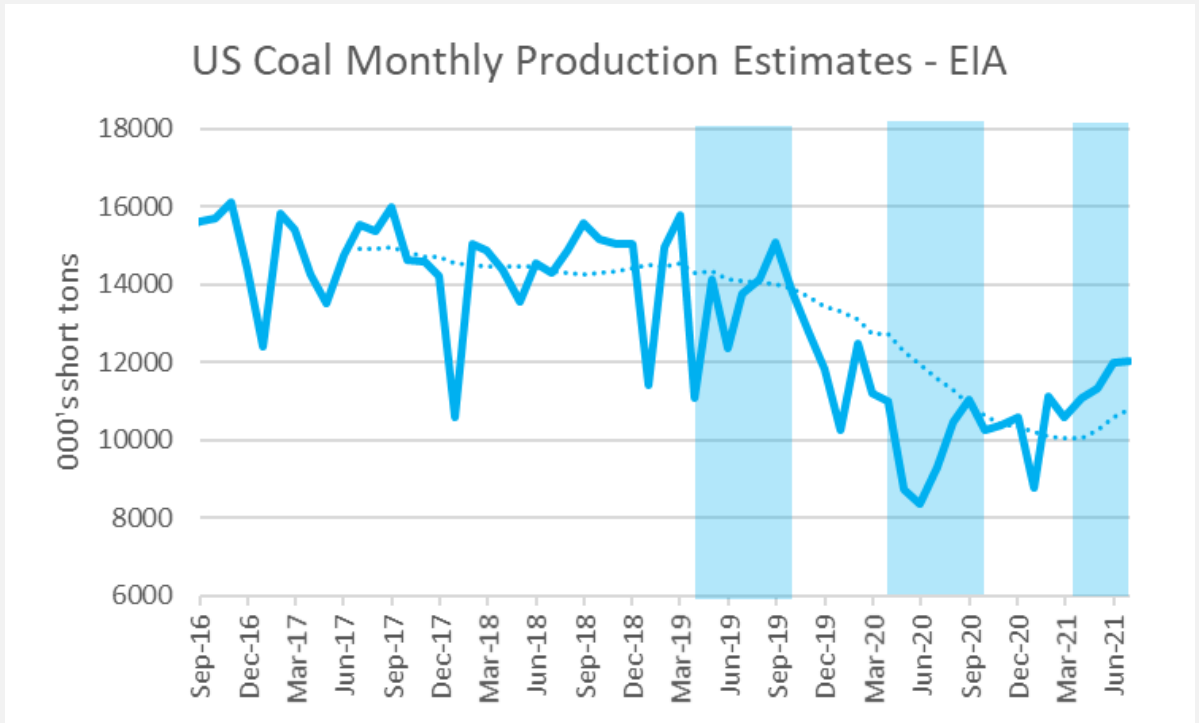


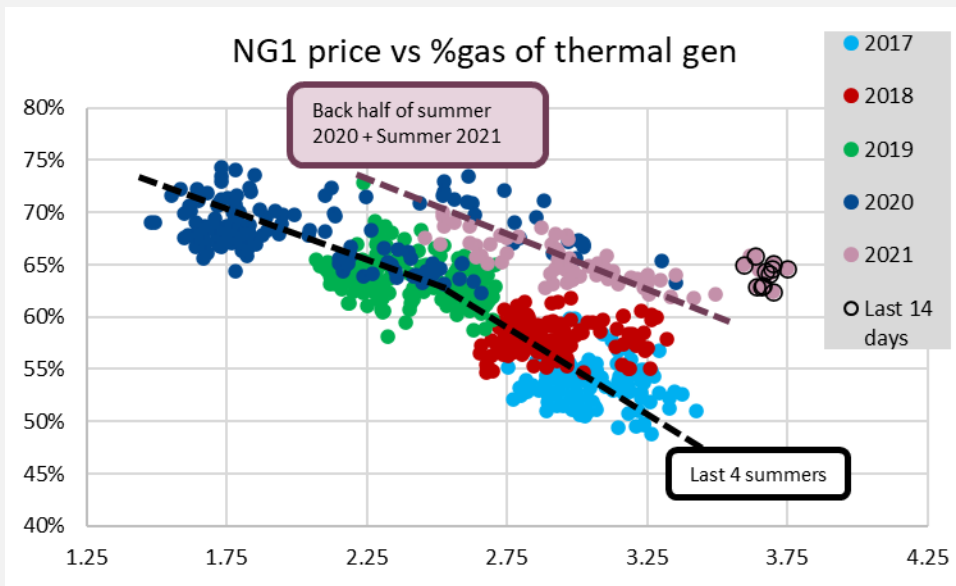
This week we touch a bit on coal gen in the power stack. Last year, there was a big decline in US coal production with lower demand due to lower natural gas prices and less export demand with COVID.



- US coal-fired generation fell 20% in 2020 from the previous year. Natural gas prices started 2020 relatively low because mild winter weather led to less natural gas demand for space heating, and prices remained low as the economic effects of the COVID-19 pandemic reduced both natural gas production and consumption.
- US coal exports were 26% lower in 2020 than the previous year. The COVID-19 pandemic slowed global demand for coal, and some U.S. coal mines were idled for extended periods to slow the spread of the virus among workers.

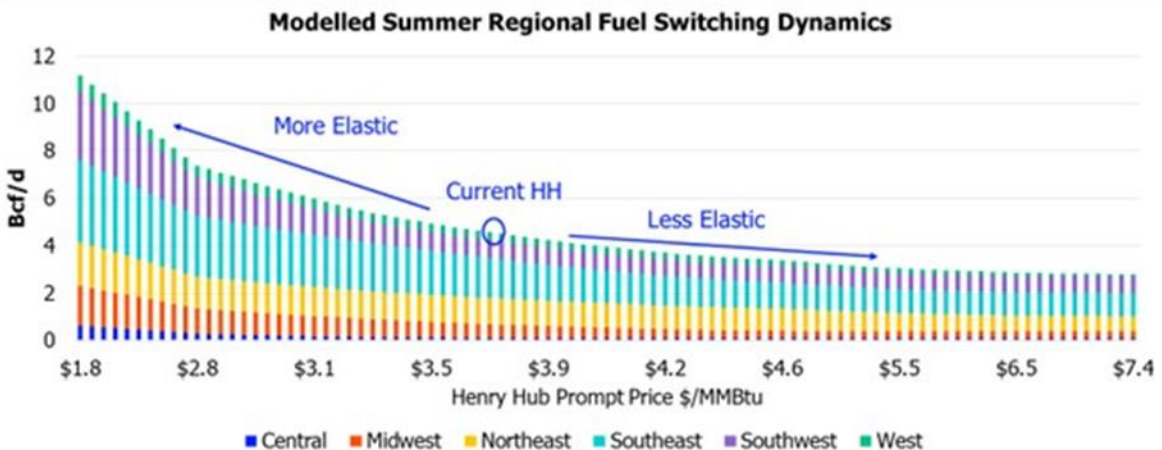
[EIA]

