

This past week the natgas market observed some wild price swings, but this time it had nothing to do with Freeport LNG. The main trigger was the potential rail strike that would have halted rail service nationwide which would have wreaked havoc and caused supply chain issues for multiple industries, including coal, chemicals, and oil and gas material/equipment.

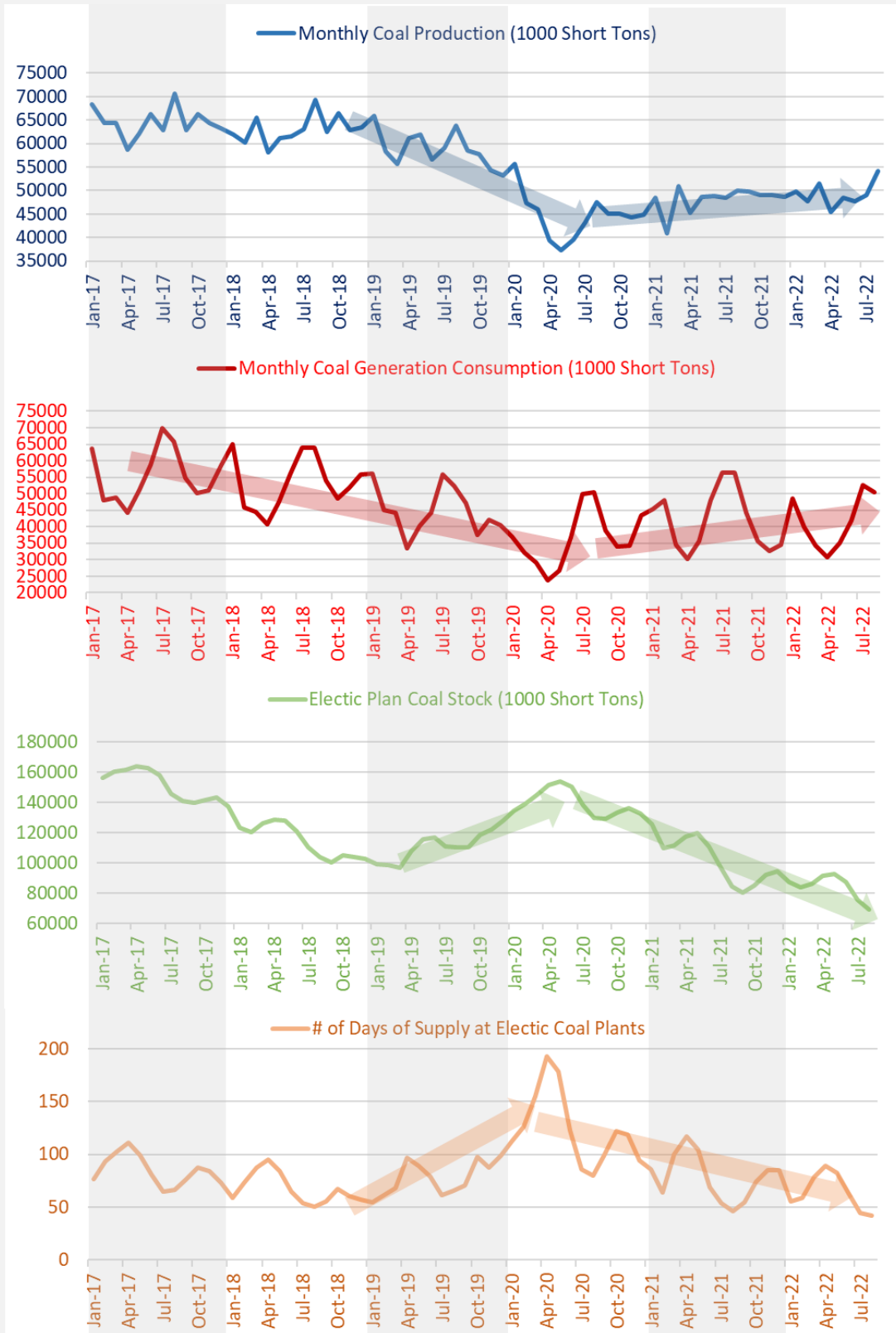
The front monthly experienced a \$1.52 range, with a close below the open for the week.



Contract negotiations have been taking place for three years between railroad management and all the associated unions. Up until Wednesday all but two unions had agreed to the most recent contract offer. With no consensus amongst the 12 associated unions, the fear of no deal sent natural gas markets running to over \$9 on Wednesday as the pause of coal deliveries would put excess pressure on natural gas-fired generators. The tide turned quickly on Thursday with the rumors of a tentative agreement reached early Thursday morning.

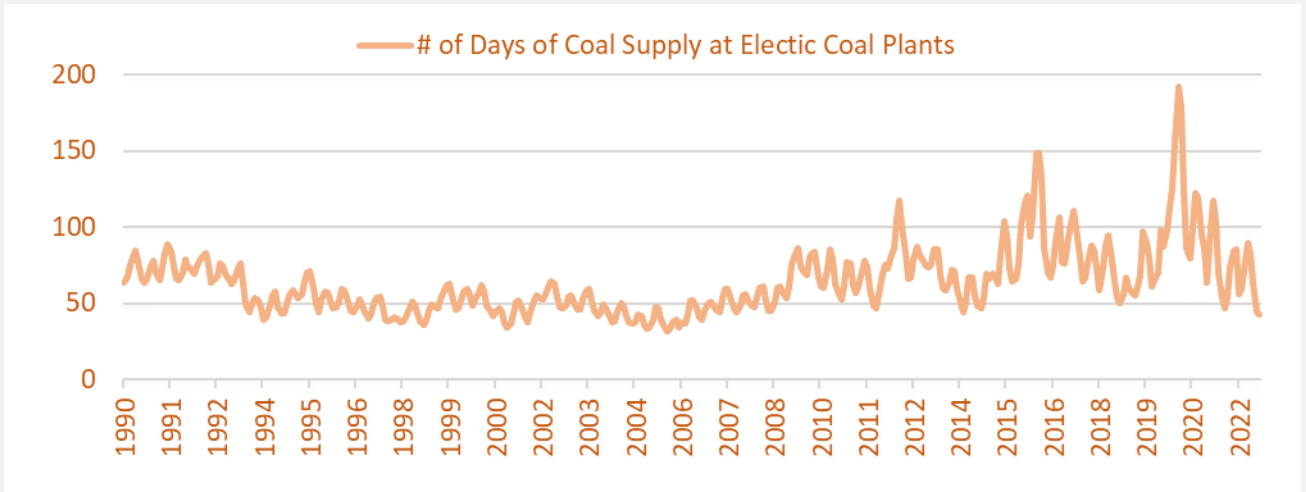
The market move we saw on Wednesday was fully justified in our opinion, as the duration of the strike could have been days to months. To fully understand the rail strike impacts to gas markets, let's take a look at how fragile the coal generation industry has become.

To start we must understand that coal generation still makes up roughly 20% of the needed daily generation to fulfill power demand. The post-COVID era and continuing conflict between Ukraine/Russia have left coal stockpiles extremely low in the US. The charts below show a complete story of how coal supply, consumption, and stockpiles have trended in the past 5 years, but the final chart brings the entire story together.



