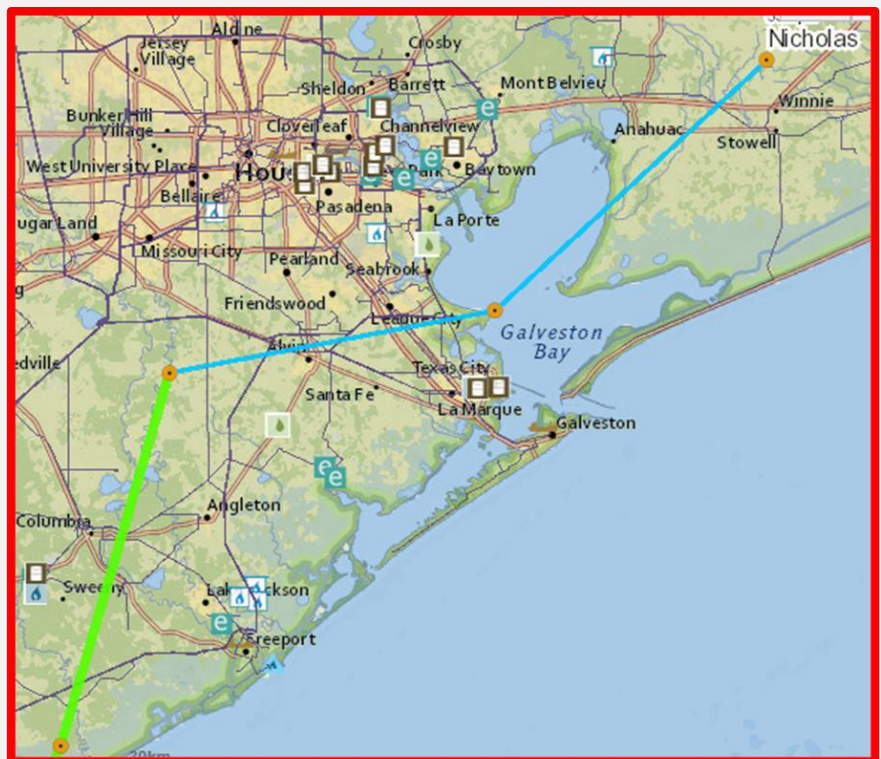
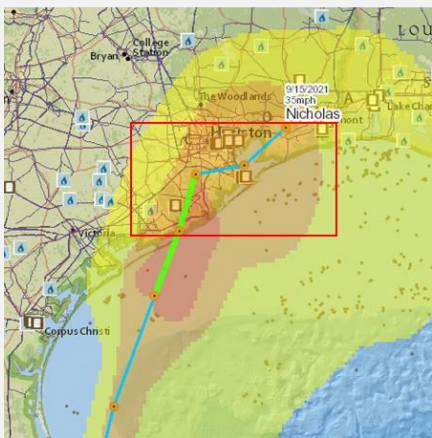


Fundamentals for the week ending Sept 17: This past week the EIA reported a +83 Bcf storage injection for week ending Sept 10th. The report came in a few Bcf higher than expectations, but the market shook it off with no substantial price reaction. The range of estimates was quite wide with the unknowns from the residual impacts from Hurricane Ida, and the lower demand due to the holiday Monday.

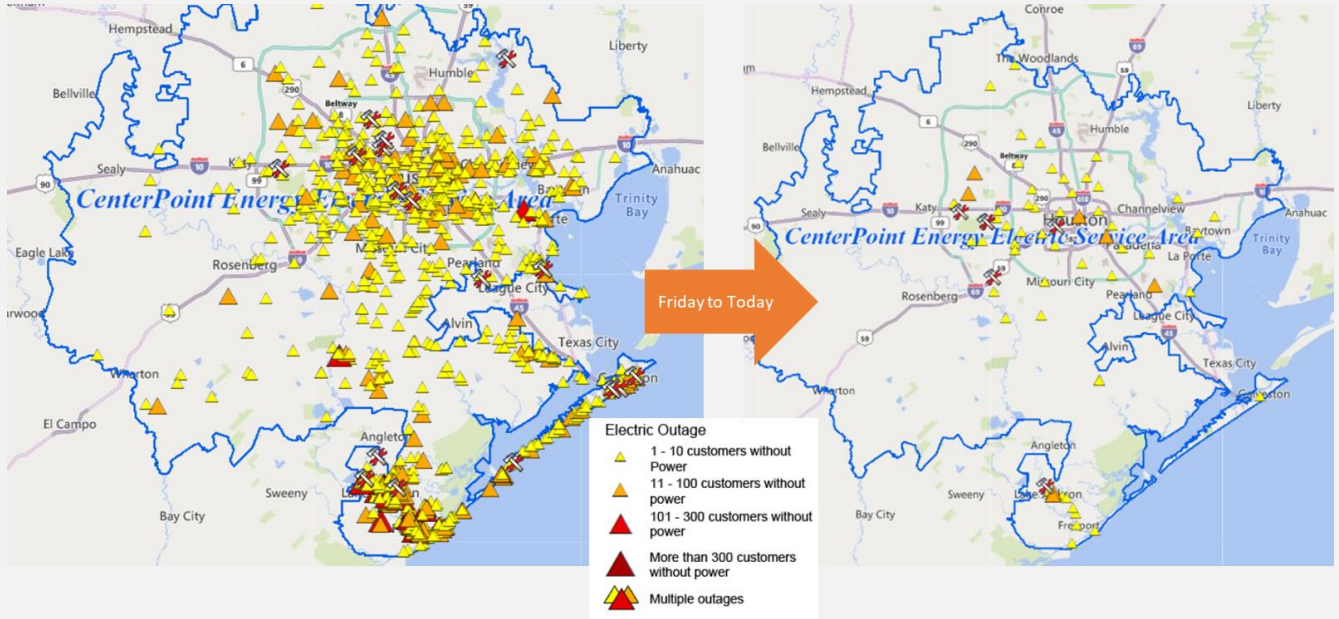
The report once again indicated loosening condition from the last few weeks of August. We estimate this report being 0.6 Bcf/d tight versus the average wx-adjusted injection from the last 3 summers. The balances were looser even with wind generation dropping by 13% from week ending Sept 3rd.

For the week ending Sept 17th, our early view is +75 Bcf. The 5Yr average is also a +74 Bcf injection. Our projected injection would take the L48 storage level to 3081 Bcf (-590 vs LY, -230 vs. 5Yr). This past week remained disordered with Hurricane Ida and Hurricane Nicholas. We are likely to see a wide variance in storage estimates once again as analysts try to figure out the demand destruction associated with Hurricane Nicholas. This hurricane passed through the main energy corridor of Texas, and the one known facility that lost power was Freeport LNG. Freeport LNG production remained offline through Friday, as power transmission lines were knocked out leading to the facility. Freeport LNG is the only liquefaction terminal in the US and one of only a few in the world that uses exclusively electric motors instead of natural gas turbines to drive the liquefaction compressors.



