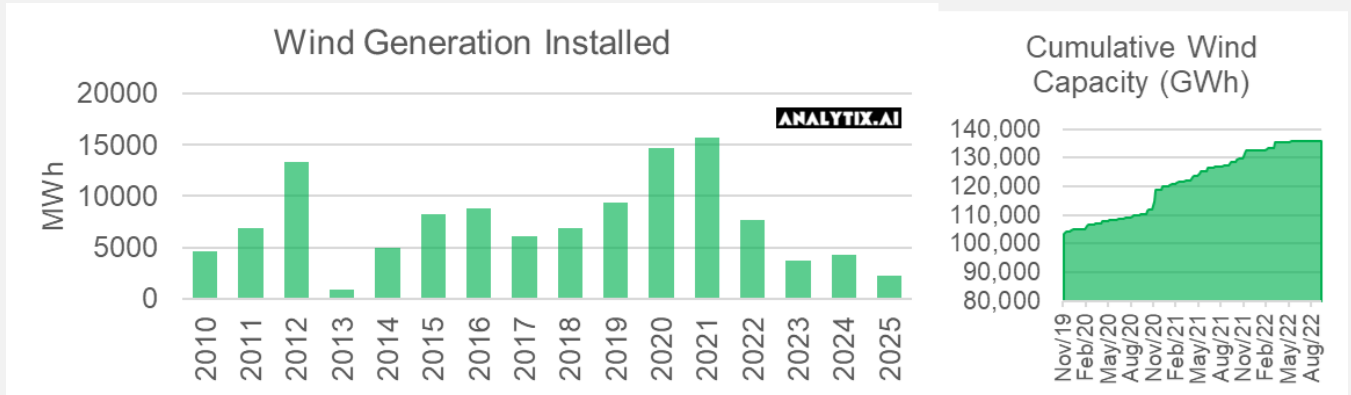
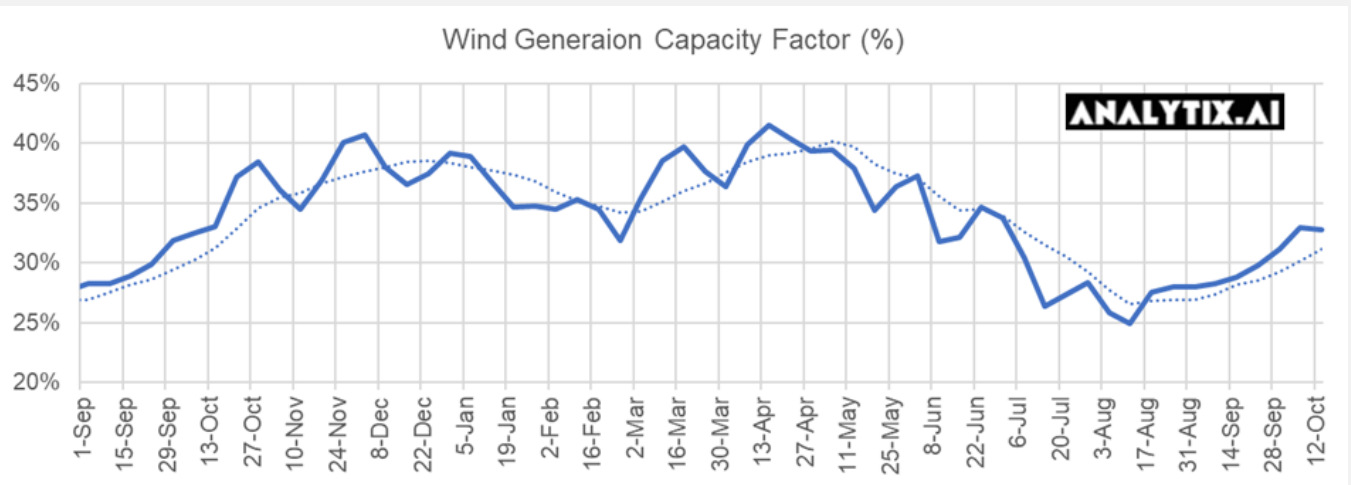


This week we start with a few charts on wind performance. Wind generation is becoming more important to gas burn levels each month as more wind generation comes online. 2020 and 2021 saw large with large federal subsidies offered to developers. These subsidies include, among other things, a production tax credit (PTC) and an investment tax credit (ITC). Wind power is the main beneficiary of the PTC, and solar is the primary beneficiary of the ITC. The ITC and PTC were established in 1978 and 1992, respectively, with expiration deadlines. However, these expiration dates have been extended 24 times by Congress.