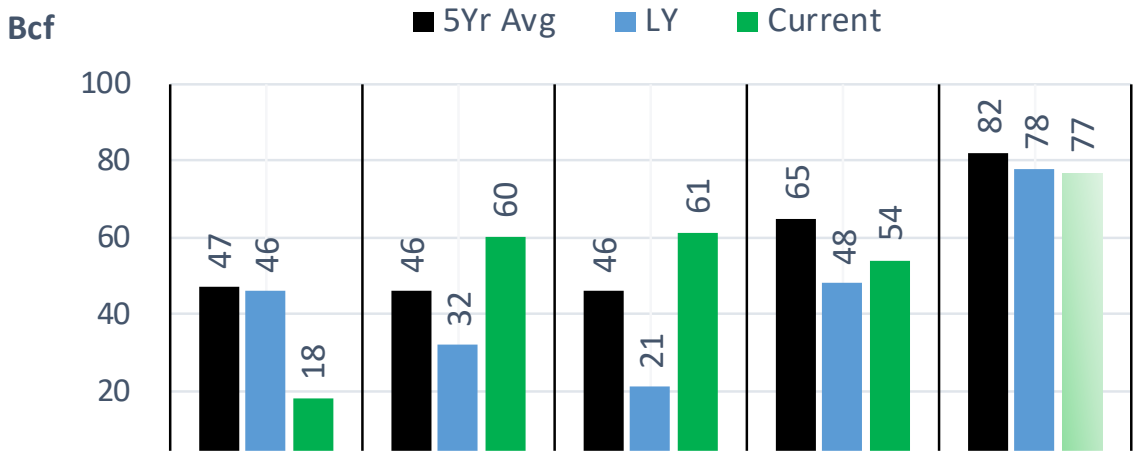
The risk of trading futures and options and other derivatives involves a substantial risk of loss and is not suitable for all persons. Each person must consider whether a particular trade, combination of trades, or strategy is suitable for that person's financial means and objectives. Past results are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

The final chart estimates the number of days of coal supply that are currently sitting at US coal plants (currently stockpiles at electric plants / current monthly electric consumption). With the latest EIA coal data for August, we estimate there are only 42 days of coal burn available; hence any stoppage in rail would cripple coal generation availability adding immense pressure to the already high power burn level. As can be seen in the same chart extending back to 1990, the coal supply level was last this low before the shale era.

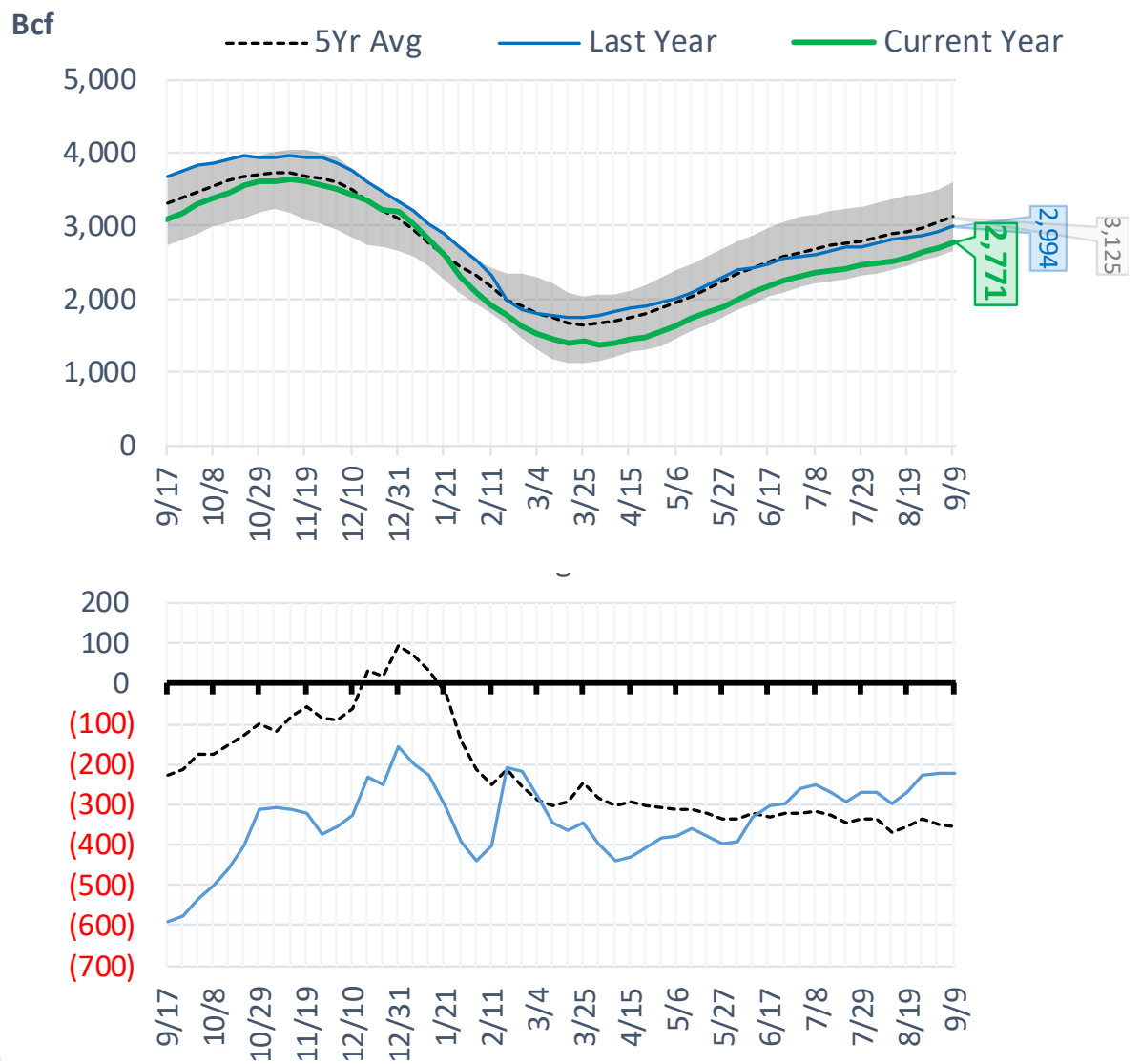


Luckily, it appears we have avoided this threat and with it, we have seen prices retreat to below \$8.