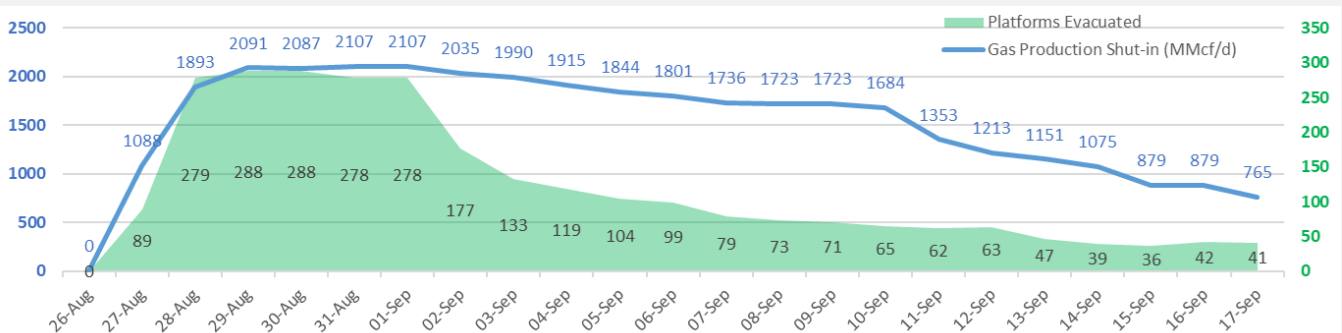
Centerpoint reports that most customers have received power back (99.9+%). This maps was full of outage up until this weekend.

[Get update data here: <https://www.centerpointenergy.com/en-us/residential/services/electric-utility/outage-center?sa=ho>]



Last week was the historical peak of hurricane season, and from the latest NOAA hurricane view, there are more disturbances on the way. Get the latest NOAA look here: <https://www.nhc.noaa.gov/>.

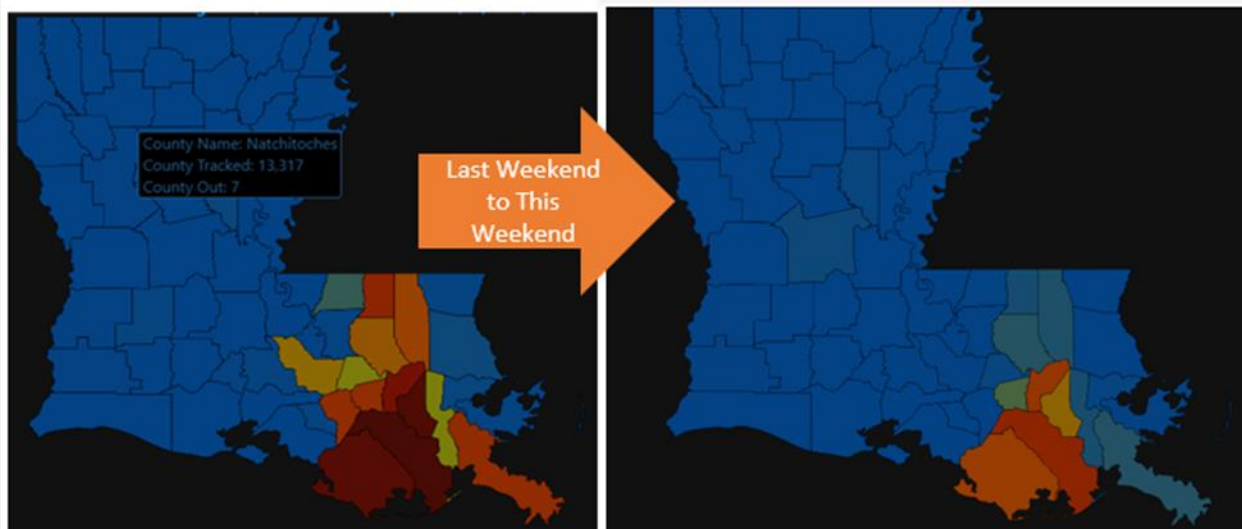
Domestic production continues to recover from Hurricane Ida ripping through the Gulf of Mexico and slamming into the Louisiana coast. We have had lower production from offshore rigs as of Aug 27th, despite most platform return staff and no major infrastructure damage. As we showed last week, there is a disconnect between GoM platform operations and shut-in volumes which points to onshore gas processing still stalling production. Here is the latest data from BSEE charted out to show that as of Friday we have 34% or 0.765 Bcf/d of production still offline.



Entergy has made a lot of progress of the week in returning power to the 4 southern Louisiana parishes that house the gas processing capacity. The goal was to have all power restored by Sept 29th.

Here is a good link to keep track of the restoration process:

<https://www.entergy.com/hurricaneida/etr/>



Overall, US dry gas production was higher by 0.4 Bcf/d to an average of 91.8 Bcf/d. Another major event that took place late in the week was another TCO outage. MarkWest notified TCO of an operational issue that forced them to reduce production deliveries. TCO initially estimated a reduction in supply on the TCO system of approximately 2.2 BCF.

Get the latest updates here: <https://ebb.tceconnects.com/infopost/?nomobile=1>

Total consumption was higher this week, primarily driven by returning LA industrial demand and higher pwCDDs leading to stronger burns. Total national temps were lower by 0.7F week-on-week. Total national power generation was higher by 1.2% from the previous week, but wind generation was much higher averaging 40 GWh through the week. We estimate the higher wind generation removed 1.7 Bcf/d of gas burns to help loosen the balances.

Generation Weekly Average - MWh (EIA)

	10-Sep	17-Sep	WoW	WoW Bcf/d Impact
US Wind	30632	40008	9376	-1.7
US Solar	14312	13849	-463	0.1
US Petroleum	2072	2525	453	-0.1
US Other	8933	9156	223	0.0
US Coal	116993	116489	-504	0.1
US Nuke	93162	89491	-3671	0.7
US Hydro	26944	23589	-3355	0.6
US Gas	181096	183141	2046	-0.4
US Total	474151	479891	5740	

Another quick note on generation is the change in the power stack over the past couple of years with the added renewable generation and price of natural gas. The table below compares the same 30 day periods between 2019, 2020, and 2021. Some notable observations:

1. Overall power load is 4.1% higher than last year as the economy recovers from covid, and pretty much in line with 2019. We should note that we have made no adjustments for differences in weather, but 2019 was significantly warmer.
2. Wind & solar generation are significantly higher.
3. Natural gas generation is flat all through years, but coal is significantly higher despite plant retirements. The unwind of C2G due to price would have been more significant with the recent price move if it weren't for lower coal production, and coal plant retirements.