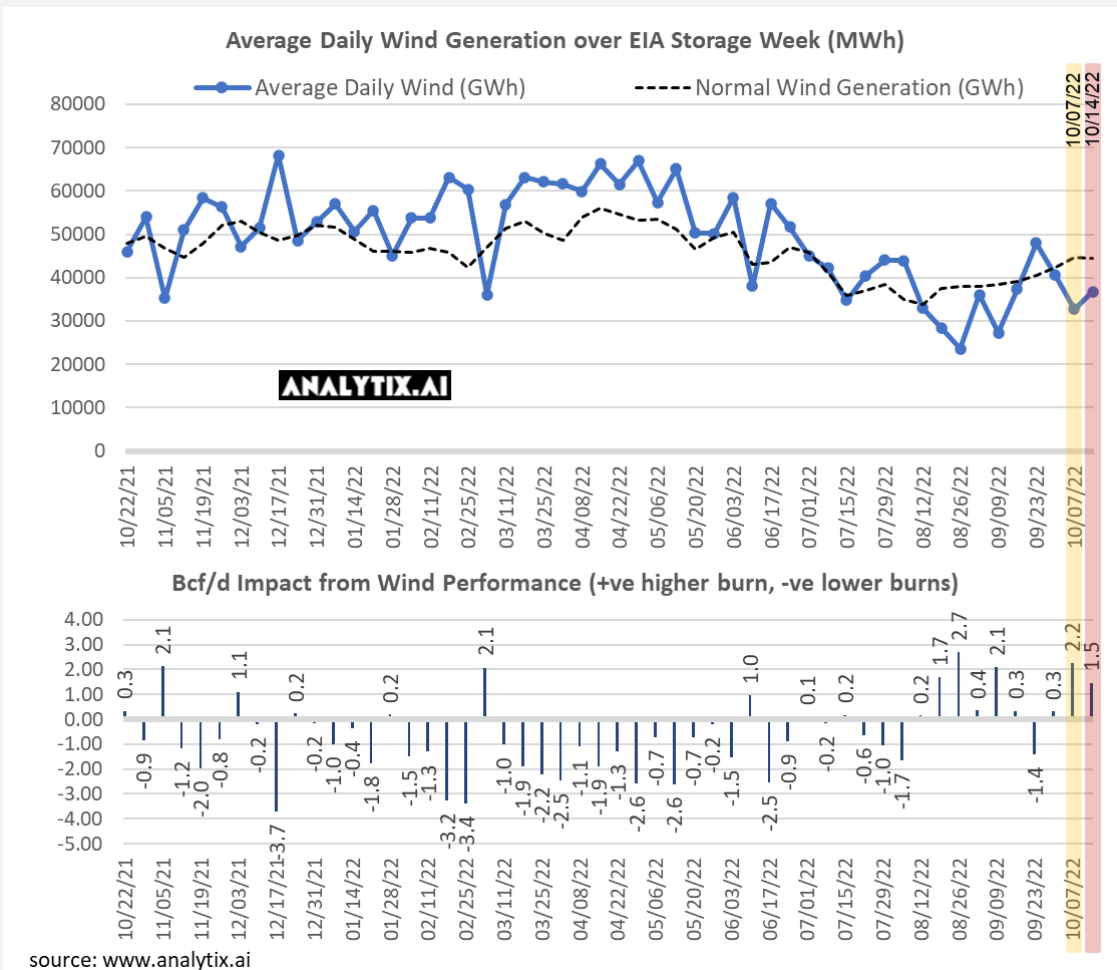


With all the wind, the stable operation of the power grid comes into question. Unlike natural gas, coal, and nuke generation – wind can be unreliable. The variability of wind through the day and seasonality of wind throughout the year has a very direct impact on natural gas generation. Here is some info on past wind stats and seasonality. I compiled the expected wind gen capacity factor by analyzing the last 4 years of wind gen and adjusting it for more installed wind capacity.



As seen, wind patterns have a very distinct rhythm. In the most general view, wind peaks in the winter and drops off significantly during the peak summer months. So at its best, we can expect a 40% wind factor, and at its lowest (during the peak of summer) we can expect 25%. [Note: we see this dip in Jan/Feb, and we believe this could be due to ice buildup around gears and on wind turbines that increase friction]

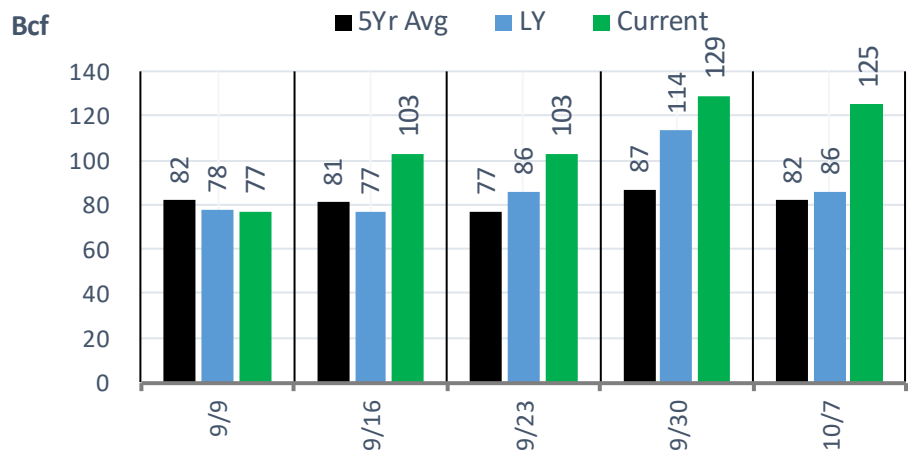
We've shown this picture in the past. Using our understanding of seasonality and total installed generation, we can calculate an average expected wind generation level for each storage week. E then use that data, to calculate the over/under performance each week and how that translated into over/under power burns. The chart below gives all the details on a week-by-week basis.



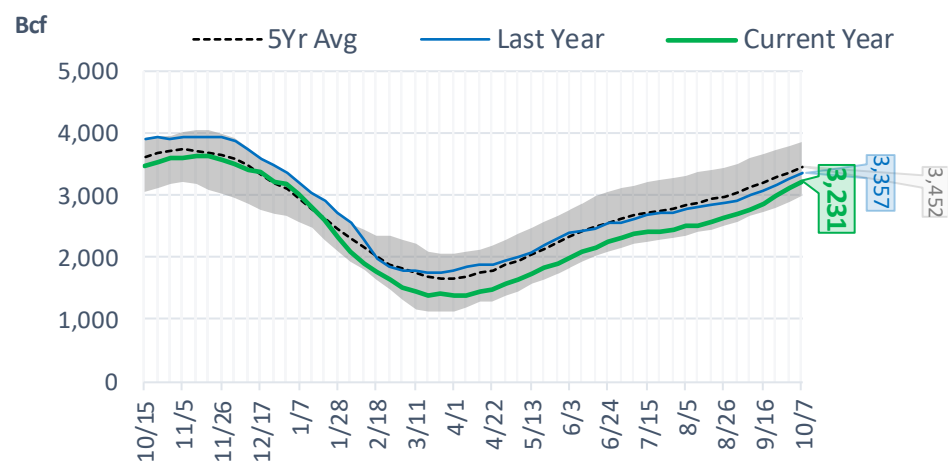
As seen, most of the summer we saw wind generation exceed expected levels. The last two months have been quite different though. For this past week, the lower wind generation added 1.5 Bcf/d or 10.5 Bcf of additional burns. Have a look at the chart and see how the strong burns from March to July helped us keep burns low and help us achieve a decent end-of-season storage level.