Total Lower 48 YoY Weekly Change



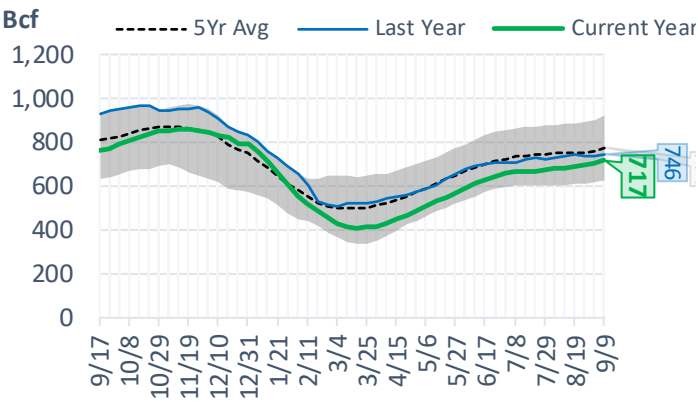
Total Lower 48 Storage Levels



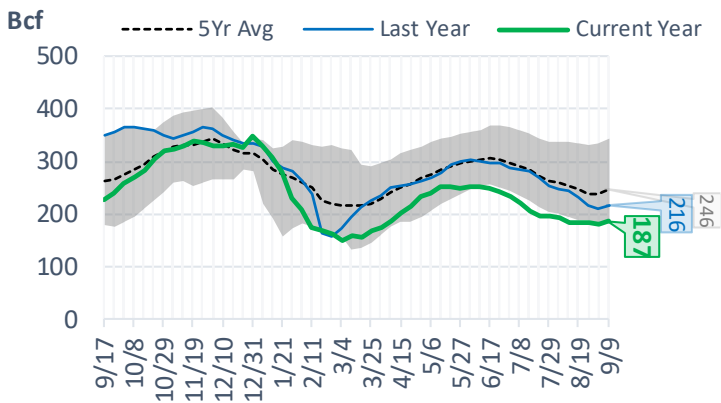
Natural Gas Storage Stats - Last 5 Weeks

Week Ending	Current 9-Sep	Week - 1 2-Sep	Week - 2 26-Aug	Week - 3 19-Aug	Week - 4 12-Aug	Week - 5 5-Aug
Total Lower 48 Storage Level	2771	2694	2640	2579	2519	2501
Weekly Change	+77	+54	+61	+60	+18	+44
vs LY	-223	-222	-228	-268	-296	-268
vs 5Yr Avg	-354	-349	-338	-353	-367	-338
S. Central Salt Storage Level	187	182	185	184	185	193
Weekly Change	+5	-3	+1	-1	-8	-2
vs LY	-29	-27	-31	-47	-59	-54
vs 5Yr Avg	-59	-56	-54	-62	-68	-66
S. Central NonSalt Storage Level	717	705	696	687	681	681
Weekly Change	+12	+9	+9	+6	0	+10
vs LY	-29	-30	-39	-55	-59	-50
vs 5Yr Avg	-57	-57	-60	-68	-72	-68
Midwest Storage Level	809	776	747	714	684	663
Weekly Change	+33	+29	+33	+30	+21	+20
vs LY	-62	-62	-62	-72	-78	-75
vs 5Yr Avg	-67	-67	-64	-71	-74	-69
East Storage Level	661	635	614	598	571	564
Weekly Change	+26	+21	+16	+27	+7	+15
vs LY	-67	-64	-62	-61	-72	-61
vs 5Yr Avg	-98	-100	-97	-91	-96	-83
Mountain Storage Level	163	159	157	153	151	148
Weekly Change	+4	+2	+4	+2	+3	+1
vs LY	-30	-32	-33	-35	-37	-37
vs 5Yr Avg	-32	-32	-31	-33	-32	-33
Pacific Storage Level	235	238	241	243	248	252
Weekly Change	-3	-3	-2	-5	-4	-1
vs LY	-5	-5	-2	+2	+8	+11
vs 5Yr Avg	-40	-36	-32	-29	-24	-20