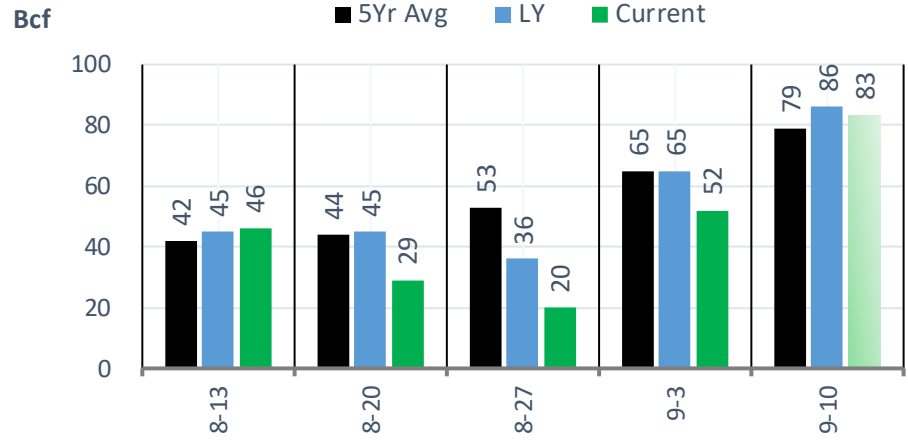
Generation Monthly Average - MWh (EIA)

	2Yr Ago		LY	
	Same 30 days	Same 30 days	Last 30 days	Last 30 days YoY
US Wind	29649	29767	36587	▲ 6820
US Solar	8489	9463	13993	▲ 4530
US Petroleum	4423	3415	3314	▼ -101
US Other	8477	9071	9539	▲ 468
US Coal	116546	116085	126829	▲ 10744
US Nuke	99334	92692	92327	▼ -366
US Hydro	29013	28307	27271	▼ -1037
US Gas	202475	198621	197258	▼ -1364
US Total	500313	487422	507631	▲ 20209

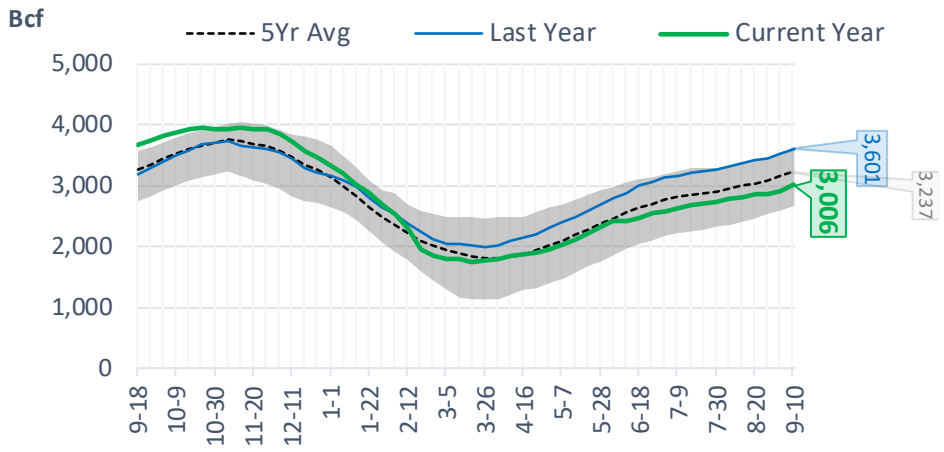
Deliveries to LNG facilities averaged 10.2 Bcf/d, which was -0.7 Bcf/d lower than the previous week due to Hurricane Nicholas knocking out power at Freeport. Corpus Christie was also slightly lower off with lower feedgas volumes due to short-term maintenance. As of today, LNG feedgas are back up to 10.84 Bcf/d. One thing to keep a look out for is annual maintenance on Cove Point which usually starts in the back half of September and typically last 3-4 weeks.

EIA Storage Report

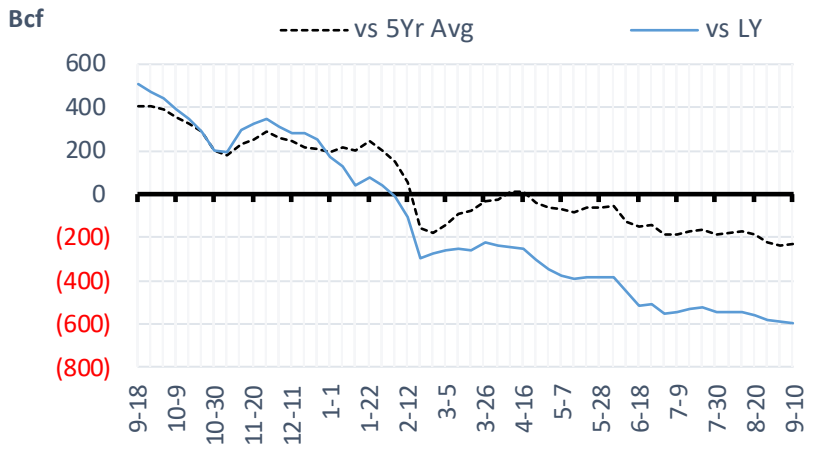
Total Lower 48 YoY Weekly Change



Total Lower 48 Storage Levels



Total Lower 48 LY Surplus/Deficit

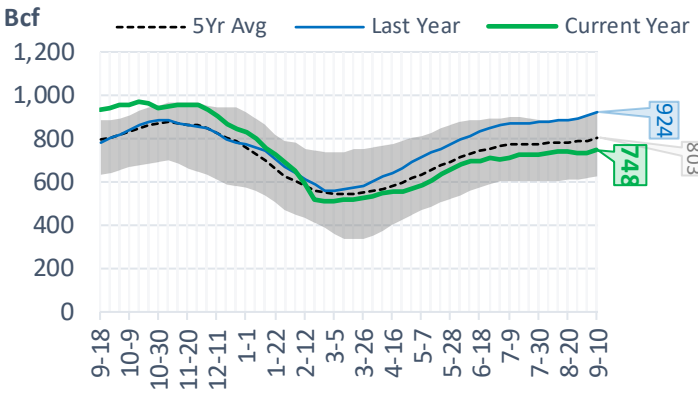


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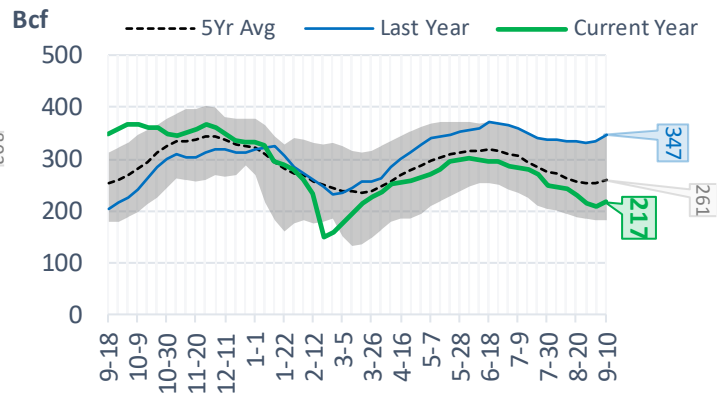
Natural Gas Storage Stats - Last 5 Weeks