Overall, the drop in coal production and plant retirements looks to have had a structural change in coal-to-gas switching economics. As we showed last week, the back half of last summer and this summer has displayed a C2G relationship that sits on a new access altogether. The lower availability of coal has either pushed out coal from some regional power stacks or pushed up delivered coal prices. As a result, gas kept a strong share of total thermal generation.



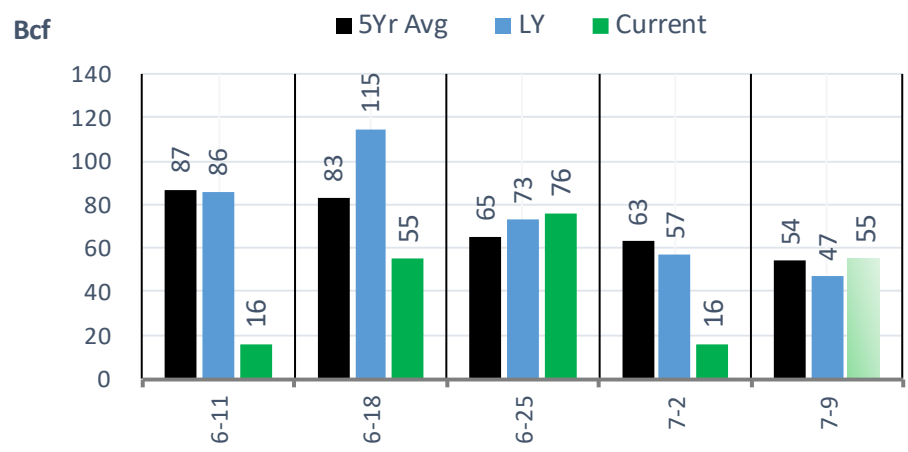
Refinitiv posted a good chart on enelyst this past week. They say that fuel switching gets less elastic as prices move into high gear recently, which will limit gas-for-power demand upside going forward.

Hotter weather in July could test switching limit as gas EG demand is becoming less elastic to the prompt price gains beyond current level