EIA Storage Report

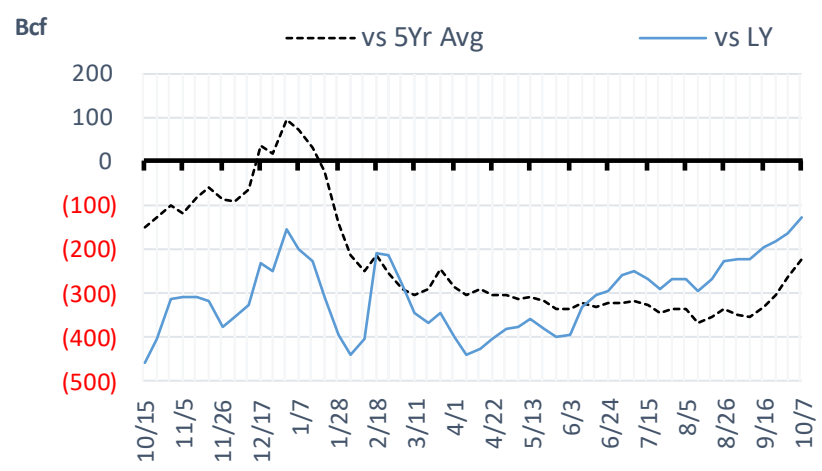
Total Lower 48 YoY Weekly Change



Total Lower 48 Storage Levels



Total Lower 48 LY Surplus/Deficit

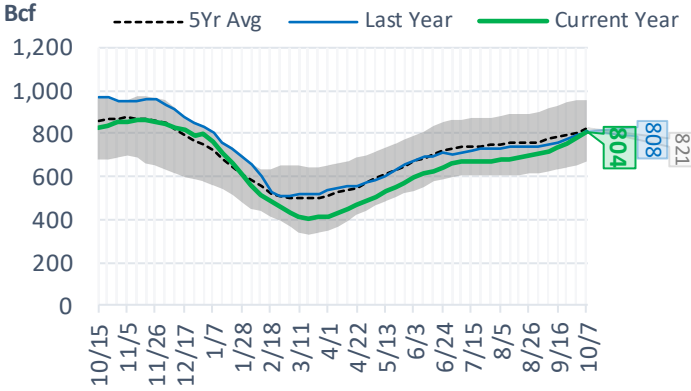


The risk of trading futures and options and other derivatives involves a substantial risk of loss and is not suitable for all persons. Each person must consider whether a particular trade, combination of trades, or strategy is suitable for that person's financial means and objectives. Past results are 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.

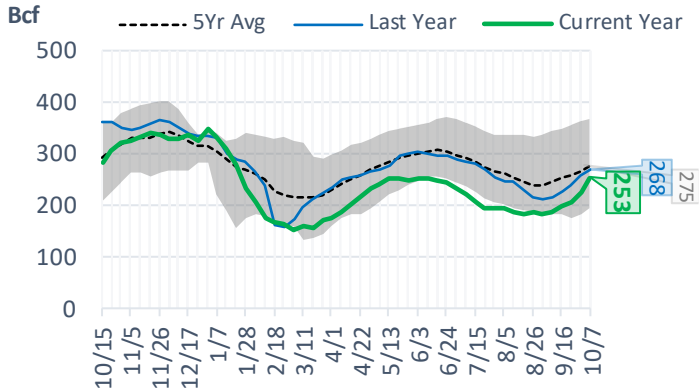
Natural Gas Storage Stats - Last 5 Weeks

Week Ending	Current 7-Oct	Week - 1 30-Sep	Week - 2 23-Sep	Week - 3 16-Sep	Week - 4 9-Sep	Week - 5 2-Sep
Total Lower 48 Storage Level	3231	3106	2977	2874	2771	2694
Weekly Change	+125	+129	+103	+103	+77	+54
vs LY	-126	-165	-180	-197	-223	-222
vs 5Yr Avg	-221	-264	-306	-332	-354	-349
S. Central Salt Storage Level	253	225	204	199	187	182
Weekly Change	+28	+21	+5	+12	+5	-3
vs LY	-15	-31	-33	-27	-29	-27
vs 5Yr Avg	-22	-41	-53	-54	-59	-56
S. Central NonSalt Storage Level	804	778	754	736	717	705
Weekly Change	+26	+24	+18	+19	+12	+9
vs LY	-4	-14	-18	-24	-29	-30
vs 5Yr Avg	-17	-30	-41	-50	-57	-57
Midwest Storage Level	952	916	879	844	809	776
Weekly Change	+36	+37	+35	+35	+33	+29
vs LY	-41	-50	-51	-56	-62	-62
vs 5Yr Avg	-49	-54	-58	-63	-67	-67
East Storage Level	782	756	721	690	661	635
Weekly Change	+26	+35	+31	+29	+26	+21
vs LY	-49	-50	-54	-58	-67	-64
vs 5Yr Avg	-74	-77	-86	-94	-98	-100
Mountain Storage Level	190	184	176	168	163	159
Weekly Change	+6	+8	+8	+5	+4	+2
vs LY	-19	-21	-24	-28	-30	-32
vs 5Yr Avg	-21	-24	-27	-31	-32	-32
Pacific Storage Level	249	247	243	237	235	238
Weekly Change	+2	+4	+6	+2	-3	-3
vs LY	-2	0	0	-3	-5	-5
vs 5Yr Avg	-40	-39	-40	-41	-40	-36