Week Ending	Current 10-Sep	Week - 1 3-Sep	Week - 2 27-Aug	Week - 3 20-Aug	Week - 4 13-Aug	Week - 5 6-Aug
Total Lower 48 Storage Level	3006	2923	2871	2851	2822	2776
Weekly Change	+83	+52	+20	+29	+46	+49
vs LY	-595	-592	-579	-563	-547	-548
vs 5Yr Avg	-231	-235	-222	-189	-174	-178
S. Central Salt Storage Level	217	208	214	229	244	247
Weekly Change	+9	-6	-15	-15	-3	-3
vs LY	-130	-126	-117	-105	-91	-90
vs 5Yr Avg	-44	-45	-39	-28	-20	-24
S. Central NonSalt Storage Level	748	735	734	742	741	732
Weekly Change	+13	+1	-8	+1	+9	+6
vs LY	-176	-171	-160	-147	-146	-150
vs 5Yr Avg	-55	-57	-52	-40	-40	-47
Midwest Storage Level	876	842	812	790	765	741
Weekly Change	+34	+30	+22	+25	+24	+22
vs LY	-103	-107	-109	-111	-112	-111
vs 5Yr Avg	-21	-23	-22	-16	-16	-16
East Storage Level	732	703	678	661	645	629
Weekly Change	+29	+25	+17	+16	+16	+25
vs LY	-90	-100	-109	-110	-103	-106
vs 5Yr Avg	-51	-57	-60	-55	-49	-45
Mountain Storage Level	193	191	190	188	188	185
Weekly Change	+2	+1	+2	0	+3	+1
vs LY	-27	-24	-22	-24	-21	-20
vs 5Yr Avg	-9	-7	-5	-4	-2	-2
Pacific Storage Level	240	243	243	241	240	241
Weekly Change	-3	0	+2	+1	-1	-3
vs LY	-70	-64	-61	-66	-73	-73
vs 5Yr Avg	-51	-45	-44	-45	-46	-45

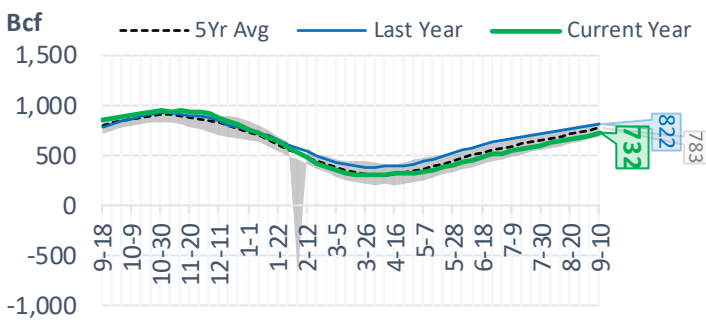
NonSalt Storage Levels



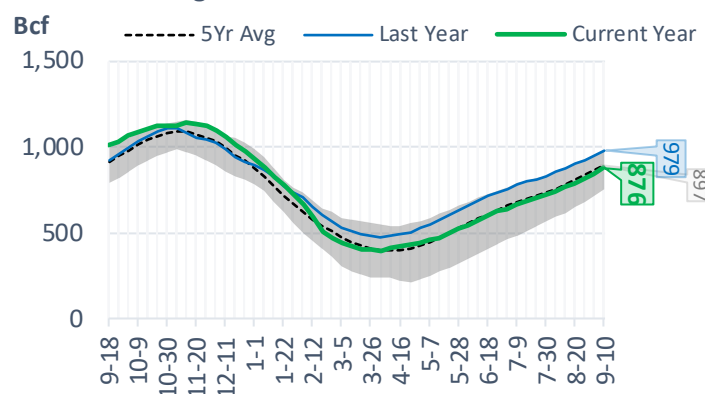
Salt Storage Levels



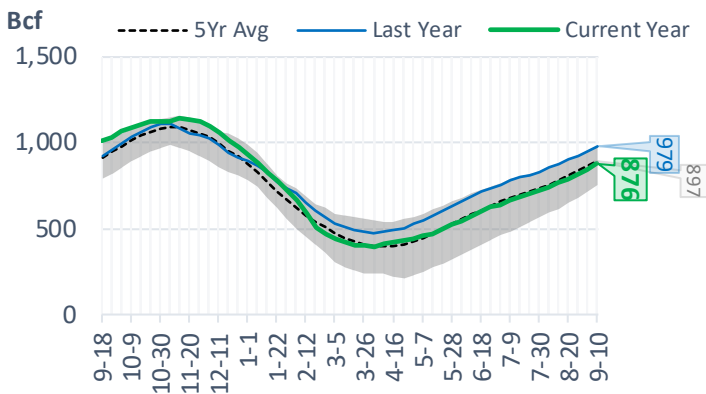
East Storage Levels



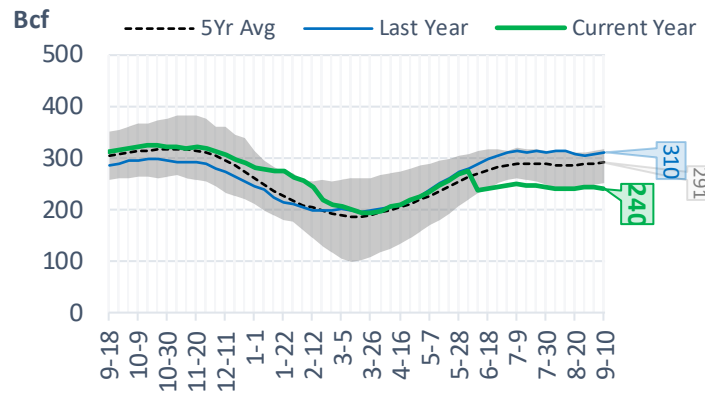
Midwest Storage Levels



Midwest Storage Levels



Pacific Storage Levels



EIA Storage Week Balances

	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	WoW	vs. 4W
Lower 48 Dry Production	92.4	92.4	93.0	90.9	91.4	91.8	▲ 0.4	▼ -0.1
Canadian Imports	5.2	5.0	5.3	5.0	4.8	5.1	▲ 0.3	▲ 0.1
L48 Power	41.1	39.7	41.9	38.1	33.7	34.9	▲ 1.2	▼ -3.4
L48 Residential & Commercial	7.8	7.6	7.8	7.5	7.0	7.3	▲ 0.2	▼ -0.2
L48 Industrial	19.3	20.9	21.0	19.0	20.0	20.9	▲ 0.9	▲ 0.7
L48 Lease and Plant Fuel	5.1	5.1	5.1	5.0	5.0	5.1	▲ 0.0	▼ 0.0
L48 Pipeline Distribution	2.4	2.3	2.4	2.2	2.1	2.1	▲ 0.1	▼ -0.1
L48 Regional Gas Consumption	75.6	75.6	78.2	71.7	67.9	70.3	▲ 2.4	▼ -3.1
Net LNG Exports	9.9	10.9	10.6	10.5	11.0	10.2	▼ -0.7	▼ -0.5
Total Mexican Exports	6.8	6.8	6.8	7.0	6.7	6.6	▼ -0.1	▼ -0.2
Implied Daily Storage Activity	5.2	4.2	2.8	6.7	10.6	9.8	-0.8	
EIA Reported Daily Storage Activity	6.6	4.1	2.9	7.4	11.9			
Daily Model Error	-1.3	0.1	-0.1	-0.7	-1.2			