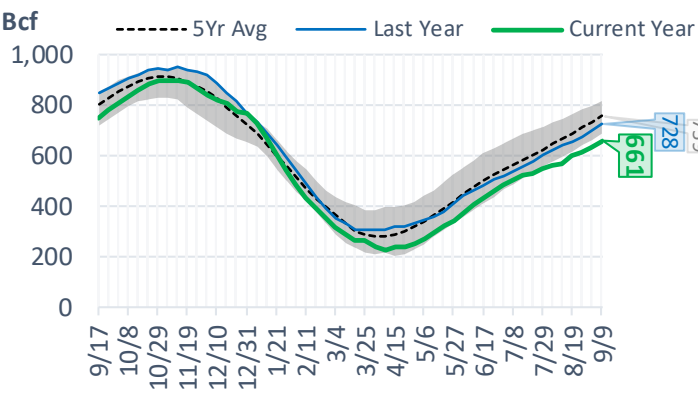
NonSalt Storage Levels



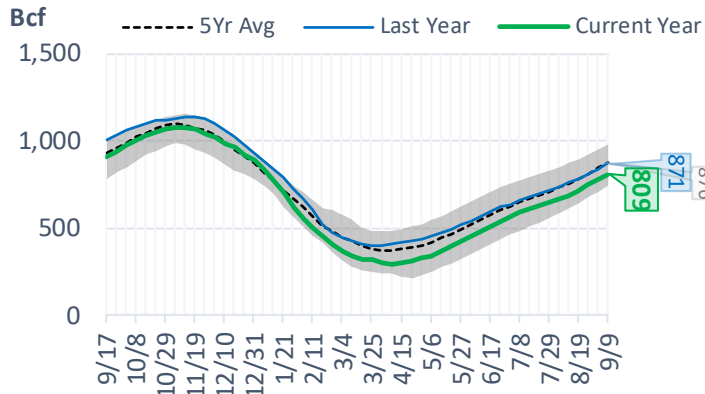
Salt Storage Levels



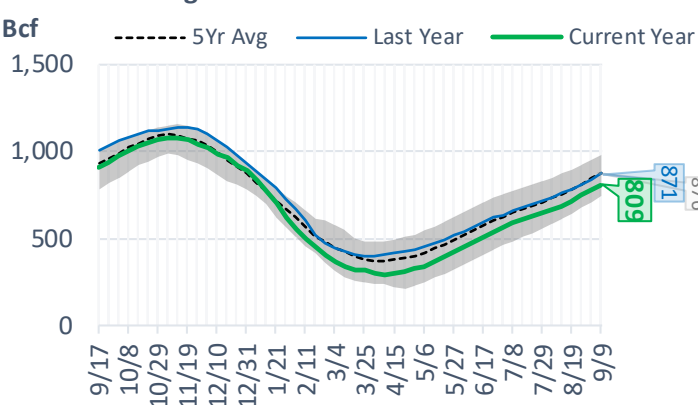
East Storage Levels



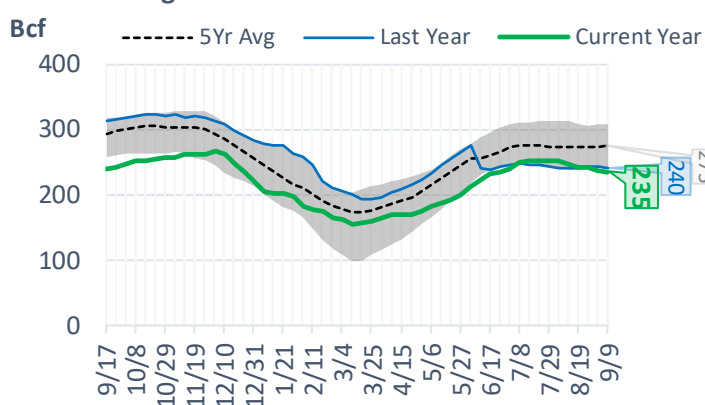
Midwest Storage Levels



Midwest Storage Levels



Pacific Storage Levels



EIA Storage Week Balances

	LY					LW	Current		
	17-Sep	19-Aug	26-Aug	2-Sep	9-Sep	16-Sep	WoW	vs. LY	
Lower 48 Dry Production	93.3	97.8	98.6	99.8	100.5	100.4	▼-0.1	▲7.2	
Canadian Imports	5.0	4.8	5.4	5.7	5.8	5.5	▼-0.3	▲0.4	
L48 Power	35.1	39.6	41.2	42.2	40.6	37.8	▼-2.8	2.6	
L48 Residential & Commercial	8.5	8.1	8.2	8.2	7.8	8.2	▲0.4	-0.3	
L48 Industrial	20.5	21.3	21.0	22.1	21.7	20.8	▼-1.0	0.3	
L48 Lease and Plant Fuel	5.1	5.3	5.4	5.4	5.4	5.4	▼0.0	0.4	
L48 Pipeline Distribution	2.4	2.5	2.6	2.7	2.7	2.6	▼-0.1	0.1	
L48 Regional Gas Consumption	71.6	76.8	78.5	80.6	78.3	74.7	▼-3.6	▲3.1	
Net LNG Exports	10.2	10.9	11.1	10.9	11.3	11.3	▲0.0	▲1.1	
Total Mexican Exports	6.6	7.0	6.9	6.9	6.6	6.7	▲0.1	▲0.0	
Implied Daily Storage Activity	9.8	7.9	7.6	7.2	10.1	13.2	3.1	3.4	
EIA Reported Daily Storage Activity	10.9	8.6	8.7	7.7	11.0				
Daily Model Error	-1.1	-0.6	-1.1	-0.5	-0.9				

Monthly Balances

	2Yr Ago	LY						MTD		
	Sep-20	Sep-21	May-22	Jun-22	Jul-22	Aug-22	Sep-22	MoM	vs. LY	
Lower 48 Dry Production	88.9	93.6	95.8	96.5	97.1	98.6	100.4	▲1.8	▲6.9	
Canadian Imports	3.8	5.1	5.1	5.7	5.9	5.4	5.7	▲0.3	▲0.5	
L48 Power	34.4	33.1	29.8	38.0	43.7	42.5	39.4	▼-3.1	▲6.3	
L48 Residential & Commercial	8.9	8.7	12.4	9.1	9.0	8.3	8.0	▼-0.3	▼-0.7	
L48 Industrial	19.9	20.2	19.7	18.7	19.5	21.3	21.3	▼0.0	▲1.0	
L48 Lease and Plant Fuel	4.8	5.1	5.3	5.3	5.3	5.4	5.4	▲0.1	▲0.4	
L48 Pipeline Distribution	2.4	2.3	2.4	2.5	2.8	2.7	2.6	▼-0.1	▲0.3	
L48 Regional Gas Consumption	70.4	69.5	69.5	73.7	80.2	80.2	76.8	▼-3.4	▲7.3	
Net LNG Exports	5.9	10.3	12.5	11.2	10.9	11.0	11.2	▲0.3	▲0.9	
Total Mexican Exports	6.1	6.7	7.0	7.1	7.0	6.9	6.6	▼-0.3	▼-0.1	
Implied Daily Storage Activity	10.3	12.1	11.9	10.2	4.9	5.8	11.4			
EIA Reported Daily Storage Activity										
Daily Model Error					0.2					

Source: Bloomberg, analytix.ai

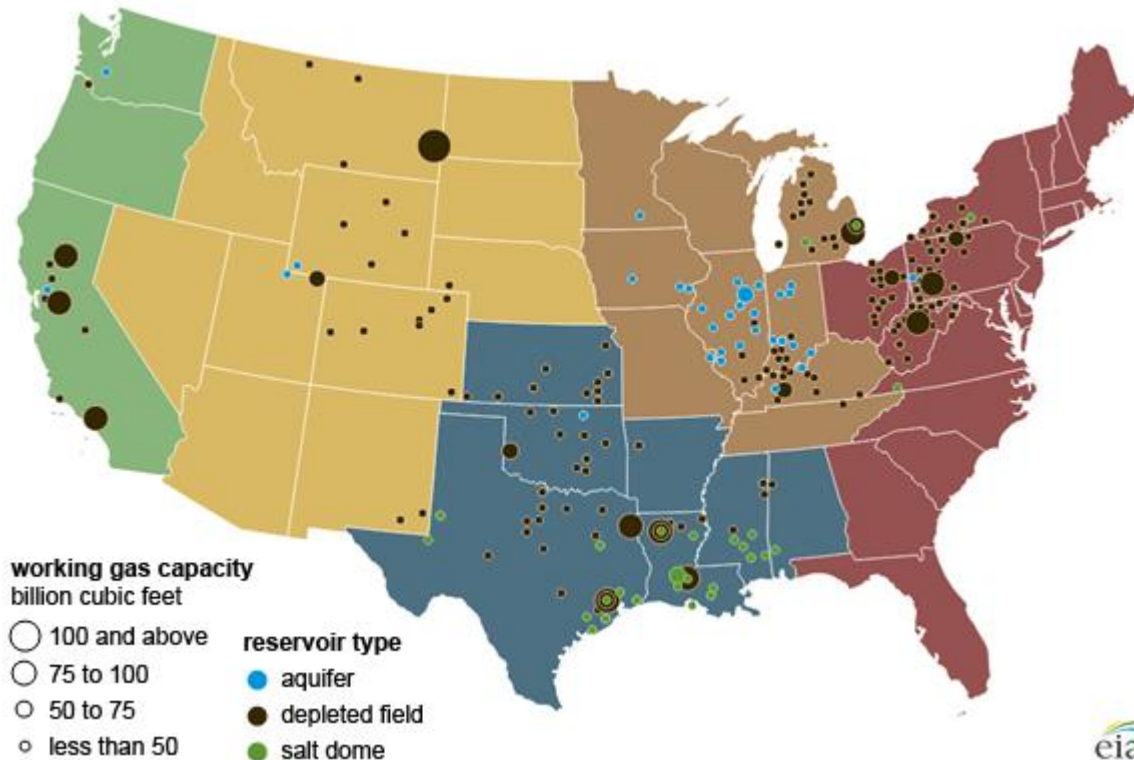
Regional S/D Models Storage Projection

Week Ending 16-Sep

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	14.3	-0.1	14.2	100
East	2.1	1.6	3.7	26
Midwest	5.3	0.2	5.5	38
Mountain	4.8	-4.2	0.7	5
South Central	1.1	2.9	4.0	28
Pacific	1.0	-0.6	0.4	3