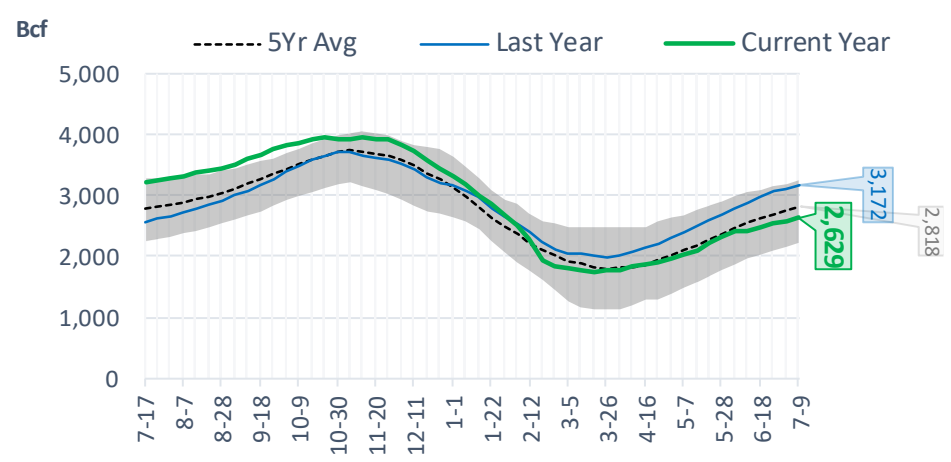


EIA Storage Report

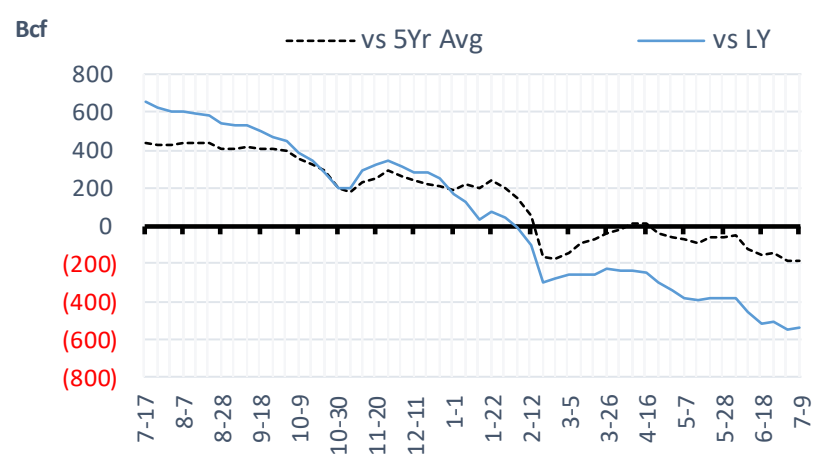
Total Lower 48 YoY Weekly Change



Total Lower 48 Storage Levels



Total Lower 48 LY Surplus/Deficit

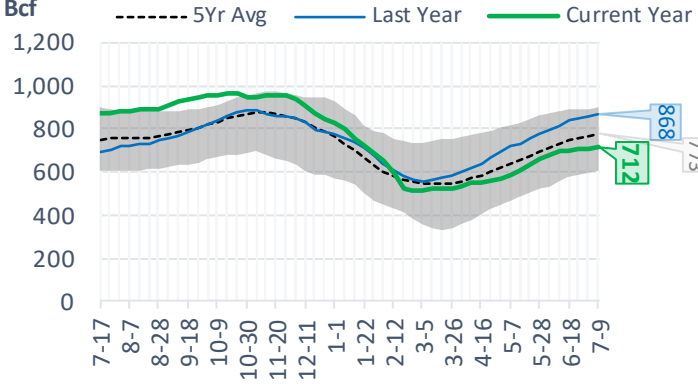


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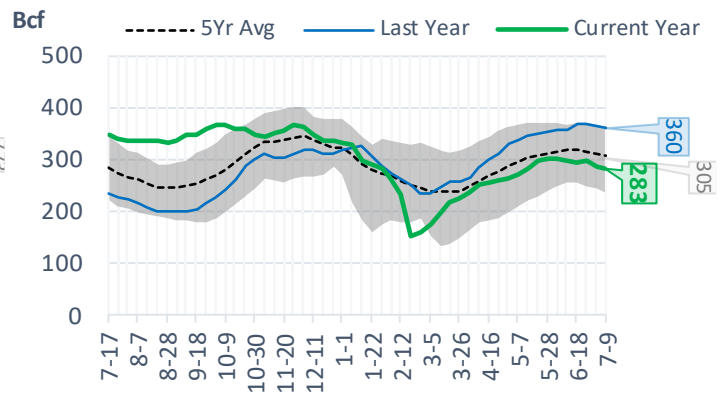
Natural Gas Storage Stats - Last 5 Weeks

Week Ending	Current 9-Jul	Week - 1 2-Jul	Week - 2 25-Jun	Week - 3 18-Jun	Week - 4 11-Jun	Week - 5 4-Jun
Total Lower 48 Storage Level	2629	2574	2558	2482	2427	2411
Weekly Change	+55	+16	+76	+55	+16	+98
vs LY	-543	-551	-510	-513	-453	-383
vs 5Yr Avg	-189	-190	-143	-154	-126	-55
S. Central Salt Storage Level	283	286	296	295	299	302
Weekly Change	-3	-10	+1	-4	-3	+2
vs LY	-77	-79	-73	-75	-59	-54
vs 5Yr Avg	-22	-24	-19	-24	-18	-13
S. Central NonSalt Storage Level	712	705	709	697	696	681
Weekly Change	+7	-4	+12	+1	+15	+22
vs LY	-156	-156	-143	-139	-116	-113
vs 5Yr Avg	-61	-60	-46	-47	-33	-31
Midwest Storage Level	662	638	623	595	570	547
Weekly Change	+24	+15	+28	+25	+23	+25
vs LY	-115	-120	-114	-117	-114	-111
vs 5Yr Avg	-16	-18	-8	-12	-11	-7
East Storage Level	543	521	513	488	461	445
Weekly Change	+22	+8	+25	+27	+16	+32
vs LY	-127	-133	-123	-126	-122	-114
vs 5Yr Avg	-55	-57	-42	-42	-42	-31
Mountain Storage Level	180	177	173	169	165	160
Weekly Change	+3	+4	+4	+4	+5	+9
vs LY	-5	-2	+1	+5	+10	+13
vs 5Yr Avg	+5	+7	+9	+10	+12	+13
Pacific Storage Level	250	246	244	239	236	276
Weekly Change	+4	+2	+5	+3	-40	+8
vs LY	-62	-63	-59	-59	-53	-4
vs 5Yr Avg	-40	-40	-37	-38	-34	+13

