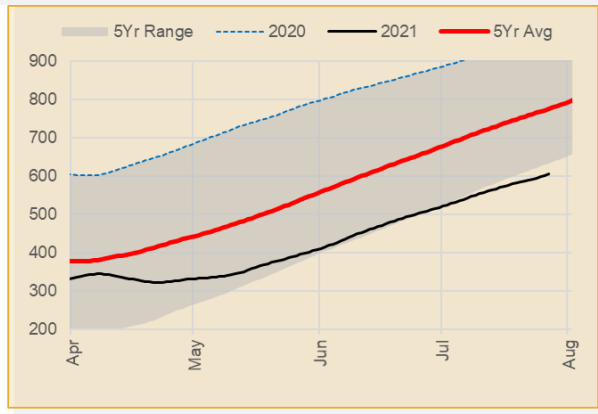
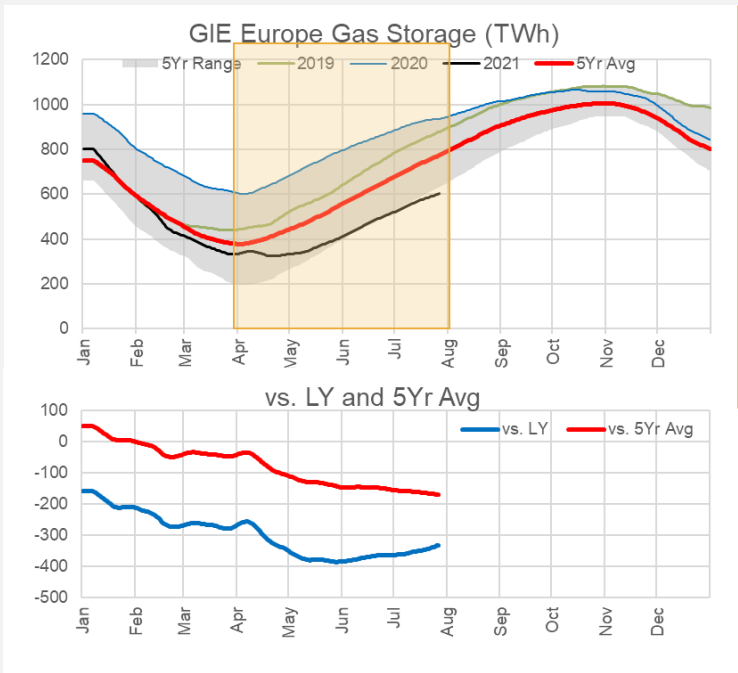


European gas prices have soared this spring with storage inventories remaining low after a brutally cold winter, warm summer, soaring carbon prices, and competition from Asia for LNG. Current storage sits at 55% full. This is 29% lower than the same time last year, and 16% below the 5-year average level.



The current price sits well above Henry Hub, and at a multi-year high for this time of the year.

### Front Month Henry Hub, TTF, and JKM



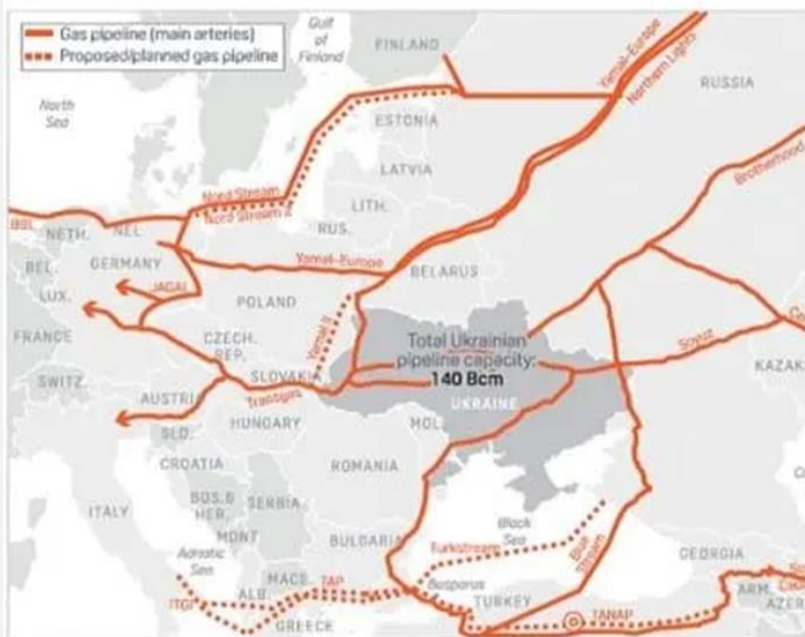
The risk of trading futures and options and other derivatives involves a substantial risk of loss and is not suitable for all persons. Each person must consider whether a particular trade, combination of trades, or strategy is suitable for that person's financial means and objectives. Past results are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

