38	22	16	