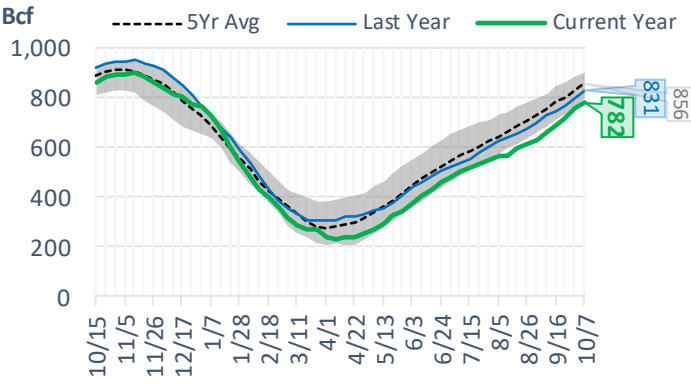
NonSalt Storage Levels



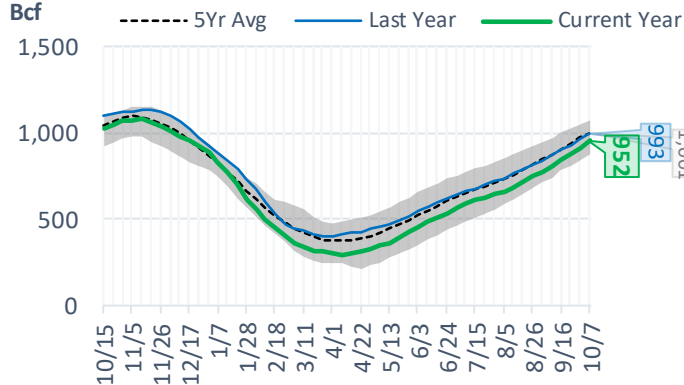
Salt Storage Levels



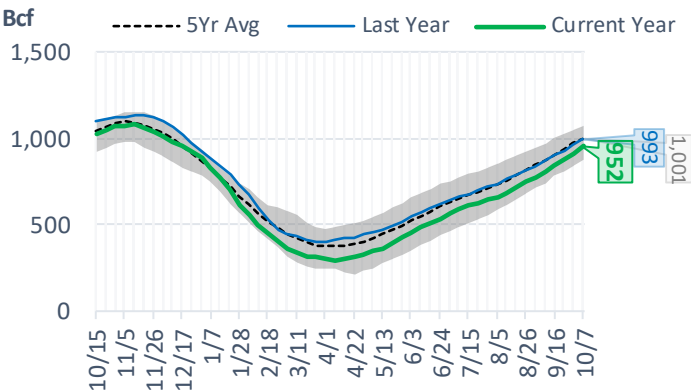
East Storage Levels



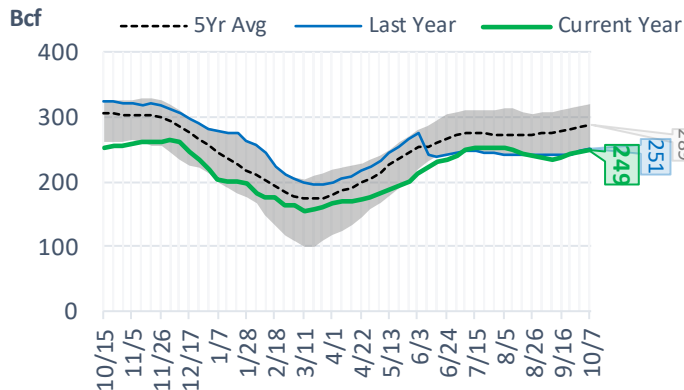
Midwest Storage Levels



Midwest Storage Levels



Pacific Storage Levels



EIA Storage Week Balances

	LY 15-Oct	16-Sep	23-Sep	30-Sep	LW 7-Oct	Current 14-Oct	WoW	vs. LY
Lower 48 Dry Production	95.2	101.0	100.8	101.6	102.4	102.1	▼-0.3	▲6.9
Canadian Imports	5.0	5.6	6.1	6.2	6.0	5.5	▼-0.5	▲0.6
L48 Power	31.6	37.9	37.0	31.5	30.5	30.7	▲0.2	-0.9
L48 Residential & Commercial	9.2	8.0	8.2	11.9	13.1	14.8	▲1.7	5.6
L48 Industrial	21.9	20.9	21.3	20.1	21.2	21.2	▲0.0	-0.7
L48 Lease and Plant Fuel	5.3	5.6	5.6	5.6	5.7	5.7	▼0.0	0.4
L48 Pipeline Distribution	2.5	2.8	2.8	2.7	2.7	2.8	▲0.1	0.3
L48 Regional Gas Consumption	70.6	75.1	74.9	71.8	73.2	75.2	▲2.0	▲4.6
Net LNG Exports	10.7	11.3	11.5	11.8	11.0	11.0	▼-0.1	▲0.3
Total Mexican Exports	6.6	6.7	6.6	6.9	6.7	6.5	▼-0.1	▼0.0
Implied Daily Storage Activity	12.3	13.4	13.9	17.2	17.5	14.9	-2.6	2.6
EIA Reported Daily Storage Activity	13.1	14.7	14.7	18.4	17.9			
Daily Model Error	-0.9	-1.3	-0.8	-1.2	-0.4			

Monthly Balances

	2Yr Ago Oct-20	LY Oct-21	Jun-22	Jul-22	Aug-22	Sep-22	MTD Oct-22	MoM	vs. LY
Lower 48 Dry Production	88.5	95.5	97.3	97.7	99.1	101.1	102.2	▲1.2	▲6.8
Canadian Imports	4.3	5.4	5.7	5.9	5.4	5.9	5.7	▼-0.2	▲0.3
L48 Power	30.6	30.4	38.3	44.3	43.1	36.8	30.7	▼-6.2	▲0.3
L48 Residential & Commercial	15.5	12.6	8.9	8.3	8.0	9.0	14.0	▲5.0	▲1.4
L48 Industrial	22.7	21.7	19.1	19.8	21.1	21.0	21.2	▲0.3	▼-0.5
L48 Lease and Plant Fuel	4.8	5.3	5.5	5.5	5.5	5.6	5.7	▲0.1	▲0.4
L48 Pipeline Distribution	2.5	2.7	2.9	3.1	3.0	2.8	2.8	▼-0.1	▲0.1
L48 Regional Gas Consumption	76.1	72.7	74.6	81.0	80.8	75.2	74.4	▼-0.8	▲1.7
Net LNG Exports	8.0	10.6	11.2	10.9	11.0	11.5	10.9	▼-0.6	▲0.3
Total Mexican Exports	6.0	6.6	7.1	7.0	6.9	6.7	6.6	▼-0.1	▼0.0
Implied Daily Storage Activity	2.7	11.0	10.0	4.7	5.8	13.6	16.1		
EIA Reported Daily Storage Activity									
Daily Model Error					0.0				