## Front month TTF seasonality chart



The strong pricing is a positive for U.S. LNG exports, which is pushing itself into a market mix. The LNG arbitrage spread between the United States and Europe is wide open as seen in the chart above. That being said, strong Asia prices led by robust industrial demand are keeping the LNG flows limited to the European shores. Europe does rely on LNG, but the bulk of the natural gas is still transported through pipelines. Of these exporters, Russia is by far the largest and most influential country due to its sizeable energy industry and excess capacity. Although prices are favorable, Gazprom does not seem to be in a hurry to send extra volumes on top of the running contracts with European customers.

## EUROPE'S GAS PIPELINE TIES TO RUSSIA



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In 2020, Gazprom's exports decreased from an average of 19.1 Bcf/d in 2019 to 16.3 Bcf/d. The majority of this gas transits from Russia to Belarus and Ukraine. Another 5.3 Bcf/d of capacity was added in 2011 with the completion of Nord Stream 1 (NS1) and the market is waiting for this to double to 10.6 Bcf/d when the disputed Nord Stream 2 (NS2) pipeline starts pumping gas at some point this year.

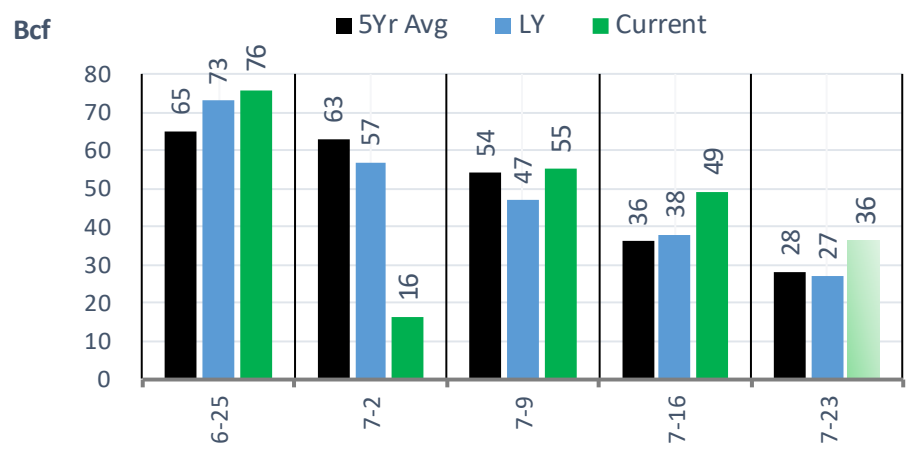
The US put sanctions on the NS2 project in 2019 and 2020, but the new administration recently waived them as it looks to build stronger relations with Europe. The US and Germany have reached a compromise, which means it could flow as early as late-Q3. Both countries pledged their support for Ukraine and agreed to sanction Russia if it uses the pipeline or energy supplies for geopolitical advantage.