Monthly Balances

	2Yr Ago Sep-19	LY Sep-20	May-21	Jun-21	Jul-21	Aug-21	MTD Sep-21	MoM	vs. LY
Lower 48 Dry Production	94.4	89.1	93.1	93.4	92.4	92.2	91.4	▼ -0.8	▲ 2.3
Canadian Imports	4.7	3.8	4.5	4.8	5.2	5.1	4.9	▼ -0.2	▲ 1.1
L48 Power	36.3	34.4	26.8	35.9	39.6	40.2	34.2	▼ -6.0	▼ -0.2
L48 Residential & Commercial	8.2	8.8	12.8	8.9	8.6	7.7	7.2	▼ -0.5	▼ -1.6
L48 Industrial	22.5	20.3	20.8	20.6	19.6	20.1	20.3	▲ 0.2	▼ -0.1
L48 Lease and Plant Fuel	5.1	4.9	5.1	5.1	5.1	5.1	5.0	▼ -0.1	▲ 0.1
L48 Pipeline Distribution	2.2	2.2	2.1	2.2	2.3	2.3	2.1	▼ -0.2	▼ -0.1
L48 Regional Gas Consumption	74.5	70.6	67.6	72.7	75.1	75.4	68.9	▼ -6.6	▼ -1.8
Net LNG Exports	6.2	5.9	10.8	10.2	10.8	10.5	10.5	▲ 0.0	▲ 4.5
Total Mexican Exports	5.3	6.1	6.8	7.4	7.0	6.9	6.7	▼ -0.2	▲ 0.6
Implied Daily Storage Activity	13.2	10.2	12.4	8.0	4.6	4.5	10.2		
EIA Reported Daily Storage Activity									
Daily Model Error									

Source: Bloomberg, analytix.ai

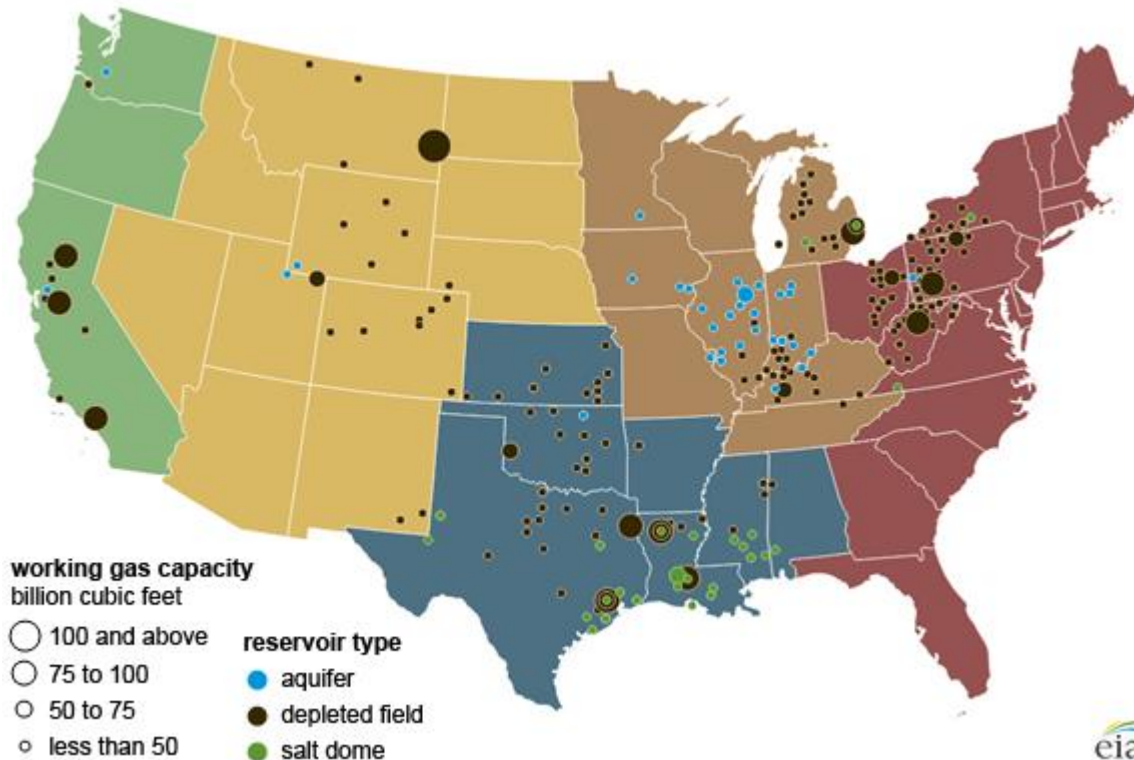
Regional S/D Models Storage Projection

Week Ending 17-Sep

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	9.5	1.1	10.7	75
East	2.5	1.1	3.6	25
Midwest	5.0	-0.4	4.6	32
Mountain	4.2	-3.5	0.8	5
South Central	-2.6	4.5	1.9	14
Pacific	0.4	-0.5	-0.2	-1

*Adjustment Factor is calculated based on historical regional deltas

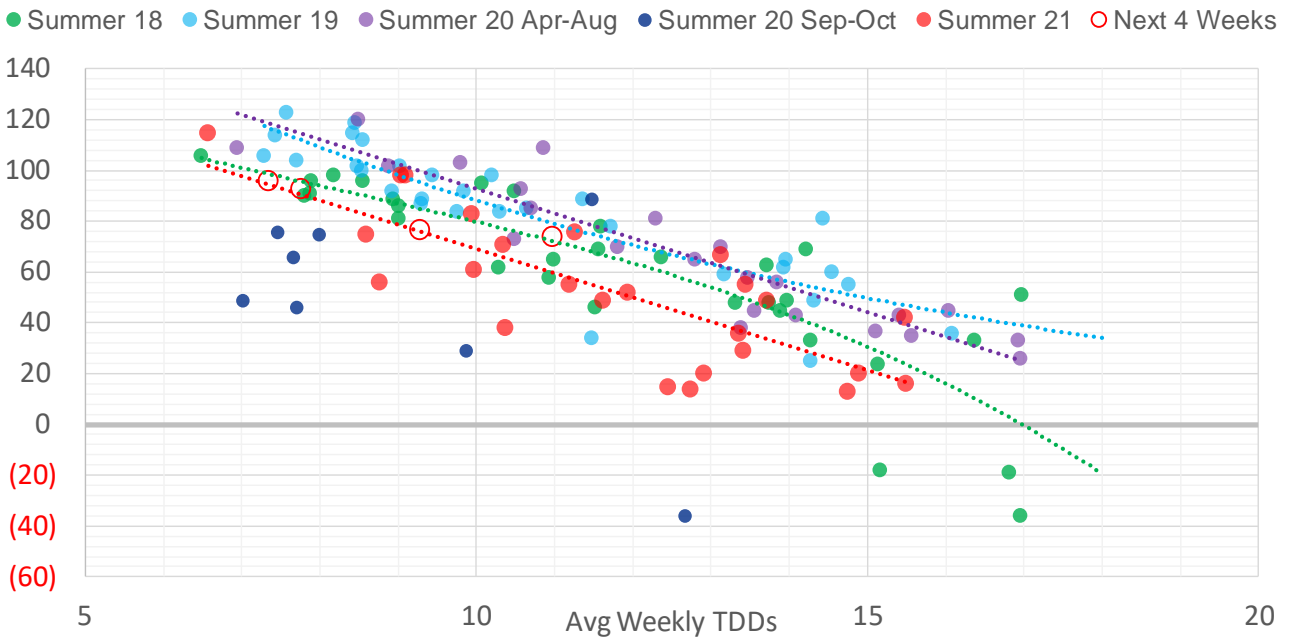
U.S. underground natural gas storage facilities by type (July 2015)