Source: Bloomberg, analytix.ai

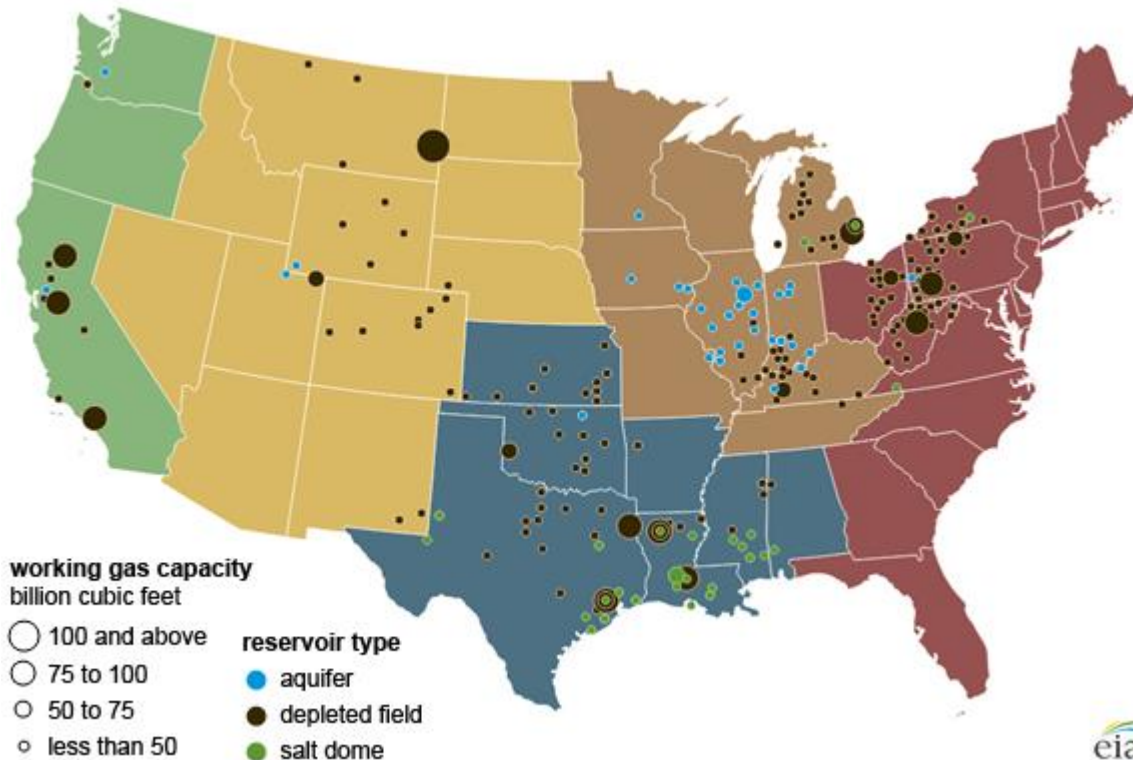
Regional S/D Models Storage Projection

Week Ending 14-Oct

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	16.0	-0.4	15.6	109
East	1.1	2.7	3.8	26
Midwest	3.7	0.4	4.1	29
Mountain	4.8	-4.4	0.4	3
South Central	6.0	1.3	7.3	51
Pacific	0.4	-0.5	0.0	0

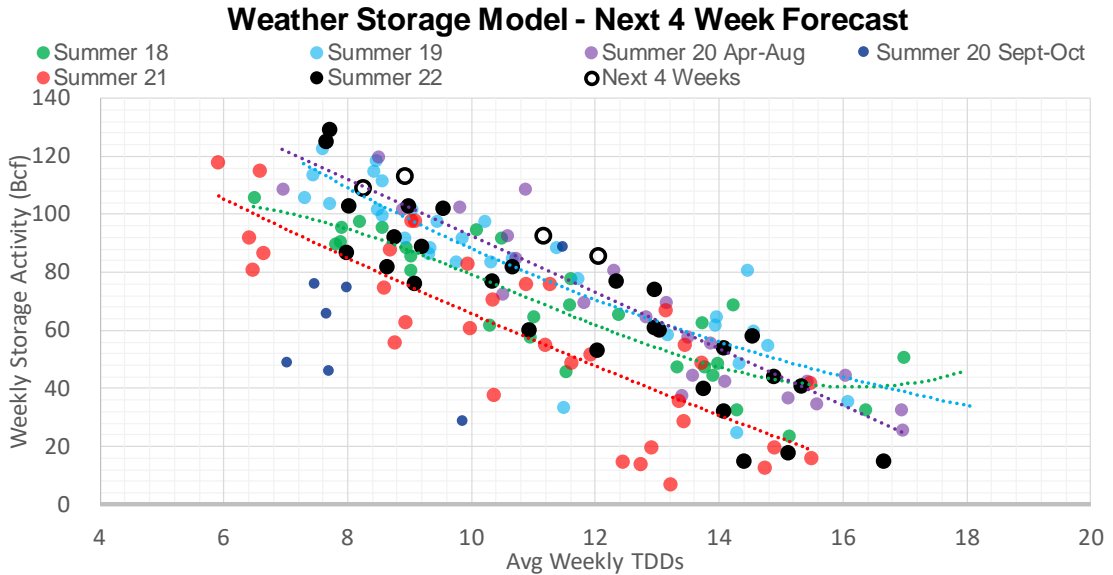
*Adjustment Factor is calculated based on historical regional deltas

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



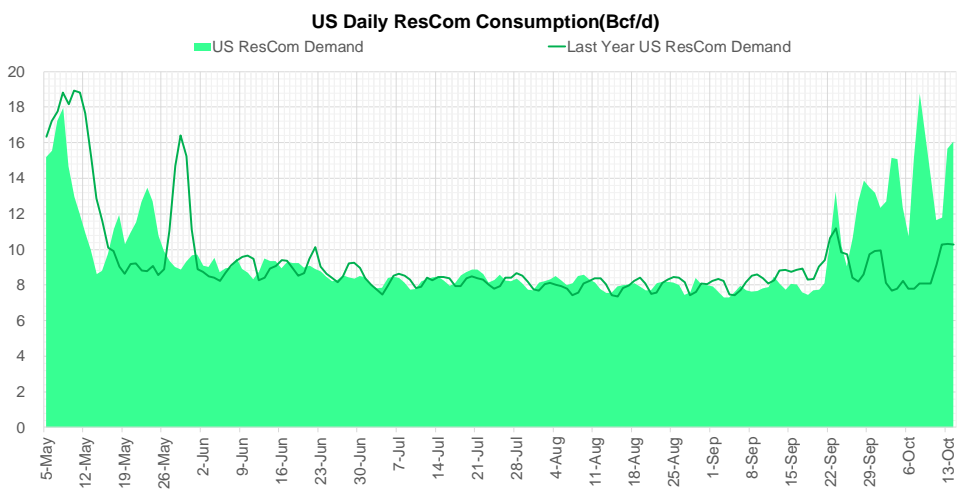
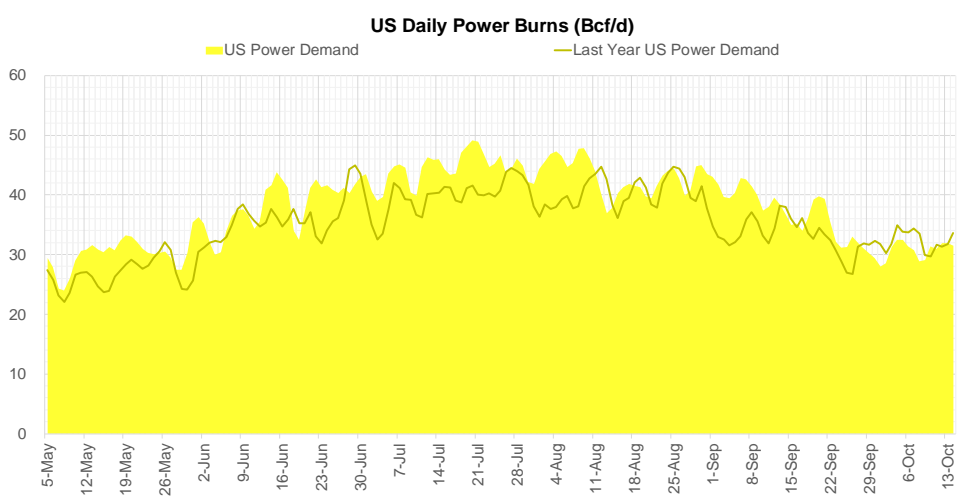
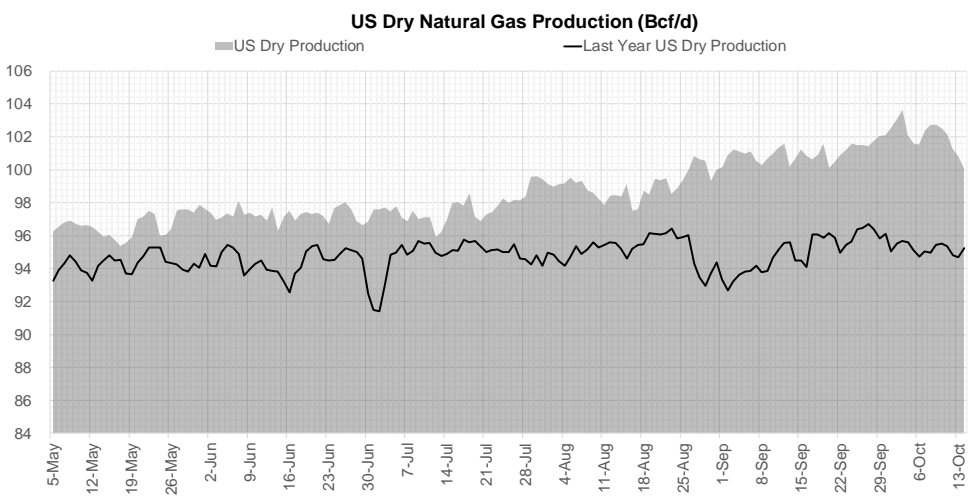
Weather Model Storage Projection