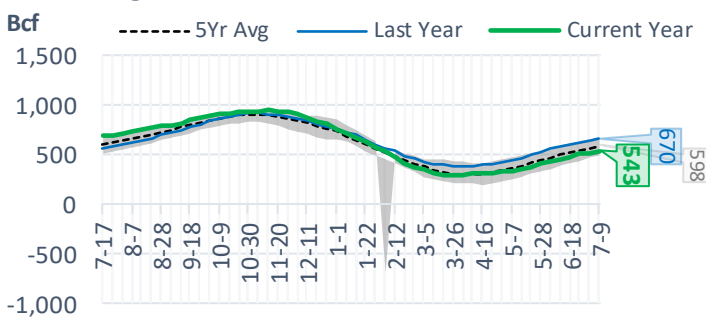
NonSalt Storage Levels



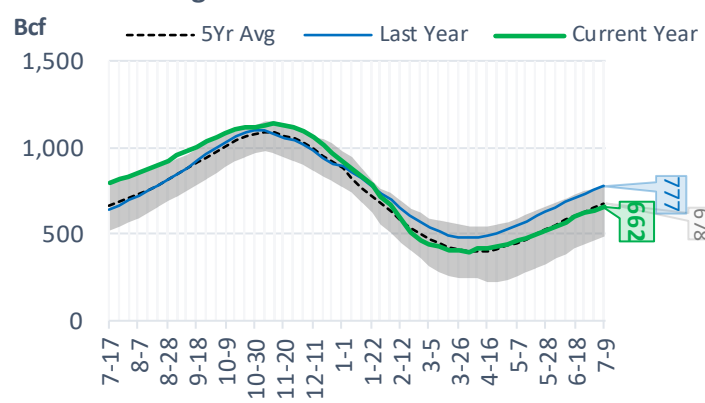
Salt Storage Levels



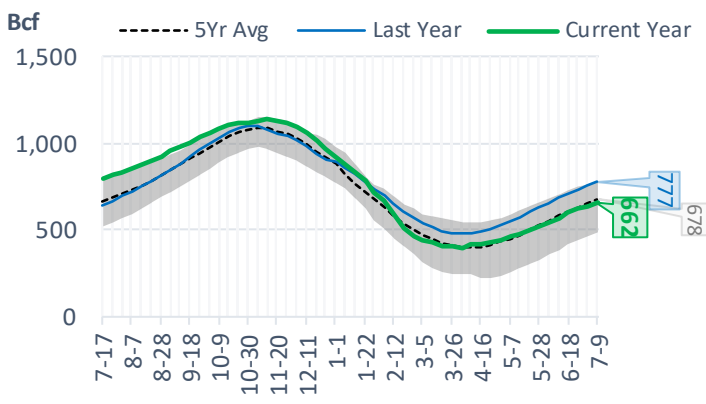
East Storage Levels



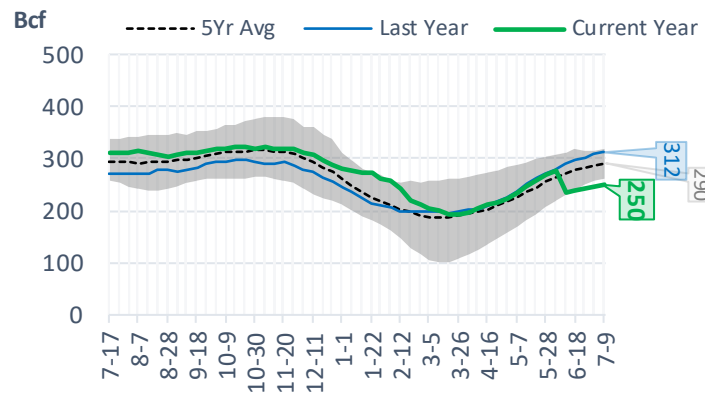
Midwest Storage Levels



Midwest Storage Levels



Pacific Storage Levels



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EIA Storage Week Balances

	11-Jun	18-Jun	25-Jun	2-Jul	9-Jul	16-Jul	WoW	vs. 4W
Lower 48 Dry Production	92.9	92.3	93.2	92.2	91.7	92.2	▲ 0.5	▼ -0.2
Canadian Imports	4.8	5.1	4.7	5.2	5.1	5.2	▲ 0.1	▲ 0.2
L48 Power	34.4	34.8	34.6	39.9	37.3	38.7	▲ 1.4	▲ 2.0
L48 Residential & Commercial	8.5	8.2	8.4	8.3	7.9	8.2	▲ 0.2	▼ -0.1
L48 Industrial	21.5	22.4	19.9	21.3	19.8	19.8	▼ -0.1	▼ -1.1
L48 Lease and Plant Fuel	5.1	5.1	5.2	5.1	5.1	5.1	▲ 0.0	▼ 0.0
L48 Pipeline Distribution	2.1	2.1	2.1	2.4	2.1	2.2	▲ 0.1	▲ 0.0
L48 Regional Gas Consumption	71.8	72.7	70.1	77.0	72.3	73.9	▲ 1.6	▲ 0.9
Net LNG Exports	9.4	9.6	10.3	11.2	11.0	10.8	▼ -0.2	▲ 0.3
Total Mexican Exports	7.3	7.5	7.6	7.2	7.1	7.1	▲ 0.0	▼ -0.2
Implied Daily Storage Activity	9.1	7.6	9.9	2.0	6.4	5.5	-0.9	
EIA Reported Daily Storage Activity	2.3	7.9	10.9	2.3	7.9			
Daily Model Error	6.9	-0.2	-0.9	-0.3	-1.4			

Monthly Balances

	2Yr Ago Jul-19	LY Jul-20	Mar-21	Apr-21	May-21	Jun-21	MTD Jul-21	MoM	vs. LY
Lower 48 Dry Production	91.9	89.1	91.5	92.3	92.2	92.7	91.7	▼ -1.0	▲ 2.7
Canadian Imports	5.0	4.4	4.8	4.7	4.5	4.9	5.1	▲ 0.3	▲ 0.8
L48 Power	40.8	43.6	24.3	25.1	27.0	35.4	38.1	▲ 2.7	▼ -5.5
L48 Residential & Commercial	8.0	7.9	29.3	19.7	13.3	8.4	8.1	▼ -0.3	▲ 0.2
L48 Industrial	21.6	20.4	19.4	21.2	19.2	21.0	19.8	▼ -1.2	▼ -0.6
L48 Lease and Plant Fuel	5.0	4.9	5.0	5.1	5.1	5.1	5.1	▼ 0.0	▲ 0.1
L48 Pipeline Distribution	2.3	2.4	2.5	2.3	2.1	2.2	2.2	▲ 0.0	▼ -0.3
L48 Regional Gas Consumption	77.8	79.4	80.6	73.3	66.7	72.0	73.3	▲ 1.2	▼ -6.1
Net LNG Exports	6.0	3.3	11.1	11.5	10.8	10.2	10.9	▲ 0.8	▲ 7.7
Total Mexican Exports	5.3	5.9	6.5	6.7	6.8	7.4	7.1	▼ -0.3	▲ 1.2
Implied Daily Storage Activity	7.8	5.0	-2.0	5.5	12.4	8.0	5.6		
EIA Reported Daily Storage Activity									
Daily Model Error									