*Adjustment Factor is calculated based on historical regional deltas

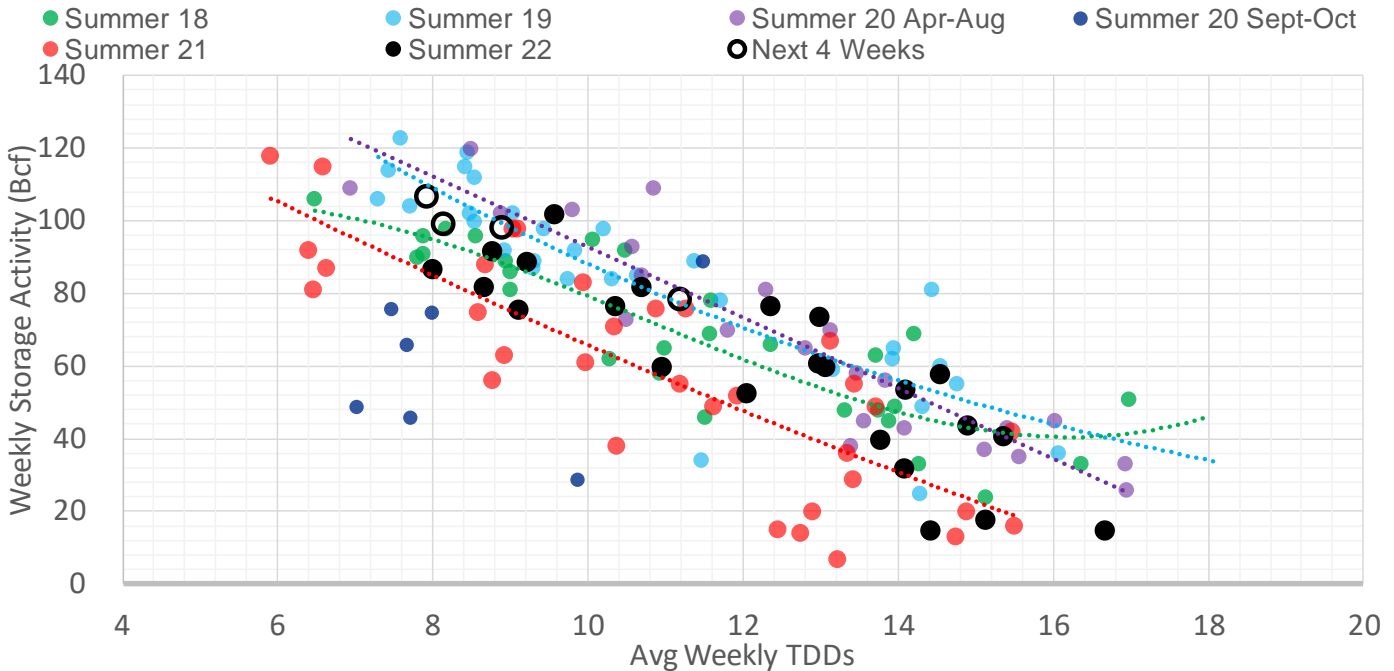
U.S. underground natural gas storage facilities by type (July 2015)



Weather Model Storage Projection

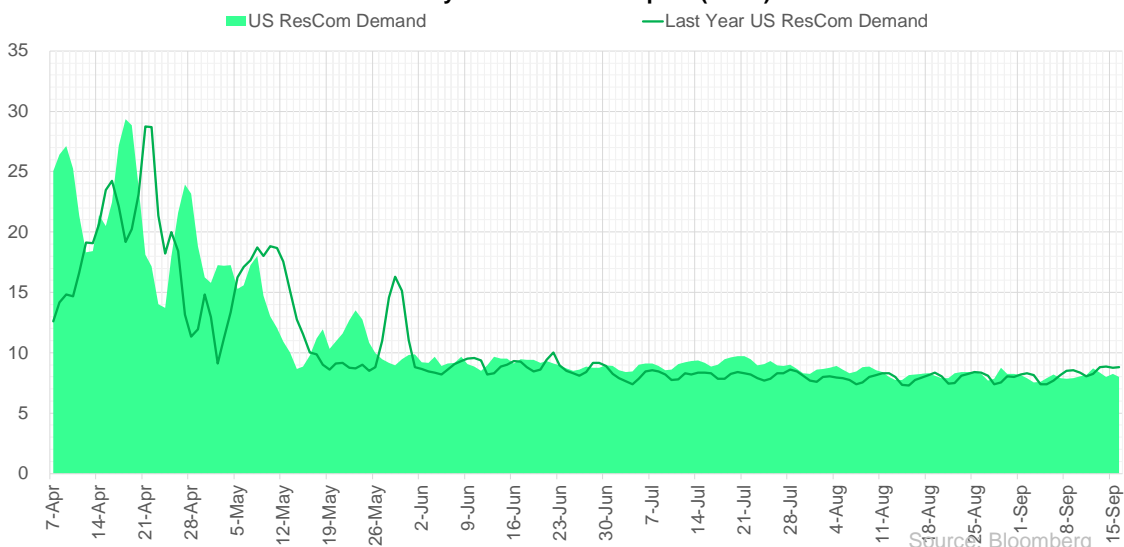
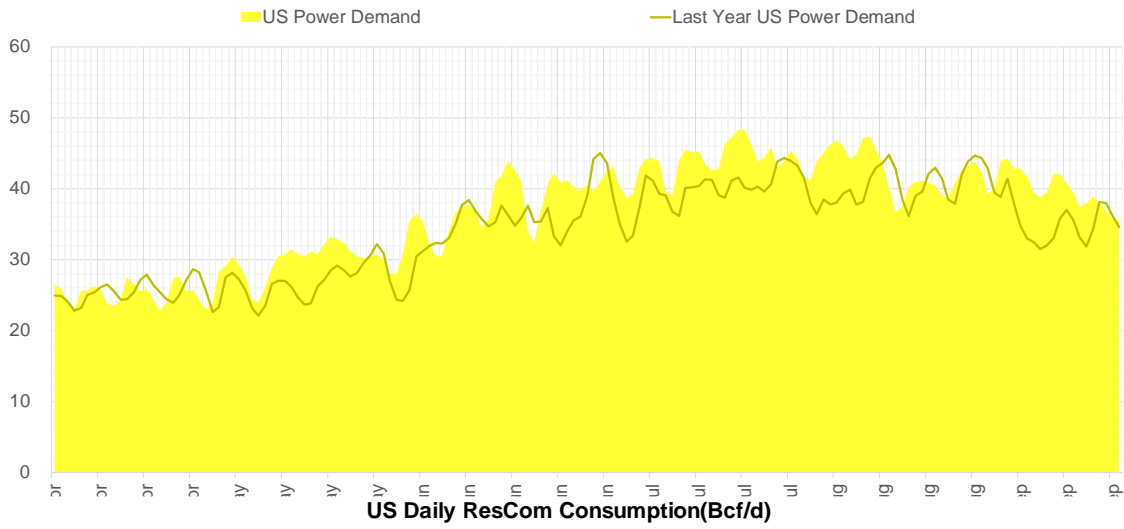
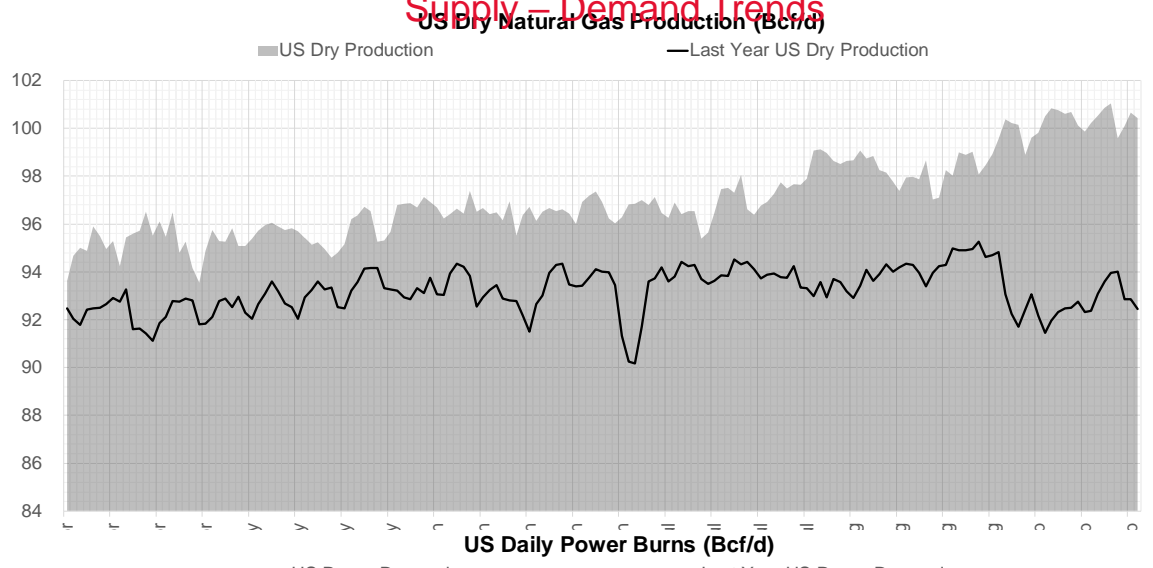
Next report and beyond		
Week Ending	GWDDs	Week Storage Projection
16-Sep	8.1	100
23-Sep	11.2	79
30-Sep	8.9	99
07-Oct	7.9	107