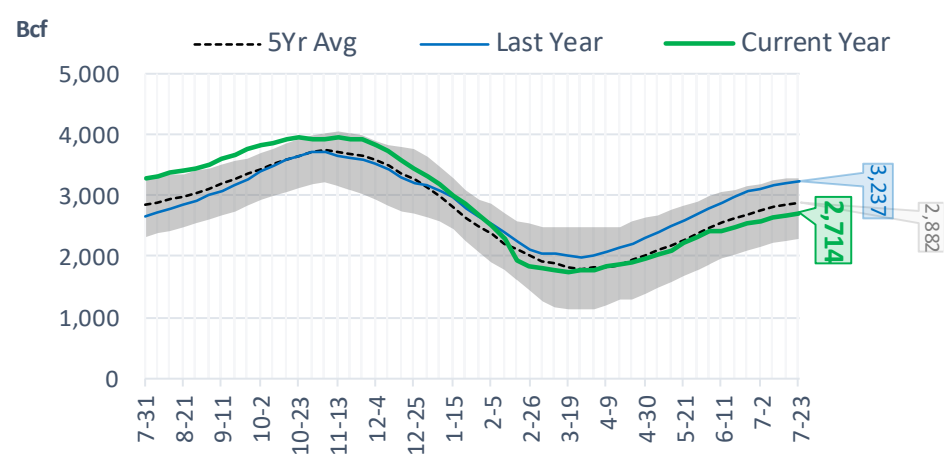
On a side note, Russia has elected not to book additional pipeline capacity to move natural gas through Ukraine to Europe this year beyond a transit agreement it has in place to move ~4 Bcf/d through Ukraine annually until 2024. This move is adding tension and could be a tool to get NS2 flowing soon. Germany is looking for Russian to extend the agreement past 2024. NS2 would provide additional European imports at a time when storage inventories are very concerning.