Source: Bloomberg, analytix.ai

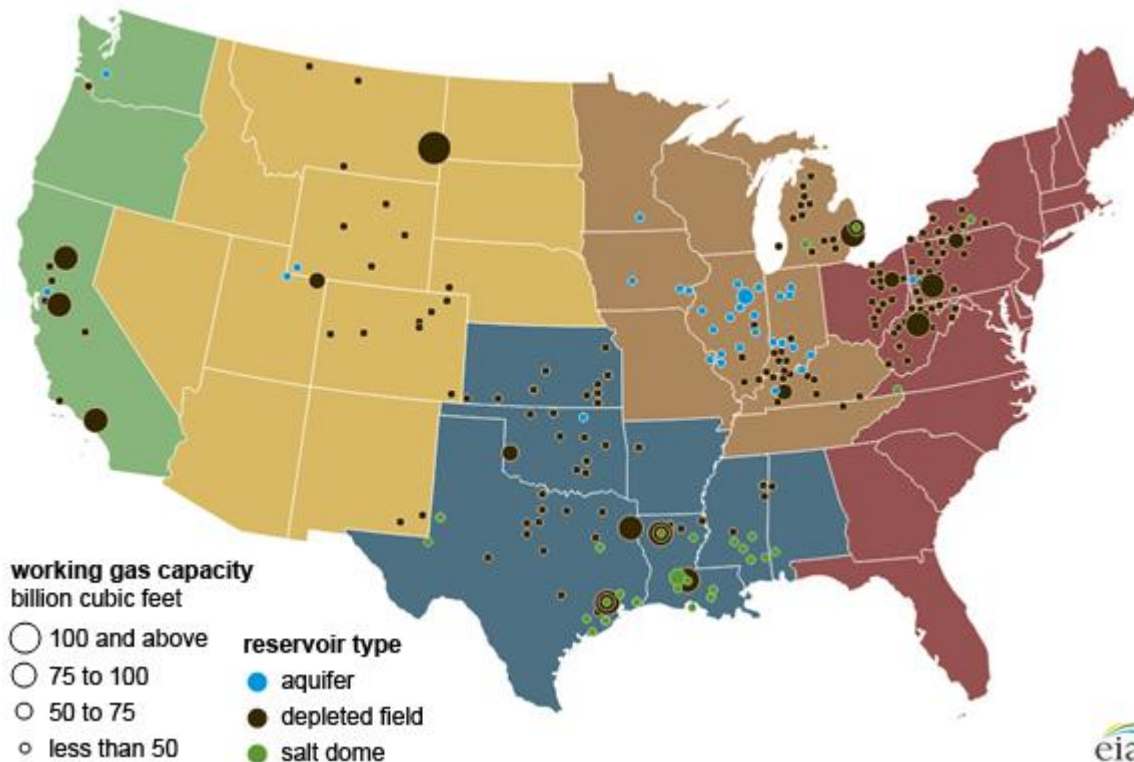
Regional S/D Models Storage Projection

Week Ending 16-Jul

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	5.2	1.4	6.6	46
East	1.5	1.5	3.0	21
Midwest	3.6	-0.2	3.4	24
Mountain	4.6	-4.1	0.6	4
South Central	-4.3	4.0	-0.3	-2
Pacific	-0.2	0.1	-0.1	0

*Adjustment Factor is calculated based on historical regional deltas

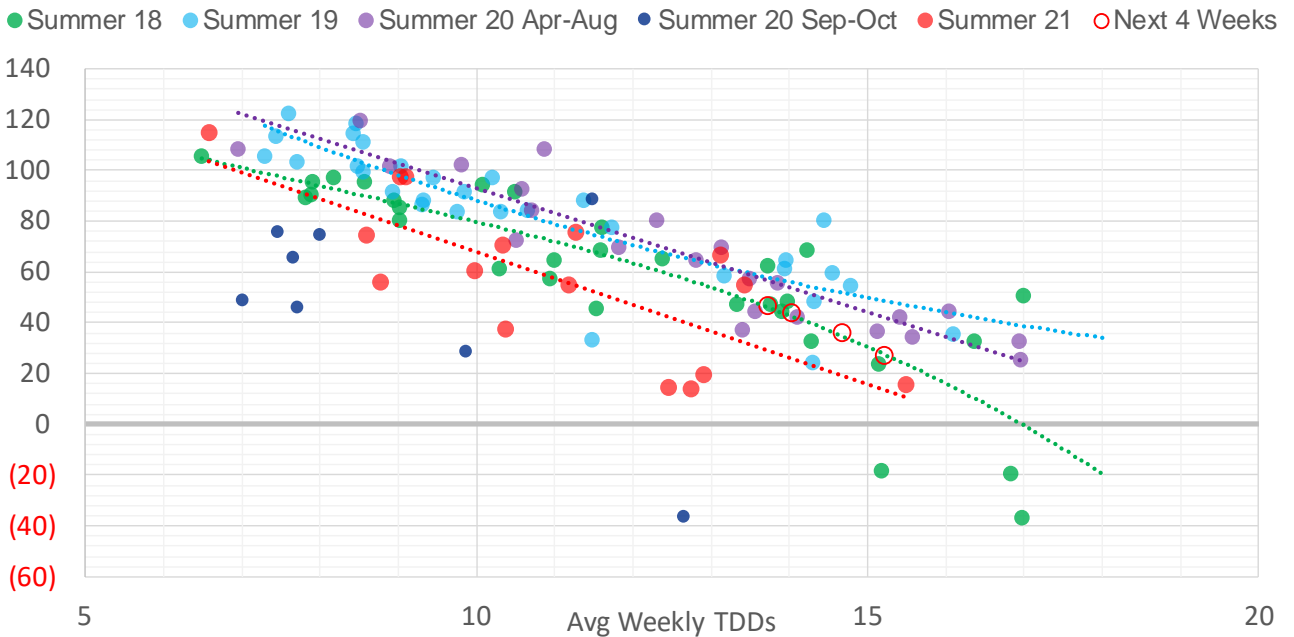
U.S. underground natural gas storage facilities by type (July 2015)