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

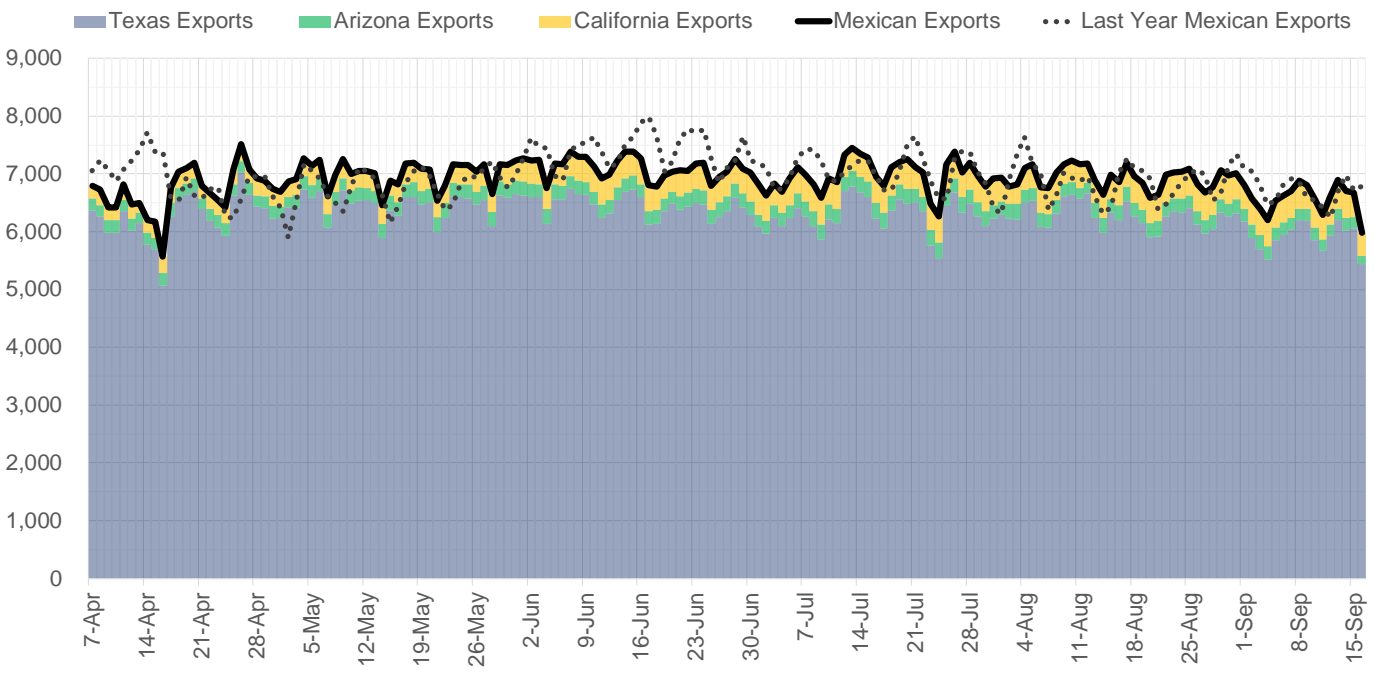
Supply – Demand Trends



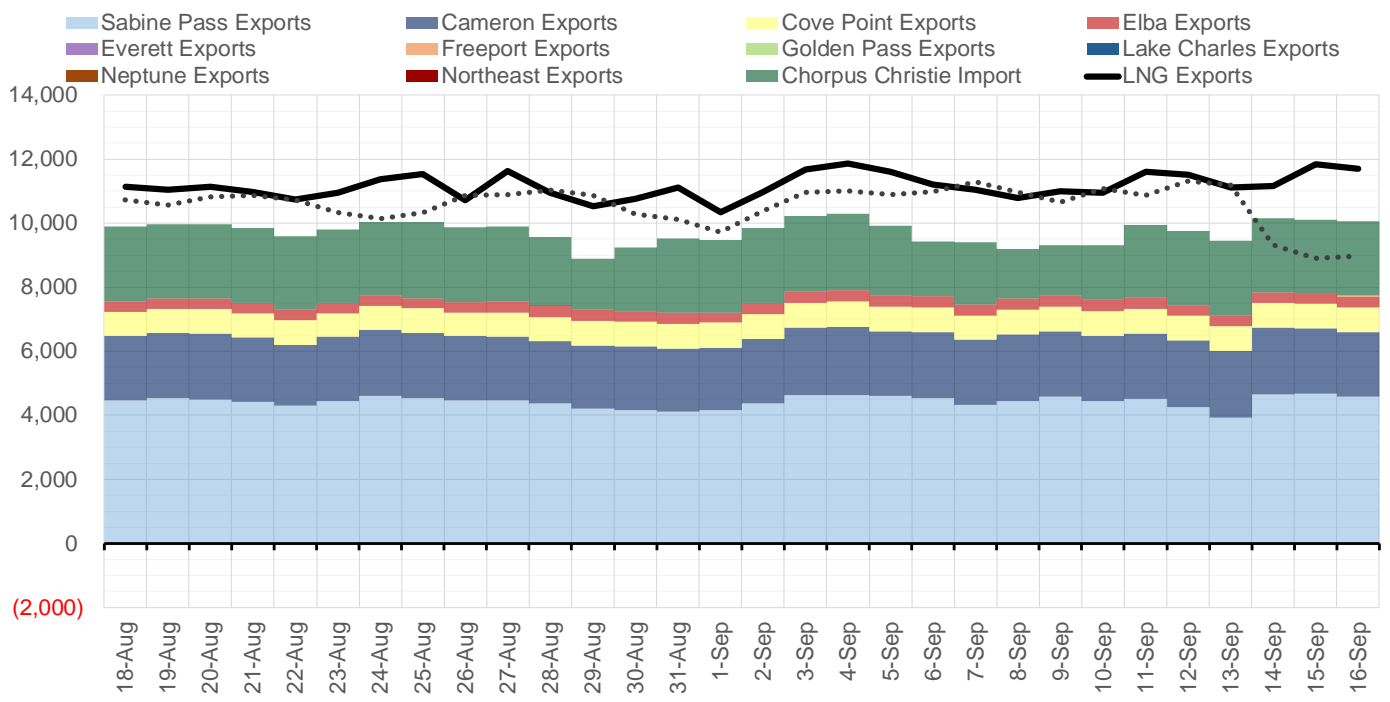
Source: Bloomberg

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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
3	2023	P	5.50	4820	10	2022	P	3.00	36677
10	2022	C	10.00	4116	10	2022	C	6.00	36016
3	2023	P	4.50	4000	10	2022	P	6.00	33914
10	2022	P	7.00	2676	10	2022	P	5.00	30184
10	2022	C	9.00	2205	10	2022	P	2.50	28006
10	2022	P	6.00	2035	10	2022	C	10.00	25304
10	2022	P	6.50	1907	10	2022	C	5.00	23569
10	2022	C	9.50	1548	3	2023	C	10.00	23185
10	2022	C	10.50	1524	10	2022	C	12.00	23100
3	2023	P	7.00	1510	11	2022	P	4.00	22894
11	2022	P	6.00	1297	10	2022	P	3.50	22296
10	2022	P	8.00	1257	5	2023	P	2.00	22227
10	2022	C	11.00	1084	10	2022	P	4.00	21662
7	2023	P	4.00	1060	12	2022	P	5.00	21542
2	2023	C	15.00	1003	4	2023	P	3.00	21356
4	2023	P	4.00	1000	10	2022	P	7.00	21266
10	2022	C	12.00	955	10	2023	P	3.00	20123
11	2022	P	4.00	912	10	2022	P	8.00	19589
10	2022	P	5.50	767	4	2023	P	3.50	19271
1	2023	C	8.00	750	3	2023	C	20.00	18698
1	2023	C	10.20	750	10	2022	P	5.50	18625
3	2023	C	20.00	742	12	2022	C	5.00	18218
11	2022	P	7.50	724	10	2022	C	8.00	17924
3	2023	P	5.00	700	6	2023	P	3.00	17740
10	2022	C	9.75	667	5	2023	P	3.00	17718
11	2022	C	10.00	653	5	2023	P	3.50	17670
4	2023	P	5.00	650	10	2023	P	2.50	17650
10	2023	P	4.50	625	7	2023	P	3.50	17345
1	2023	C	30.00	600	8	2023	P	3.50	17345
10	2022	P	7.50	534	9	2023	P	3.50	17335
10	2022	C	9.25	520	11	2022	P	5.00	17308
11	2022	P	5.00	516	10	2023	P	3.50	17235
10	2022	P	6.40	502	1	2023	C	10.00	17170
2	2023	C	10.00	500	6	2023	P	3.50	17095
3	2023	P	4.00	500	11	2022	P	6.00	16811
12	2022	C	15.00	450	3	2023	P	3.00	16799
4	2023	P	4.50	425	10	2022	P	2.00	16759
5	2023	P	4.50	425	7	2023	P	3.00	16395
6	2023	P	4.50	425	12	2022	P	4.00	16334
11	2022	C	12.00	419	8	2023	P	3.00	16195
1	2023	P	5.50	400	9	2023	P	3.00	16195
10	2022	C	13.50	387	12	2022	C	4.00	16194
10	2022	C	10.25	381	10	2023	P	4.00	15911
10	2022	P	8.75	378	12	2022	P	6.00	15907
7	2023	P	4.50	375	11	2022	C	12.00	15895
8	2023	P	4.50	375	11	2022	C	4.00	15755
9	2023	P	4.50	375	2	2023	C	10.00	15714
1	2023	C	10.00	369	10	2023	P	2.00	15710
12	2022	P	5.00	367	10	2022	P	3.25	15196
					1	2023	P	5	15151