## EIA Storage Report

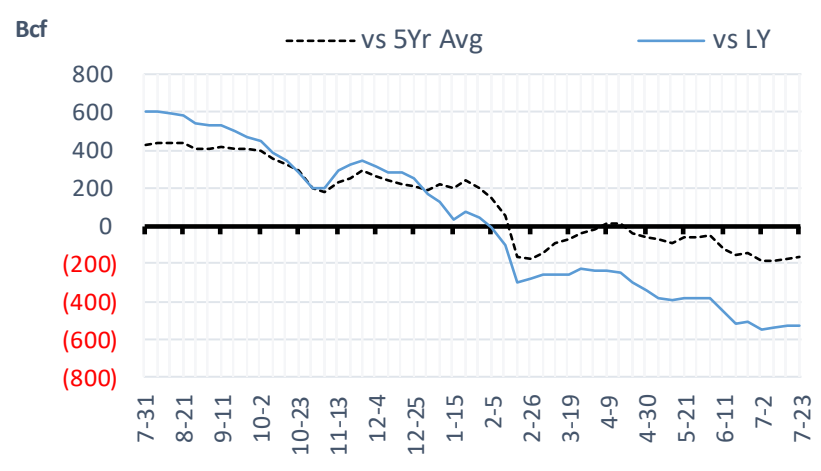
### Total Lower 48 YoY Weekly Change



### Total Lower 48 Storage Levels



### Total Lower 48 LY Surplus/Deficit

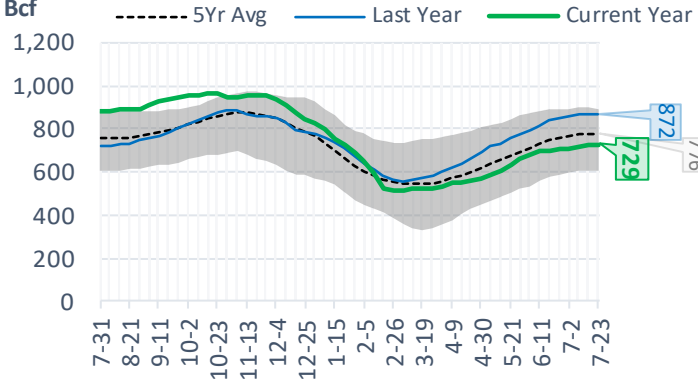


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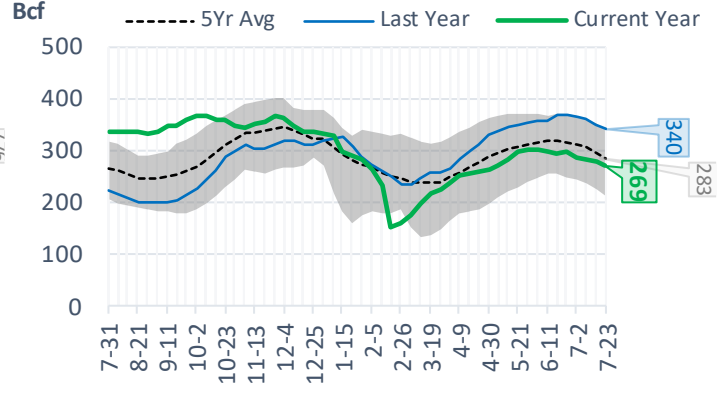
## Natural Gas Storage Stats - Last 5 Weeks

Week Ending	Current 23-Jul	Week - 1 16-Jul	Week - 2 9-Jul	Week - 3 2-Jul	Week - 4 25-Jun	Week - 5 18-Jun
<b>Total Lower 48 Storage Level</b>	<b>2714</b>	2678	2629	2574	2558	2482
<b>Weekly Change</b>	<b>+36</b>	+49	+55	+16	+76	+55
<b>vs LY</b>	<b>-523</b>	-532	-543	-551	-510	-513
<b>vs 5Yr Avg</b>	<b>-168</b>	-176	-189	-190	-143	-154
<b>S. Central Salt Storage Level</b>	<b>269</b>	279	283	286	296	295
<b>Weekly Change</b>	<b>-10</b>	-4	-3	-10	+1	-4
<b>vs LY</b>	<b>-71</b>	-71	-77	-79	-73	-75
<b>vs 5Yr Avg</b>	<b>-14</b>	-16	-22	-24	-19	-24
<b>S. Central NonSalt Storage Level</b>	<b>729</b>	723	712	705	709	697
<b>Weekly Change</b>	<b>+6</b>	+11	+7	-4	+12	+1
<b>vs LY</b>	<b>-143</b>	-149	-156	-156	-143	-139
<b>vs 5Yr Avg</b>	<b>-47</b>	-53	-61	-60	-46	-47
<b>Midwest Storage Level</b>	<b>702</b>	683	662	638	623	595
<b>Weekly Change</b>	<b>+19</b>	+21	+24	+15	+28	+25
<b>vs LY</b>	<b>-111</b>	-113	-115	-120	-114	-117
<b>vs 5Yr Avg</b>	<b>-13</b>	-14	-16	-18	-8	-12
<b>East Storage Level</b>	<b>583</b>	562	543	521	513	488
<b>Weekly Change</b>	<b>+21</b>	+19	+22	+8	+25	+27
<b>vs LY</b>	<b>-121</b>	-128	-127	-133	-123	-126
<b>vs 5Yr Avg</b>	<b>-53</b>	-56	-55	-57	-42	-42
<b>Mountain Storage Level</b>	<b>184</b>	183	180	177	173	169
<b>Weekly Change</b>	<b>+1</b>	+3	+3	+4	+4	+4
<b>vs LY</b>	<b>-11</b>	-6	-5	-2	+1	+5
<b>vs 5Yr Avg</b>	<b>+3</b>	+5	+5	+7	+9	+10
<b>Pacific Storage Level</b>	<b>246</b>	247	250	246	244	239
<b>Weekly Change</b>	<b>-1</b>	-3	+4	+2	+5	+3
<b>vs LY</b>	<b>-67</b>	-64	-62	-63	-59	-59
<b>vs 5Yr Avg</b>	<b>-43</b>	-43	-40	-40	-37	-38