Next report and beyond		
Week Ending	GWDDs	Week Storage Projection
14-Oct	8.3	109
21-Oct	11.2	92
28-Oct	9.0	113
04-Nov	12.1	85



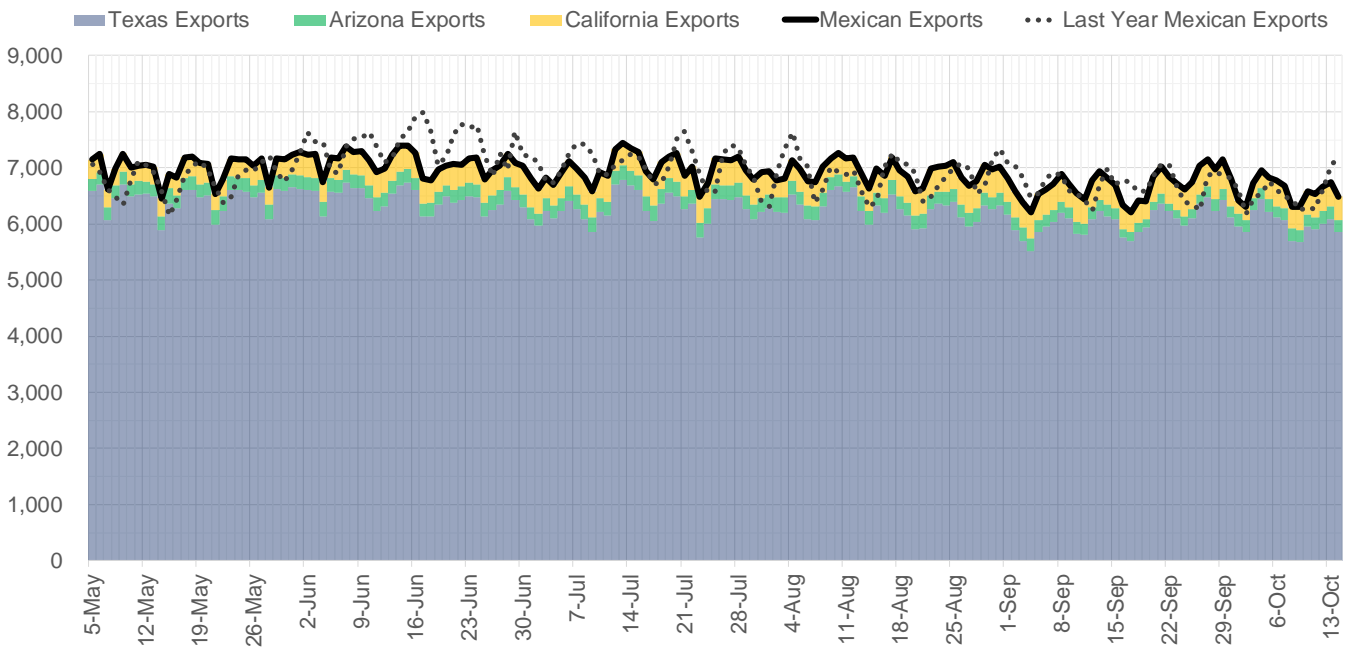
Note: this is not our official end of season forecast. This chart signifies where storage levels end with 10-year normal weather and current market tightness relative to last year