Weather Model Storage Projection

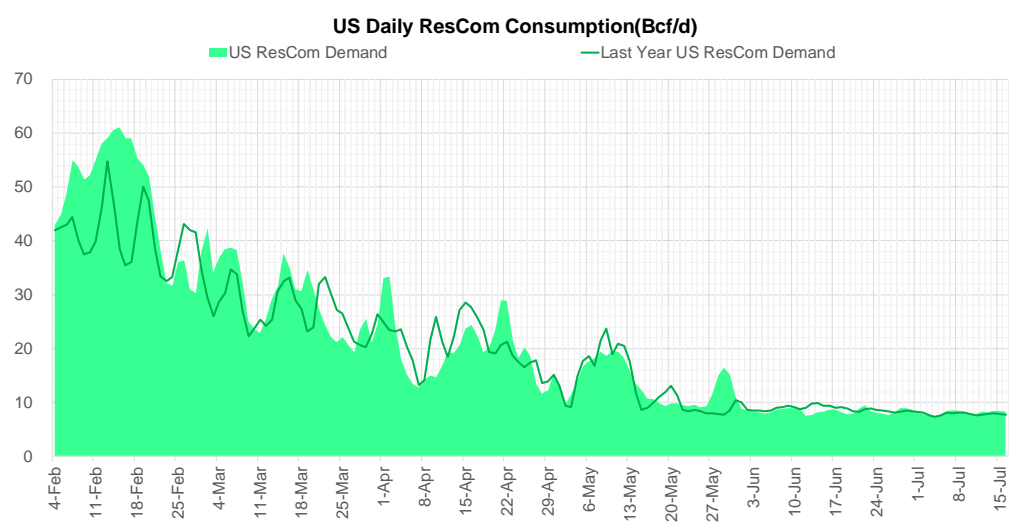
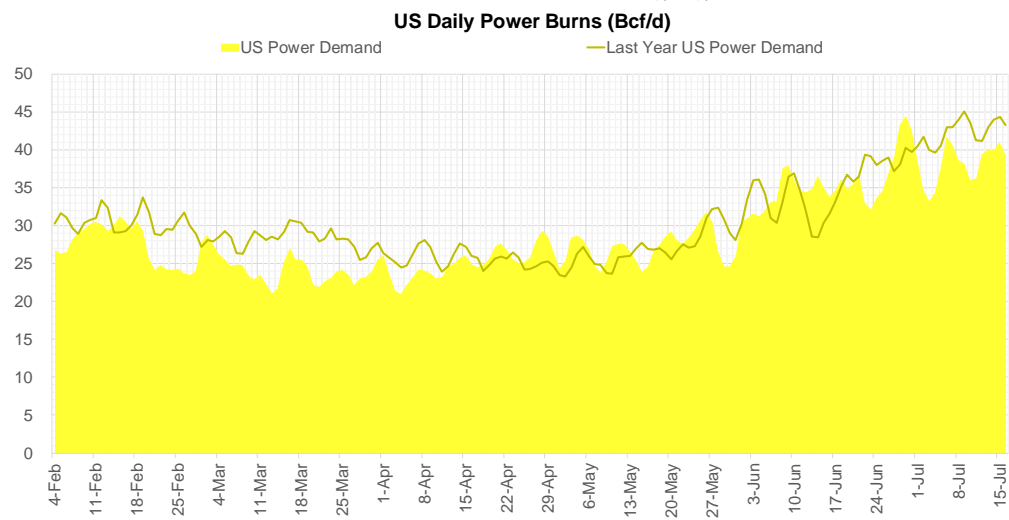
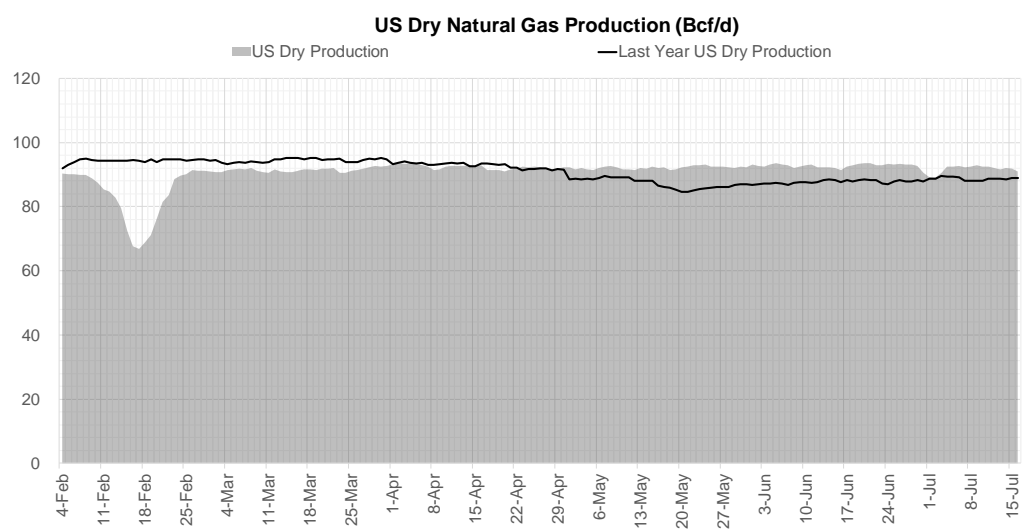
Next report and beyond		
Week Ending	Temp	Week Storage Projection
23-Jul	14.7	36
30-Jul	15.2	27
06-Aug	14.1	43

Weather Storage Model - Next 4 Week Forecast



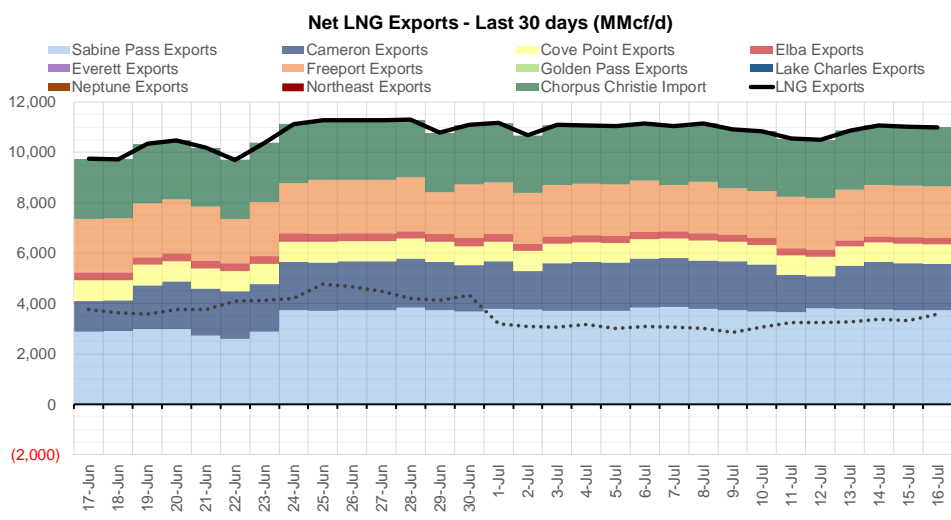
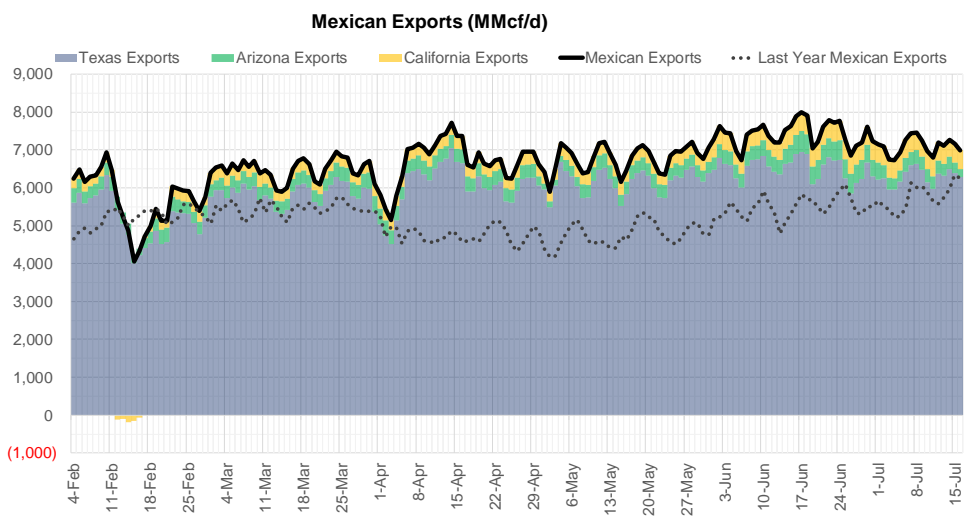
Note: this is not our official end of season forecast. This chart signifies where storage levels end with 10-year normal weather and current market tightness relative to last year