Weather Model Storage Projection

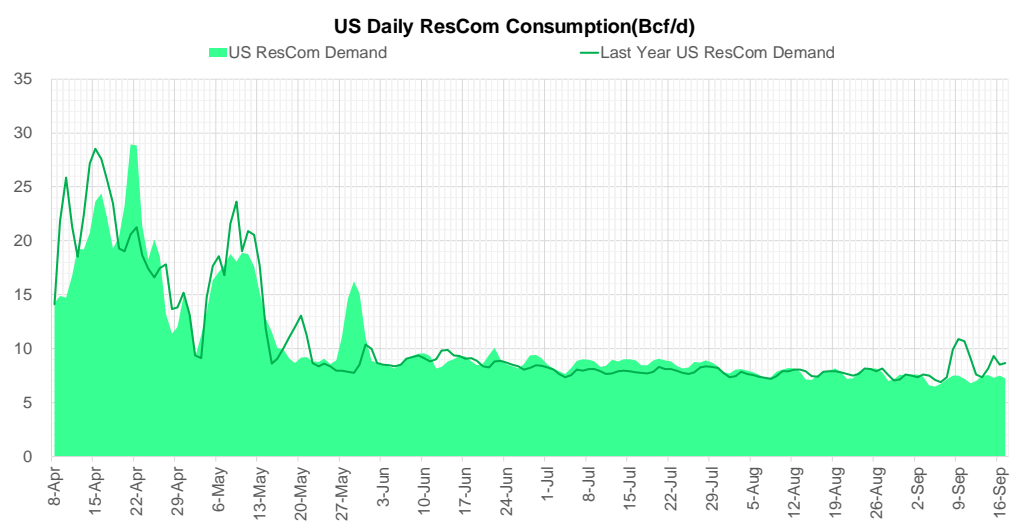
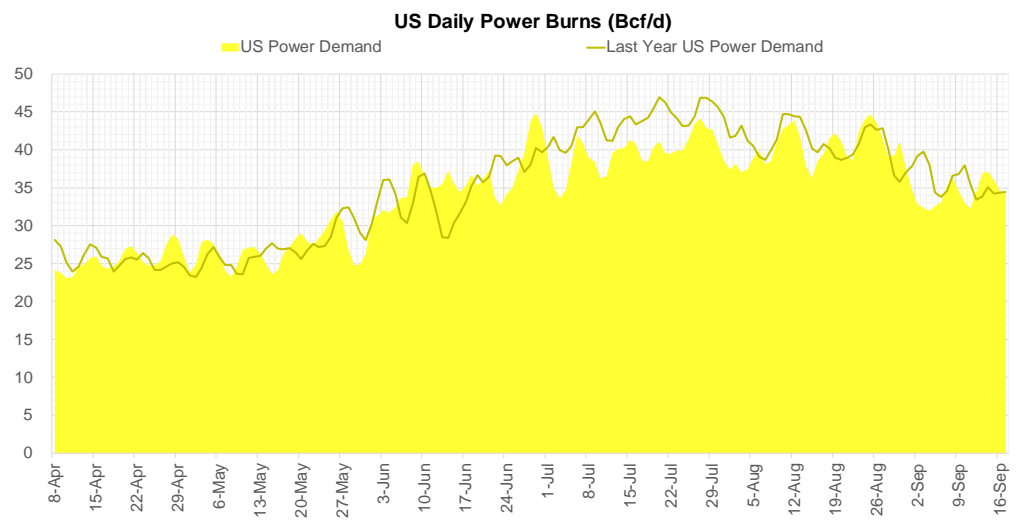
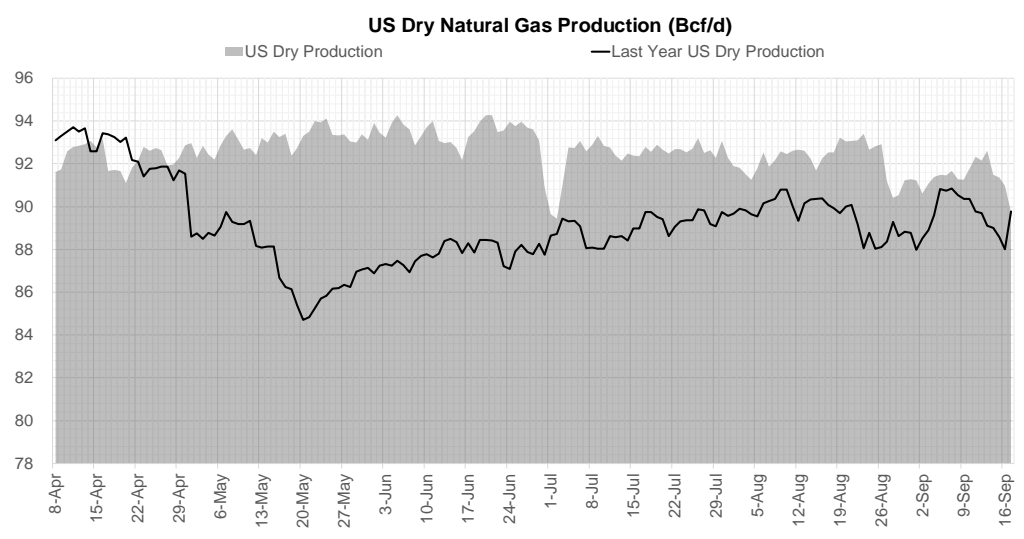
Next report and beyond		
Week Ending	Temp	Week Storage Projection
24-Sep	9.3	77
01-Oct	7.3	97
08-Oct	7.7	93

Weather Storage Model - Next 4 Week Forecast



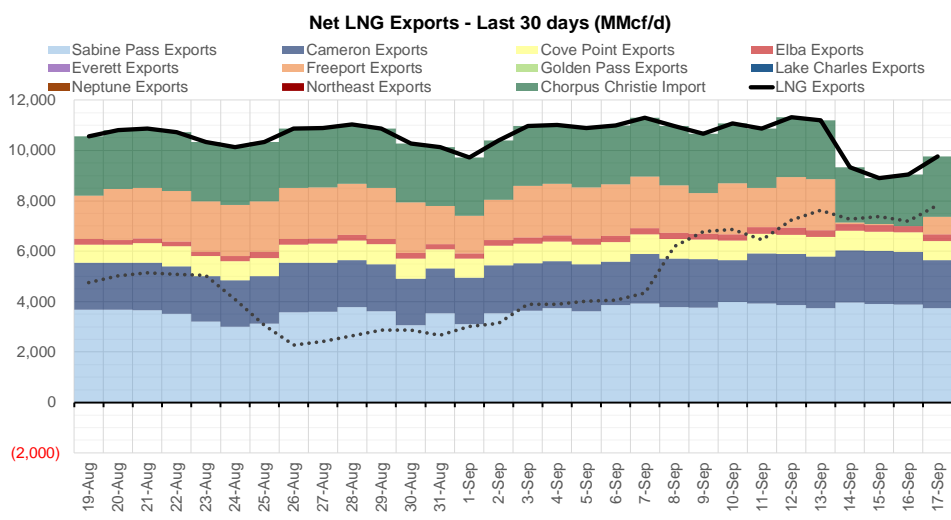
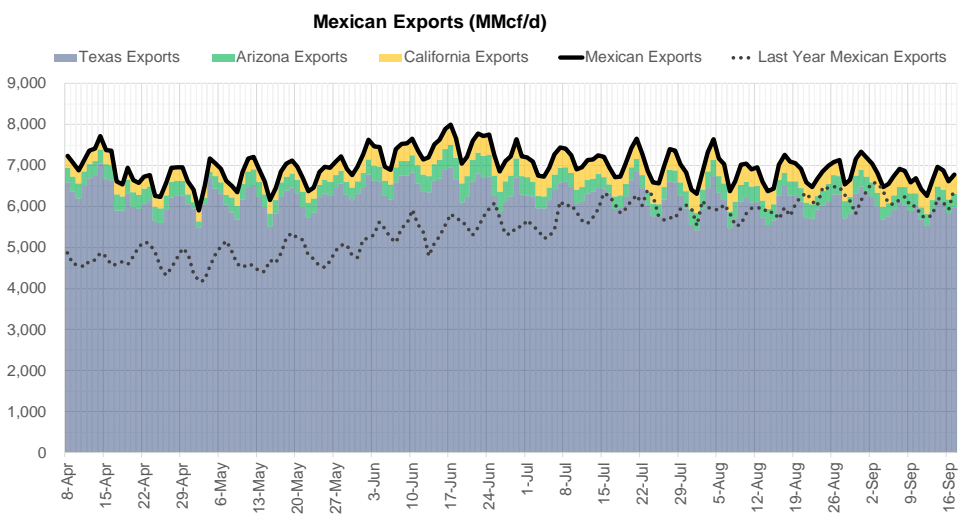
Note: this is not our official end of season forecast. This chart signifies where storage levels end with 10-year normal weather and current market tightness relative to last year