Supply – Demand Trends

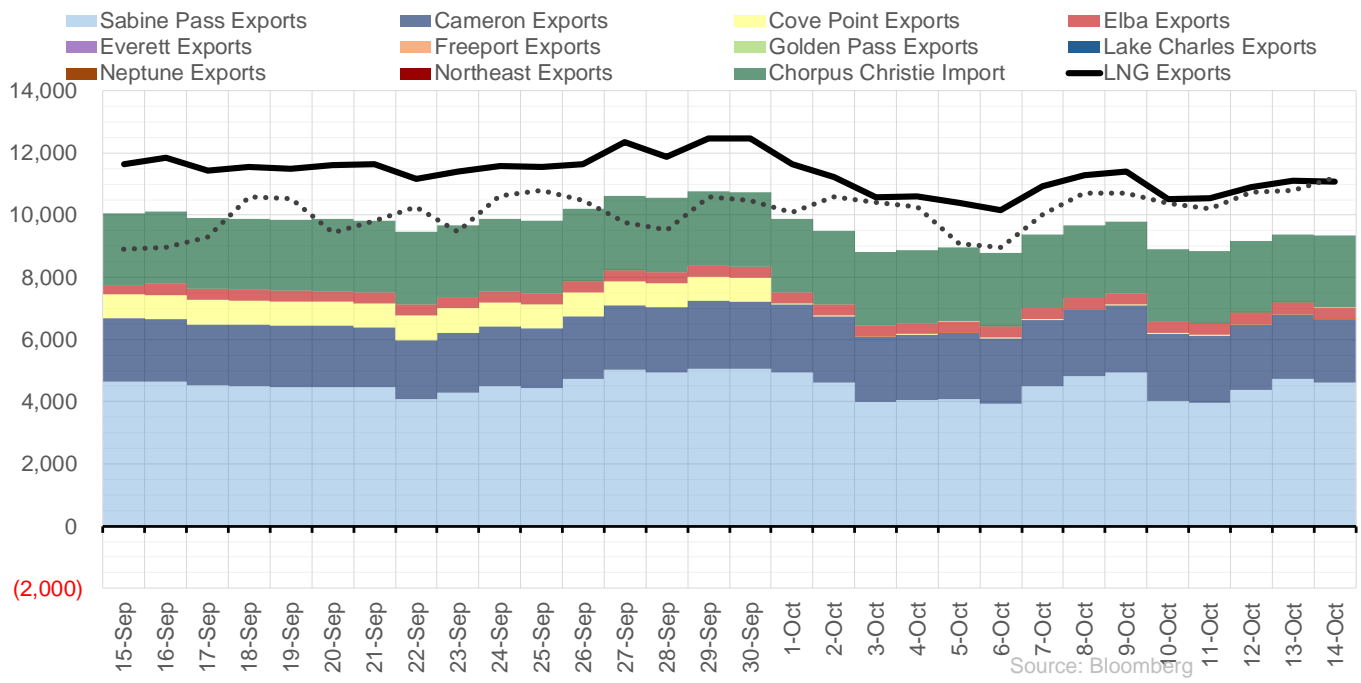


Source: Bloomberg

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
11	2022	P	5.50	9939	12	2022	P	5.00	25860
11	2022	P	5.25	7520	11	2022	C	10.00	25539
11	2022	P	5.75	6825	12	2022	P	4.00	25345
11	2022	P	6.00	6175	12	2022	P	6.00	24601
11	2022	C	10.00	4625	11	2022	P	4.00	24595
1	2023	C	10.00	3081	3	2023	C	10.00	24153
11	2022	P	5.00	2638	11	2022	P	6.00	23816
1	2023	C	20.00	2479	5	2023	P	2.00	23237
12	2022	P	4.50	2462	11	2022	C	8.00	21544
11	2022	P	6.80	2442	4	2023	P	3.00	21184
3	2023	C	10.00	2008	1	2023	C	10.00	20674
11	2022	P	6.50	1989	11	2022	P	5.00	20396
11	2022	C	7.00	1928	10	2023	P	3.00	20394
11	2022	P	6.25	1770	11	2022	P	5.50	20153
11	2022	C	8.00	1598	3	2023	P	4.00	20055
12	2022	P	6.00	1507	3	2023	P	3.00	19211
3	2023	P	4.00	1502	10	2023	P	2.50	19100
12	2022	P	5.00	1366	3	2023	C	20.00	18980
12	2022	P	4.00	1277	4	2023	P	3.50	18716
11	2022	C	7.50	1197	12	2022	C	5.00	18227
1	2023	P	4.00	1097	10	2023	P	4.00	17791
12	2022	C	17.00	1051	1	2023	P	4.00	17512
4	2023	C	6.00	1020	11	2022	C	12.00	17420
12	2022	C	9.00	939	2	2023	C	9.00	17255
6	2023	P	4.00	900	6	2023	P	3.00	17255
12	2022	P	5.25	849	12	2022	P	5.50	17141
12	2022	C	14.00	815	2	2023	C	10.00	17093
6	2023	P	3.50	815	5	2023	P	3.00	17058
11	2022	P	6.90	814	12	2022	C	10.00	16820
12	2022	C	18.00	800	5	2023	P	3.50	16690
3	2023	P	3.00	800	4	2023	P	4.00	16548
3	2023	P	6.00	800	11	2022	P	6.50	16489
3	2023	C	14.00	788	3	2023	P	2.75	16470
11	2022	C	6.50	771	9	2023	P	4.00	16271
4	2023	P	3.50	715	4	2023	P	2.00	16248
3	2023	C	9.00	700	12	2022	C	4.00	16195
2	2023	C	12.00	661	11	2022	C	4.00	15755
4	2023	P	4.00	660	8	2023	P	3.50	15747
11	2022	C	9.00	649	6	2023	P	3.50	15740
2	2023	C	9.00	640	7	2023	P	3.50	15715
12	2022	C	12.00	609	9	2023	P	3.50	15705
12	2022	C	8.50	601	10	2023	P	3.50	15680
1	2023	C	15.00	586	10	2023	P	2.00	15498
11	2022	C	7.25	558	7	2023	P	3.00	15365
11	2022	C	8.50	557	1	2023	P	5.00	15216
12	2022	P	6.50	555	7	2023	P	4.00	15179
1	2023	P	6.00	500	12	2022	P	7.00	15170
4	2023	C	5.50	500	8	2023	P	3.00	15165
4	2023	P	2.50	500	9	2023	P	3.00	15165
					5	2023	P	4	14893