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

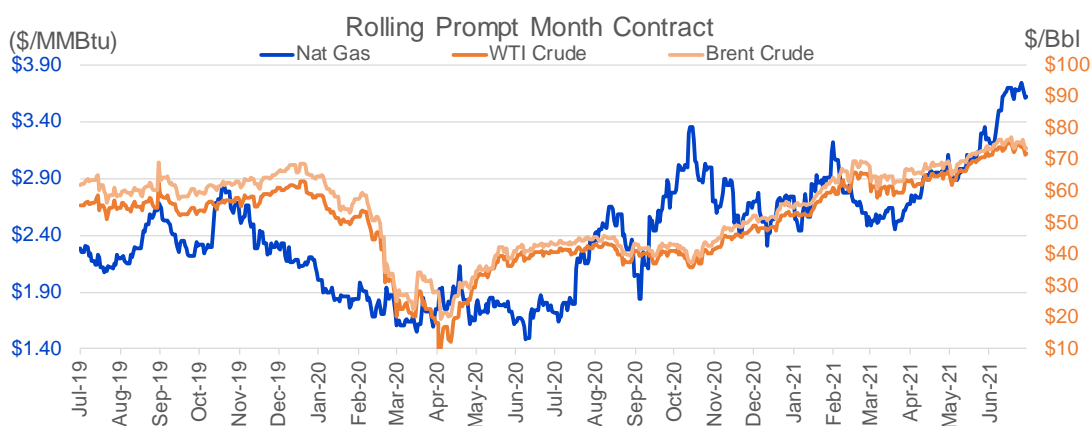
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
8	2021	C	4.00	6642	8	2021	C	4.00	48735
9	2021	C	4.00	6271	10	2021	C	4.00	43878
8	2021	P	3.40	4664	8	2021	C	3.50	40606
8	2021	C	3.75	3994	9	2021	C	4.00	37212
9	2021	C	4.75	3365	10	2021	C	3.50	34096
8	2021	C	3.90	2945	10	2021	C	5.00	32761
9	2021	C	4.25	2765	10	2021	P	2.50	32175
8	2021	P	3.50	2307	8	2021	P	2.50	29351
8	2021	P	2.90	2150	10	2021	C	3.25	28364
1	2022	C	10.00	2002	8	2021	P	3.00	27625
1	2022	C	8.00	2000	10	2021	P	2.00	26294
2	2022	C	8.00	2000	10	2021	P	2.75	26176
2	2022	C	10.00	2000	8	2021	C	3.75	25258
3	2022	C	5.00	2000	8	2021	P	3.25	24851
3	2022	C	8.00	2000	10	2021	C	4.50	24696
3	2022	C	10.00	2000	8	2021	C	3.25	23627
8	2021	C	4.25	1950	11	2021	C	4.00	23617
3	2022	P	3.00	1710	9	2021	C	3.50	23573
1	2022	P	3.00	1700	8	2021	C	4.50	23504
1	2022	P	3.50	1700	9	2021	P	2.50	23267
1	2022	C	5.50	1620	10	2021	P	3.00	22077
12	2021	P	3.00	1600	12	2021	C	4.00	21935
2	2022	P	3.00	1600	9	2021	P	3.00	20546
2	2022	C	5.50	1520	9	2021	P	2.00	20427
11	2021	C	5.50	1500	10	2021	P	2.25	19713
12	2021	C	5.50	1500	4	2022	C	3.00	19685
3	2022	C	5.50	1500	8	2021	P	2.00	19668
2	2022	P	3.50	1350	8	2021	P	2.90	19603
3	2022	P	3.50	1350	8	2021	P	2.25	19478
8	2021	P	3.30	1323	8	2021	P	3.50	19421
8	2021	C	4.35	1252	9	2021	C	3.25	19002
12	2021	P	3.50	1250	10	2021	C	3.00	18500
8	2021	C	3.85	1222	8	2021	P	2.75	18483
9	2021	C	3.75	1194	10	2021	C	6.00	16898
9	2021	C	4.50	1170	10	2021	C	3.75	16686
10	2021	C	4.25	1128	9	2021	C	4.50	16387
11	2021	C	4.30	1000	3	2022	C	5.00	15937
12	2021	C	4.30	1000	8	2021	C	3.00	15826
1	2022	C	4.30	1000	9	2021	P	2.75	15772
2	2022	C	4.30	1000	11	2021	P	3.00	15739
3	2022	C	4.30	1000	9	2021	C	5.00	15511
8	2021	P	3.35	951	8	2021	C	3.30	15351
3	2022	P	2.50	912	11	2021	C	3.75	15327
8	2021	C	3.80	829	9	2021	C	4.25	14796
9	2021	C	3.90	810	10	2021	P	3.50	14716
10	2021	P	3.00	805	1	2022	C	4.00	14498
8	2021	C	3.30	800	3	2022	C	3.00	14448
10	2021	C	4.50	795	8	2021	P	3.40	14291
8	2021	P	3.45	757	8	2021	C	4.25	14179
					3	2022	C	4	14001