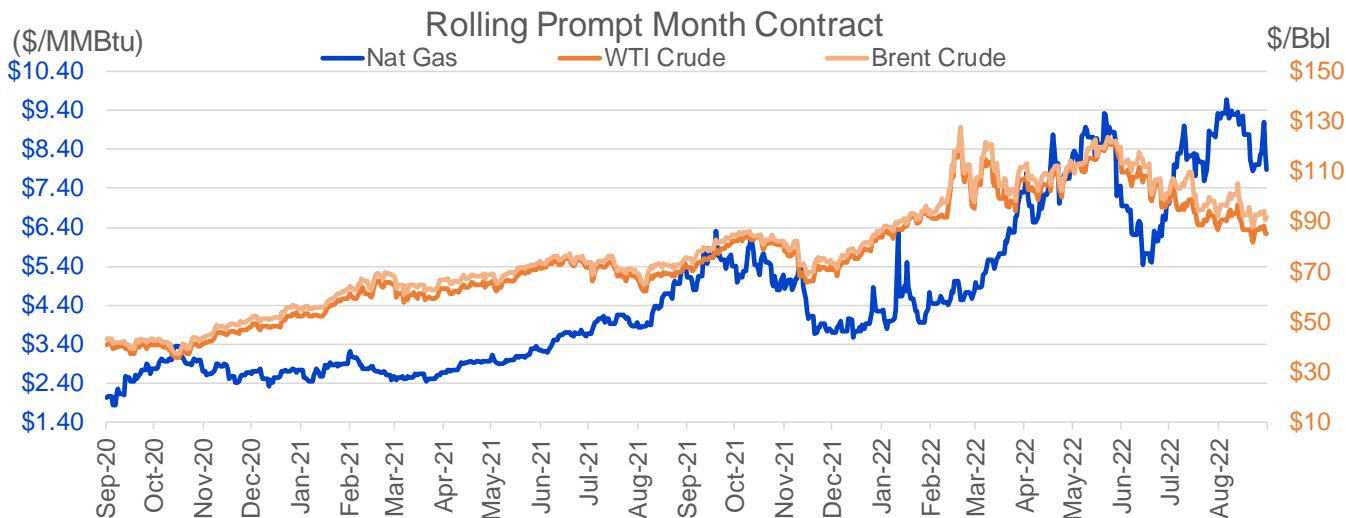
Source: CME, ICE

Nat Gas Futures Open Interest

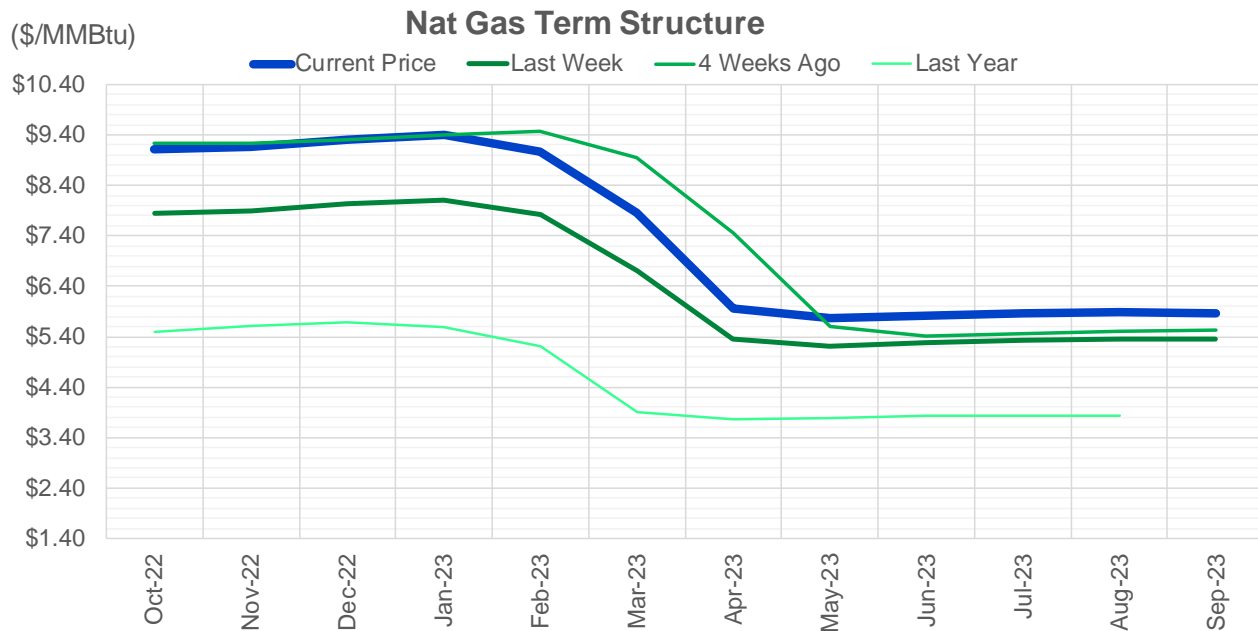
CME and ICE data combined

CME Henry Hub Futures (10,000 MMBtu)				ICE Henry Hub Futures Contract Equivalent (10,000 MM			
	Current	Prior	Daily Change		Current	Prior	Daily Change
OCT 22	66738	74159	-7421	OCT 22	76541	76599	-58
NOV 22	146683	144263	2420	NOV 22	73523	73772	-249
DEC 22	64835	65649	-814	DEC 22	68383	68617	-235
JAN 23	88987	88544	443	JAN 23	66404	66532	-128
FEB 23	41032	41599	-567	FEB 23	67247	66809	438
MAR 23	72472	72837	-365	MAR 23	56482	56370	112
APR 23	76018	76719	-701	APR 23	52473	52577	-104
MAY 23	78956	79123	-167	MAY 23	52208	52127	81
JUN 23	24017	24491	-474	JUN 23	45202	45175	28
JUL 23	23993	24485	-492	JUL 23	44224	44282	-58
AUG 23	19690	19898	-208	AUG 23	42906	42910	-4
SEP 23	23089	23015	74	SEP 23	43104	43054	51
OCT 23	53828	54211	-383	OCT 23	51222	50894	328
NOV 23	16861	16882	-21	NOV 23	46932	46836	96
DEC 23	14354	14199	155	DEC 23	40929	40838	91
JAN 24	22050	21199	851	JAN 24	40061	39555	506
FEB 24	8808	8894	-86	FEB 24	30573	31040	-467
MAR 24	18810	18649	161	MAR 24	36091	35631	460
APR 24	15101	14877	224	APR 24	28960	28919	41
MAY 24	7516	7488	28	MAY 24	27587	27590	-3
JUN 24	2886	2858	28	JUN 24	24902	24905	-3
JUL 24	3471	3443	28	JUL 24	24655	24658	-4
AUG 24	3429	3419	10	AUG 24	24344	24347	-3
SEP 24	2233	2219	14	SEP 24	24101	24129	-28
OCT 24	8625	8620	5	OCT 24	27899	27828	71
NOV 24	4895	4885	10	NOV 24	25326	25282	44
DEC 24	8195	8184	11	DEC 24	28697	28648	49
JAN 25	17668	17673	-5	JAN 25	23075	23070	6
FEB 25	1572	1571	1	FEB 25	15461	15348	113
MAR 25	5187	5188	-1	MAR 25	17481	17099	382

Source: CME, ICE



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	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
Current Price	\$9.114	\$9.167	\$9.310	\$9.407	\$9.073	\$7.850	\$5.954	\$5.779	\$5.823	\$5.872	\$5.882	\$5.861
Last Week	\$7.842	\$7.901	\$8.035	\$8.115	\$7.818	\$6.705	\$5.352	\$5.219	\$5.278	\$5.340	\$5.357	\$5.345