Supply – Demand Trends



Source: Bloomberg

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Source: Bloomberg

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Nat Gas Options Volume and Open Interest CME, ICE and Nasdaq Combined

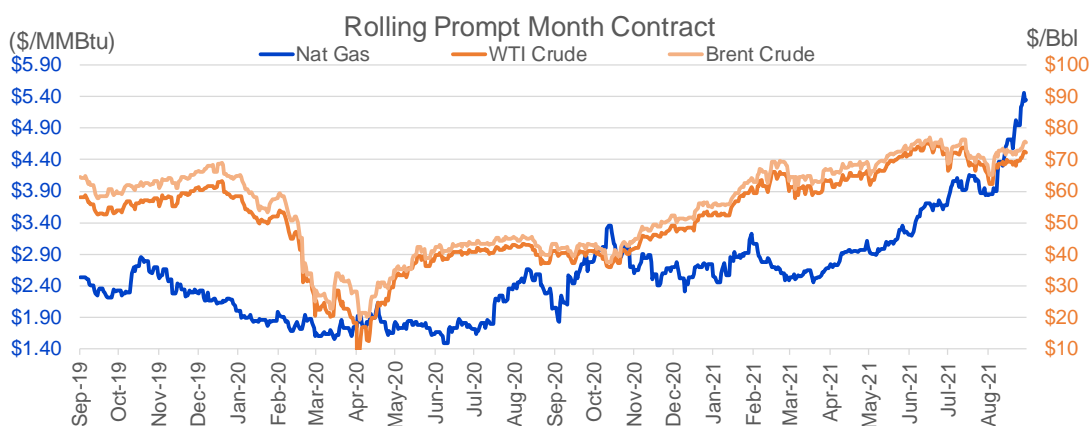
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
10	2021	P	5.00	10125	10	2021	C	5.00	56204
10	2021	P	4.75	5697	10	2021	P	3.50	41986
10	2021	C	6.00	5683	12	2021	P	2.75	41959
3	2022	C	10.00	4921	10	2021	C	4.00	41755
10	2021	C	5.75	3687	10	2021	C	6.00	41200
3	2022	C	8.00	3676	10	2021	C	4.50	40176
11	2021	C	7.00	3471	12	2021	P	2.50	38542
2	2022	C	10.00	3240	10	2021	C	3.50	32999
10	2021	P	5.25	3172	10	2021	C	4.25	32689
12	2021	C	6.00	2926	10	2021	P	3.00	31756
10	2021	C	5.50	2874	10	2021	P	4.00	31005
10	2021	C	6.50	2423	11	2021	P	3.00	30622
1	2022	P	3.50	2344	10	2021	P	2.50	29994
12	2021	C	6.50	2195	10	2021	P	2.00	28650
10	2021	P	4.50	2129	10	2021	C	3.25	28193
11	2021	C	6.00	1884	10	2021	P	2.75	26887
3	2022	C	6.00	1864	12	2021	P	3.00	24475
11	2021	C	7.50	1667	3	2022	C	10.00	23324
10	2021	C	6.25	1661	11	2021	C	4.00	23309
10	2021	C	5.00	1649	11	2021	P	4.00	22733
2	2022	C	10.50	1500	12	2021	C	4.00	22597
10	2021	P	4.85	1491	10	2021	P	3.75	22363
2	2022	C	12.00	1485	11	2021	P	3.50	22339
4	2022	C	7.00	1475	12	2021	P	4.00	21893
10	2021	C	5.25	1467	11	2021	C	7.00	21446
12	2021	C	7.00	1320	10	2021	P	2.25	19784
10	2021	P	4.25	1260	4	2022	C	3.00	19760
1	2022	C	8.00	1255	3	2022	P	3.50	19675
11	2021	P	5.00	1159	10	2021	P	4.25	19042
1	2022	C	6.50	1056	3	2022	C	5.00	19036
3	2022	C	5.25	1033	11	2021	C	6.00	18954
11	2021	P	4.25	1016	3	2022	C	8.00	18527
10	2021	C	7.00	999	10	2021	C	3.00	18494
4	2022	P	2.50	975	2	2022	P	3.50	18447
1	2022	C	10.00	957	10	2021	C	5.50	18148
4	2022	C	9.00	950	10	2021	P	4.50	17956
3	2022	C	20.00	901	10	2021	P	3.25	17940
2	2022	C	20.00	850	1	2022	C	5.00	17421
1	2022	P	5.00	846	3	2022	P	2.50	16805
3	2022	C	7.00	792	10	2021	C	3.75	16780
11	2021	P	3.50	783	1	2022	P	3.50	16740
1	2022	P	4.00	783	2	2022	C	5.00	16591
12	2021	C	8.00	782	11	2021	C	5.00	16186
10	2021	C	4.50	769	3	2022	C	4.00	16022
12	2021	C	8.50	765	2	2022	C	4.00	15818
3	2022	C	5.00	759	12	2021	C	6.00	15693
1	2022	C	6.00	756	11	2021	C	4.50	15152
3	2022	C	4.60	750	11	2021	P	3.25	14581
5	2022	C	5.00	750	1	2022	C	4.00	14503
					11	2021	P	2.5	14486