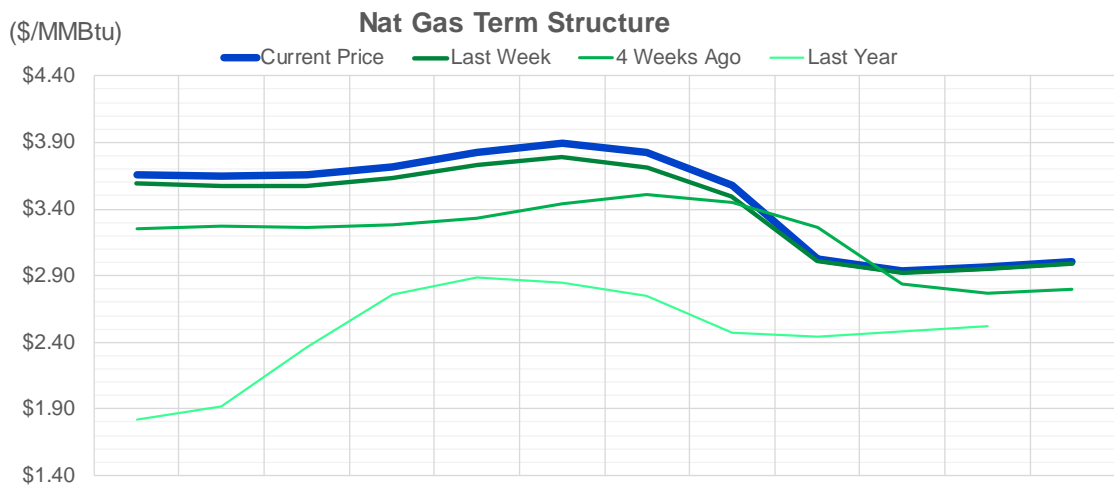
Source: CME, Nasdaq, ICE

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
AUG 21	113118	125481	-12363	AUG 21	95884	94452	1432
SEP 21	306238	297159	9079	SEP 21	86159	86184	-25
OCT 21	155324	156238	-914	OCT 21	100587	101116	-529
NOV 21	106723	106938	-215	NOV 21	73259	72892	367
DEC 21	69894	69392	502	DEC 21	70562	70267	296
JAN 22	119500	121368	-1868	JAN 22	78477	78444	33
FEB 22	47624	47212	412	FEB 22	66894	66608	287
MAR 22	97829	95490	2339	MAR 22	68247	67935	312
APR 22	97613	97184	429	APR 22	64865	64646	219
MAY 22	84878	84332	546	MAY 22	67239	67184	55
JUN 22	27497	27399	98	JUN 22	55459	55458	2
JUL 22	21965	21930	35	JUL 22	54024	54308	-284
AUG 22	23028	23003	25	AUG 22	55254	55523	-269
SEP 22	23088	22957	131	SEP 22	54922	55232	-311
OCT 22	60909	60357	552	OCT 22	59035	59670	-635
NOV 22	24783	24789	-6	NOV 22	47450	47600	-151
DEC 22	20376	20370	6	DEC 22	50042	50204	-162
JAN 23	13493	13391	102	JAN 23	29218	29164	54
FEB 23	4971	4564	407	FEB 23	25124	25117	7
MAR 23	7840	7829	11	MAR 23	27659	27512	147
APR 23	8815	8714	101	APR 23	22036	21978	58
MAY 23	5590	5464	126	MAY 23	22396	22367	29
JUN 23	2269	2267	2	JUN 23	20886	20851	35
JUL 23	2366	2265	101	JUL 23	20966	20929	37
AUG 23	1500	1400	100	AUG 23	20884	20831	53
SEP 23	1863	1763	100	SEP 23	20528	20485	43
OCT 23	2401	2401	0	OCT 23	21856	21802	54
NOV 23	1109	1109	0	NOV 23	19761	19781	-20
DEC 23	1758	1758	0	DEC 23	21321	21349	-28
JAN 24	793	793	0	JAN 24	12484	12478	6

Source: CME, ICE






	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22
Current Price	\$3.660	\$3.648	\$3.655	\$3.721	\$3.829	\$3.899	\$3.821	\$3.580	\$3.024	\$2.935	\$2.965	\$3.001
Last Week	\$3.596	\$3.574	\$3.576	\$3.633	\$3.730	\$3.794	\$3.715	\$3.498	\$3.011	\$2.922	\$2.952	\$2.988
vs. Last Week	\$0.064	\$0.074	\$0.079	\$0.088	\$0.099	\$0.105	\$0.106	\$0.082	\$0.013	\$0.013	\$0.013	\$0.013
4 Weeks Ago	\$3.251	\$3.271	\$3.259	\$3.277	\$3.331	\$3.436	\$3.514	\$3.448	\$3.263	\$2.834	\$2.770	\$2.798
vs. 4 Weeks Ago	\$0.409	\$0.377	\$0.396	\$0.444	\$0.498	\$0.463	\$0.307	\$0.132	-\$0.239	\$0.101	\$0.195	\$0.203
Last Year	\$1.778	\$1.818	\$1.917	\$2.366	\$2.760	\$2.888	\$2.852	\$2.750	\$2.476	\$2.443	\$2.480	\$2.524
vs. Last Year	\$1.882	\$1.830	\$1.738	\$1.355	\$1.069	\$1.011	\$0.969	\$0.830	\$0.548	\$0.492	\$0.485	\$0.477

	Units	Current Price	vs. Last Week	vs. 4 Weeks Ago	vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	-0.007	▼ -0.058	▼ -0.031	▼ -0.024
NatGas Oct21/Nov21	\$/MMBtu	0.070	▲ 0.016	▲ 0.017	▲ 0.023
NatGas Oct21/Jan22	\$/MMBtu	0.251	▲ 0.044	▲ 0.019	▼ -0.027
NatGas Apr22/Oct22	\$/MMBtu	-0.001	▲ 0.013	▼ -0.025	▼ -0.064
WTI Crude	\$/Bbl	71.65	▼ -1.290	▲ 0.610	▲ 30.900
Brent Crude	\$/Bbl	73.47	▼ -0.650	▲ 0.390	▲ 30.100
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	▲ 0.000	▲ 0.000	▲ 0.000
Heating Oil	cents/Gallon	211.26	▼ -0.780	▲ 4.580	▲ 88.470
Propane, Mt. Bel	cents/Gallon	1.10	▲ 0.011	▲ 0.153	▲ 0.621
Ethane, Mt. Bel	cents/Gallon	0.31	▲ 0.002	▲ 0.028	▲ 0.088
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					
7/16/2021					
Baker Hughes 					
U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago
Oil	380	2	378	200	180
Gas	104	3	101	33	71
Miscellaneous	0	0	0	-2	2
Directional	32	1	31	9	23
Horizontal	434	1	433	219	215
Vertical	18	3	15	3	15
Canada Breakout	This Week	+/-	Last Week	+/-	Year Ago
Oil	94	6	88	88	6
Gas	55	7	48	29	26
Miscellaneous	1	0	1	1	0
Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago
Ardmore Woodford	1	0	1	0	1
Arkoma Woodford	1	0	1	1	0
Cana Woodford	16	-1	17	10	6
DJ-Niobrara	11	0	11	7	4
Eagle Ford	32	0	32	21	11
Granite Wash	1	-1	2	1	0
Haynesville	49	0	49	17	32
Marcellus	28	0	28	1	27
Permian	238	1	237	114	124
Utica	10	0	10	4	6
Williston	18	0	18	8	10