vs. Last Week	\$1.272	\$1.266	\$1.275	\$1.292	\$1.255	\$1.145	\$0.602	\$0.560	\$0.545	\$0.532	\$0.525	\$0.516
4 Weeks Ago	\$9.244	\$9.228	\$9.297	\$9.401	\$9.465	\$8.951	\$7.448	\$5.593	\$5.416	\$5.463	\$5.512	\$5.524
vs. 4 Weeks Ago	-\$0.130	-\$0.061	\$0.013	\$0.006	-\$0.392	-\$1.101	-\$1.494	\$0.186	\$0.407	\$0.409	\$0.370	\$0.337
Last Year	\$5.460	\$5.507	\$5.604	\$5.676	\$5.585	\$5.221	\$3.914	\$3.768	\$3.797	\$3.831	\$3.839	\$3.825
vs. Last Year	\$3.654	\$3.660	\$3.706	\$3.731	\$3.488	\$2.629	\$2.040	\$2.011	\$2.026	\$2.041	\$2.043	\$2.036

	Units	Current Price	vs. Last Week	vs. 4 Weeks Ago	vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224	▲ 0.000	▲ 0.000	▲ 0.506
NatGas Oct21/Nov21	\$/MMBtu	0.361	▲ 0.000	▲ 0.000	▲ 0.314
NatGas Oct21/Jan22	\$/MMBtu	-1.817	▲ 0.000	▲ 0.000	▼ -2.046
NatGas Apr22/Oct22	\$/MMBtu	2.988	▲ 0.409	▼ -0.846	▲ 3.034
WTI Crude	\$/Bbl	85.10	▲ 1.560	▼ -5.400	▲ 12.490
Brent Crude	\$/Bbl	90.84	▲ 1.690	▼ -5.750	▲ 15.170
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	▲ 0.000	▲ 0.000	▲ 0.000
Heating Oil	cents/Gallon	320.52	▼ -33.490	▼ -44.450	▲ 99.420
Propane, Mt. Bel	cents/Gallon	1.05	▲ 0.002	▼ -0.040	▼ -0.226
Ethane, Mt. Bel	cents/Gallon	0.51	▼ -0.012	▼ -0.100	▲ 0.113
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 
9/16/2022						
U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago	
Oil	599	8	591	188	411	
Gas	162	-4	166	62	100	
Miscellaneous	2	0	2	1	1	
Directional	45	2	43	28	17	
Horizontal	695	3	692	229	466	
Vertical	23	-1	24	-6	29	
Canada Breakout	This Week	+/-	Last Week	+/-	Year Ago	
Oil	146	6	140	51	95	
Gas	65	0	65	6	59	
Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago	
Ardmore Woodford	4	0	4	2	2	
Arkoma Woodford	7	0	7	6	1	
Barnett	3	0	3	3	0	
Cana Woodford	23	2	21	4	19	
DJ-Niobrara	17	0	17	5	12	
Eagle Ford	72	1	71	36	36	
Granite Wash	7	0	7	3	4	
Haynesville	71	0	71	24	47	
Marcellus	35	0	35	8	27	
Mississippian	2	0	2	1	1	
Permian	343	3	340	84	259	
Utica	12	0	12	0	12	
Williston	40	-1	41	17	23	