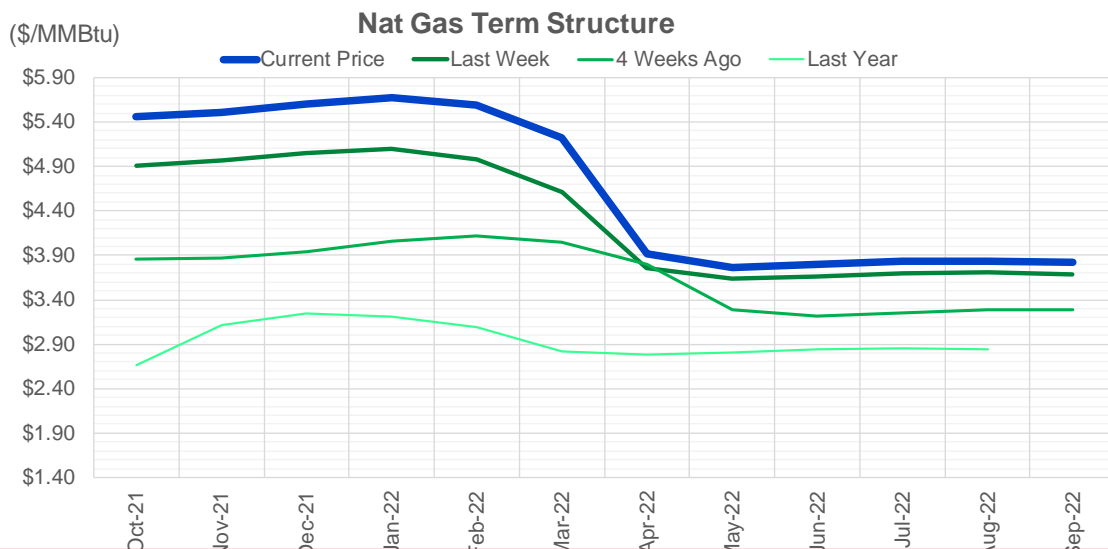
Source: CME, Nasdaq, ICE

Nat Gas Futures Open Interest CME, ICE and Nasdaq 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 21	110367	130952	-20585	OCT 21	100264	97773	2491
NOV 21	256619	251229	5390	NOV 21	79662	77823	1839
DEC 21	90101	91914	-1813	DEC 21	76287	76691	-404
JAN 22	156201	158943	-2742	JAN 22	94528	92697	1831
FEB 22	57222	57292	-70	FEB 22	68833	69217	-385
MAR 22	117940	117923	17	MAR 22	75016	75739	-724
APR 22	117476	117123	353	APR 22	71464	70285	1179
MAY 22	116488	116172	316	MAY 22	69815	70086	-272
JUN 22	39299	40896	-1597	JUN 22	52845	52943	-98
JUL 22	30667	30434	233	JUL 22	54873	54566	307
AUG 22	32973	33104	-131	AUG 22	54767	54875	-108
SEP 22	35279	35704	-425	SEP 22	55049	55155	-106
OCT 22	87787	88720	-933	OCT 22	61154	61372	-218
NOV 22	31728	31994	-266	NOV 22	47529	47680	-151
DEC 22	25712	26066	-354	DEC 22	50872	50989	-117
JAN 23	22694	22391	303	JAN 23	37222	37267	-45
FEB 23	8908	8831	77	FEB 23	30441	30445	-4
MAR 23	12012	11748	264	MAR 23	32677	32621	56
APR 23	11709	11683	26	APR 23	29335	29344	-10
MAY 23	7398	7302	96	MAY 23	29574	29571	3
JUN 23	5562	5563	-1	JUN 23	27516	27514	2
JUL 23	4050	4050	0	JUL 23	27618	27616	2
AUG 23	3225	3219	6	AUG 23	27451	27450	1
SEP 23	4470	4468	2	SEP 23	26760	26760	1
OCT 23	5781	5772	9	OCT 23	28814	28821	-7
NOV 23	2094	2094	0	NOV 23	27827	27857	-30
DEC 23	2024	2023	1	DEC 23	26570	26600	-30
JAN 24	1312	1312	0	JAN 24	14825	14824	0
FEB 24	891	891	0	FEB 24	12364	12364	0
MAR 24	3213	3211	2	MAR 24	16652	16652	0

Source: CME, ICE






	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22
Current Price	\$5.460	\$5.507	\$5.604	\$5.676	\$5.585	\$5.221	\$3.914	\$3.768	\$3.797	\$3.831	\$3.839	\$3.825
Last Week	\$4.914	\$4.962	\$5.046	\$5.103	\$4.985	\$4.609	\$3.761	\$3.641	\$3.667	\$3.698	\$3.706	\$3.691
vs. Last Week	\$0.546	\$0.545	\$0.558	\$0.573	\$0.600	\$0.612	\$0.153	\$0.127	\$0.130	\$0.133	\$0.133	\$0.134
4 Weeks Ago	\$3.852	\$3.866	\$3.939	\$4.057	\$4.120	\$4.045	\$3.800	\$3.287	\$3.220	\$3.250	\$3.284	\$3.292
vs. 4 Weeks Ago	\$1.608	\$1.641	\$1.665	\$1.619	\$1.465	\$1.176	\$0.114	\$0.481	\$0.577	\$0.581	\$0.555	\$0.533
Last Year	\$2.267	\$2.664	\$3.120	\$3.249	\$3.210	\$3.097	\$2.814	\$2.779	\$2.808	\$2.846	\$2.857	\$2.846
vs. Last Year	\$3.193	\$2.843	\$2.484	\$2.427	\$2.375	\$2.124	\$1.100	\$0.989	\$0.989	\$0.985	\$0.982	\$0.979

	Units	Current Price	vs. Last Week	vs. 4 Weeks Ago	vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	1.718	▲ 0.304	▲ 1.491	▲ 1.692
NatGas Oct21/Nov21	\$/MMBtu	0.047	▲ 0.006	▼ -0.018	▼ -0.007
NatGas Oct21/Jan22	\$/MMBtu	0.229	▲ 0.044	▼ -0.008	▼ -0.063
NatGas Apr22/Oct22	\$/MMBtu	-0.046	▼ -0.005	▼ -0.063	▼ -0.072
WTI Crude	\$/Bbl	72.61	▲ 4.470	▲ 8.920	▲ 31.640
Brent Crude	\$/Bbl	75.67	▲ 4.220	▲ 9.220	▲ 32.370
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	▲ 0.000	▲ 0.000	▲ 0.000
Heating Oil	cents/Gallon	221.10	▲ 9.730	▲ 24.200	▲ 105.120
Propane, Mt. Bel	cents/Gallon	1.27	▲ 0.071	▲ 0.160	▲ 0.775
Ethane, Mt. Bel	cents/Gallon	0.39	▲ 0.020	▲ 0.058	▲ 0.194
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					
9/17/2021					
Baker Hughes 					
U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago
Oil	411	10	401	232	179
Gas	100	-1	101	27	73
Miscellaneous	1	0	1	-2	3
Directional	17	1	16	-6	23
Horizontal	466	5	461	251	215
Vertical	29	3	26	12	17
Canada Breakout	This Week	+/-	Last Week	+/-	Year Ago
Oil	95	8	87	65	30
Gas	59	3	56	25	34
Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago
Ardmore Woodford	2	0	2	2	0
Arkoma Woodford	1	0	1	0	1
Cana Woodford	19	1	18	13	6
DJ-Niobrara	12	0	12	8	4
Eagle Ford	36	2	34	27	9
Granite Wash	4	0	4	3	1
Haynesville	47	-1	48	11	36
Marcellus	27	1	26	2	25
Mississippian	1	0	1	1	0
Permian	259	5	254	136	123
Utica	12	0	12	7	5
Williston	23	0	23	13	10