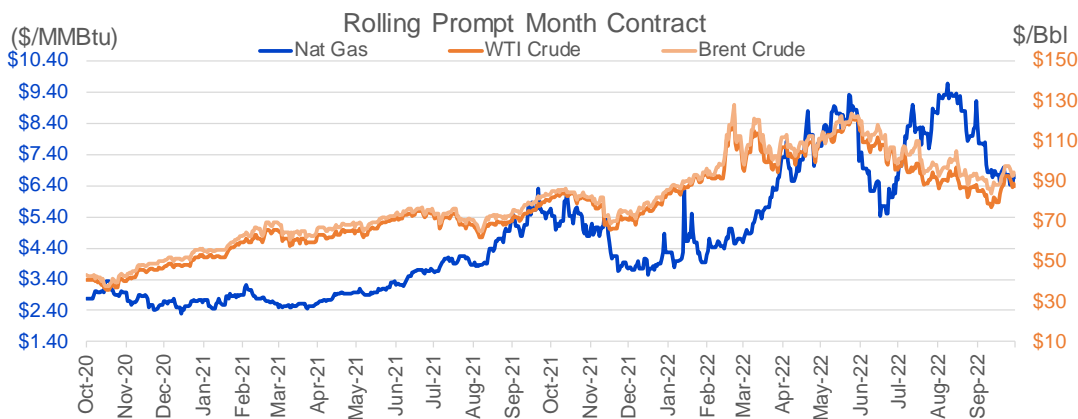
Source: CME, ICE

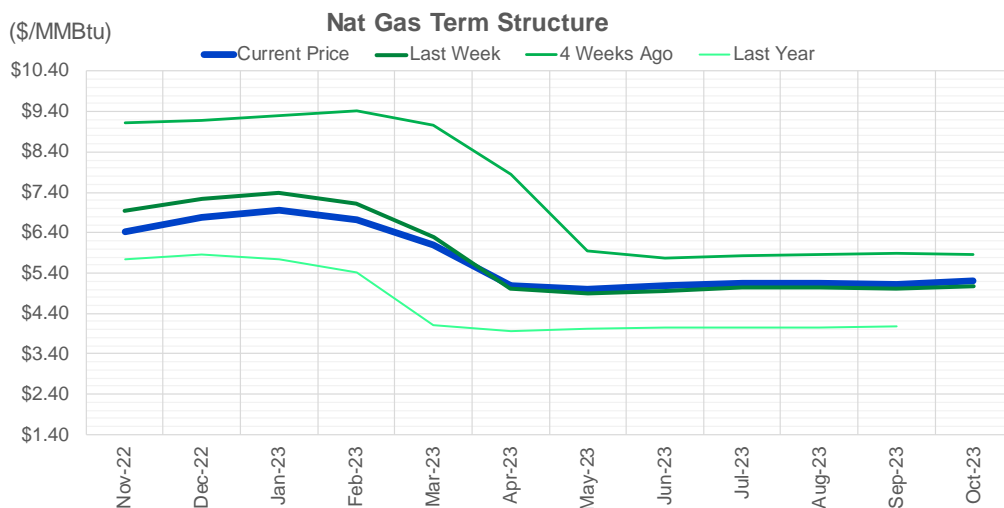
Nat Gas Futures Open Interest

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
NOV 22	90635	106261	-15626	NOV 22	67487	66923	564
DEC 22	80409	76612	3797	DEC 22	75998	76433	-435
JAN 23	120765	112187	8578	JAN 23	72079	72714	-635
FEB 23	51665	51043	622	FEB 23	66275	65868	407
MAR 23	88148	85619	2529	MAR 23	58172	58528	-356
APR 23	77491	76923	568	APR 23	55183	54910	273
MAY 23	83522	83148	374	MAY 23	55817	55756	62
JUN 23	24901	24415	486	JUN 23	46816	46600	216
JUL 23	29316	28989	327	JUL 23	46735	46523	212
AUG 23	21058	20948	110	AUG 23	44918	44922	-4
SEP 23	27576	27245	331	SEP 23	42406	42160	246
OCT 23	53744	53894	-150	OCT 23	55877	55614	263
NOV 23	22365	22341	24	NOV 23	47385	47341	44
DEC 23	22208	22155	53	DEC 23	40092	39955	136
JAN 24	33997	34104	-107	JAN 24	44396	44422	-26
FEB 24	9924	9660	264	FEB 24	30958	30958	0
MAR 24	20030	19643	387	MAR 24	35508	35629	-121
APR 24	18568	18122	446	APR 24	29886	29867	20
MAY 24	8370	8282	88	MAY 24	28385	28306	79
JUN 24	3070	3071	-1	JUN 24	25788	25688	100
JUL 24	3983	3991	-8	JUL 24	25379	25247	132
AUG 24	3849	3833	16	AUG 24	25141	25010	131
SEP 24	2464	2460	4	SEP 24	24766	24663	103
OCT 24	8647	8817	-170	OCT 24	28774	28785	-11
NOV 24	4907	4916	-9	NOV 24	26147	26144	3
DEC 24	8268	8273	-5	DEC 24	30048	30080	-32
JAN 25	17504	17447	57	JAN 25	23250	23251	-1
FEB 25	1684	1684	0	FEB 25	15689	15702	-14
MAR 25	5316	5316	0	MAR 25	17991	17974	17
APR 25	5345	5245	100	APR 25	16189	16217	-28

Source: CME, ICE






	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23
Current Price	\$6.435	\$6.766	\$6.953	\$6.723	\$6.110	\$5.096	\$5.004	\$5.076	\$5.150	\$5.158	\$5.126	\$5.201
Last Week	\$6.930	\$7.236	\$7.385	\$7.110	\$6.290	\$5.006	\$4.886	\$4.960	\$5.033	\$5.041	\$5.007	\$5.079
vs. Last Week	-\$0.495	-\$0.470	-\$0.432	-\$0.387	-\$0.180	\$0.090	\$0.118	\$0.116	\$0.117	\$0.117	\$0.119	\$0.122
4 Weeks Ago	\$9.114	\$9.167	\$9.310	\$9.407	\$9.073	\$7.850	\$5.954	\$5.779	\$5.823	\$5.872	\$5.882	\$5.861
vs. 4 Weeks Ago	-\$2.679	-\$2.401	-\$2.357	-\$2.684	-\$2.963	-\$2.754	-\$0.950	-\$0.703	-\$0.673	-\$0.714	-\$0.756	-\$0.660
Last Year	\$5.590	\$5.753	\$5.854	\$5.750	\$5.429	\$4.098	\$3.977	\$4.011	\$4.052	\$4.058	\$4.042	\$4.072
vs. Last Year	\$0.845	\$1.013	\$1.099	\$0.973	\$0.681	\$0.998	\$1.027	\$1.065	\$1.098	\$1.100	\$1.084	\$1.129

	Units	Current Price	vs. Last Week	vs. 4 Weeks Ago	vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224	▲ 0.000	▲ 0.000	▲ 0.000
NatGas Oct21/Nov21	\$/MMBtu	0.361	▲ 0.000	▲ 0.000	▲ 0.515
NatGas Oct21/Jan22	\$/MMBtu	-1.817	▲ 0.000	▲ 0.000	▼ -1.912
NatGas Apr22/Oct22	\$/MMBtu	1.532	▲ 0.000	▼ -1.456	▲ 1.563
WTI Crude	\$/Bbl	89.11	▲ 0.660	▲ 4.010	▲ 7.800
Brent Crude	\$/Bbl	94.57	▲ 0.150	▲ 3.730	▲ 10.570
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	▲ 0.000	▲ 0.000	▲ 0.000
Heating Oil	cents/Gallon	409.48	▲ 22.990	▲ 88.960	▲ 153.340
Propane, Mt. Bel	cents/Gallon	0.85	▼ -0.065	▼ -0.195	▼ -0.613
Ethane, Mt. Bel	cents/Gallon	0.43	▲ 0.008	▼ -0.076	▼ -0.014
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					
10/14/2022					
Baker Hughes 					
U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago
Oil	610	8	602	165	445
Gas	157	-1	158	59	98
Miscellaneous	2	0	2	2	0
Directional	41	0	41	9	32
Horizontal	705	7	698	224	481
Vertical	23	0	23	-7	30
Canada Breakout	This Week	+/-	Last Week	+/-	Year Ago
Oil	150	2	148	52	98
Gas	66	-1	67	-4	70
Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago
Ardmore Woodford	5	1	4	3	2
Arkoma Woodford	3	-2	5	1	2
Barnett	3	0	3	3	0
Cana Woodford	26	0	26	4	22
DJ-Niobrara	17	0	17	5	12
Eagle Ford	71	-1	72	31	40
Granite Wash	6	0	6	3	3
Haynesville	70	0	70	24	46
Marcellus	41	1	40	14	27
Mississippian	1	0	1	0	1
Permian	346	1	345	79	267
Utica	12	2	10	2	10
Williston	40	1	39	17	23