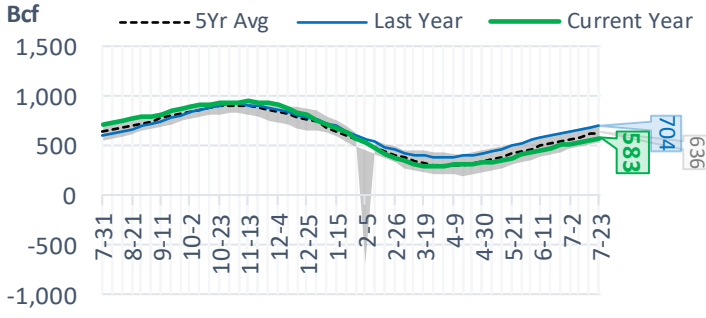
## NonSalt Storage Levels



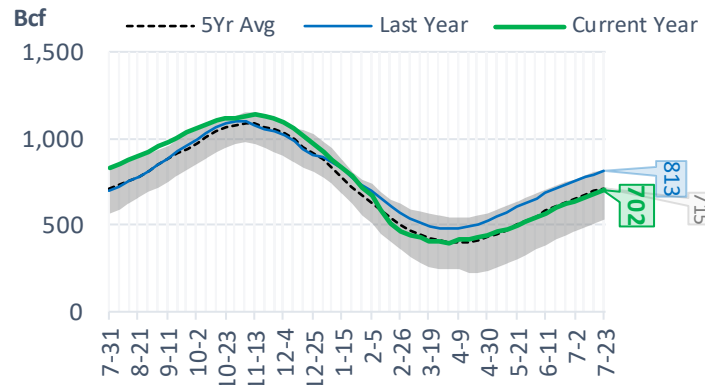
## Salt Storage Levels



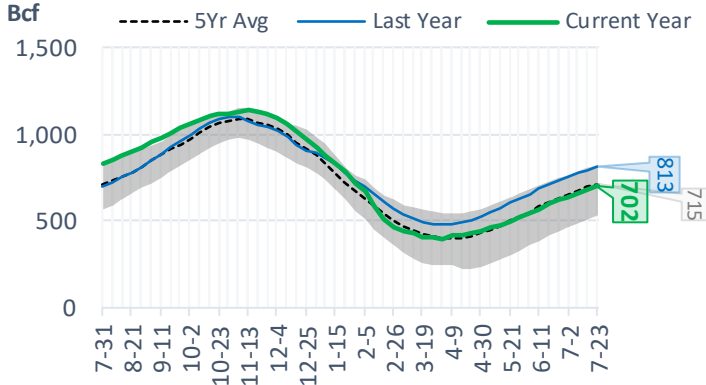
## East Storage Levels



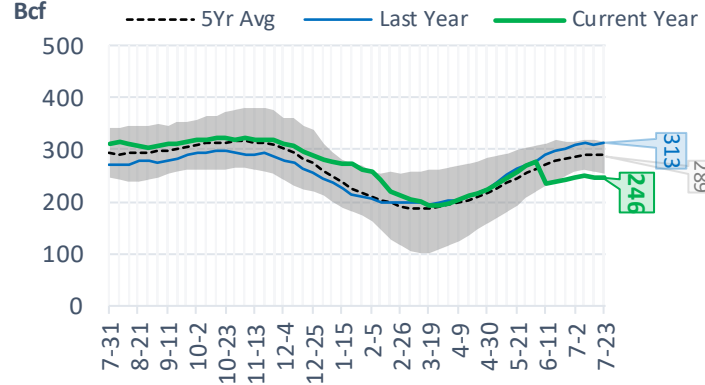
## Midwest Storage Levels



## Midwest Storage Levels



## Pacific Storage Levels



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## EIA Storage Week Balances

	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	WoW	vs. 4W
<b>Lower 48 Dry Production</b>	<b>93.2</b>	<b>92.2</b>	<b>91.8</b>	<b>92.3</b>	<b>92.2</b>	<b>92.4</b>	▲ 0.2	▲ 0.3
<b>Canadian Imports</b>	<b>4.7</b>	<b>5.2</b>	<b>5.1</b>	<b>5.2</b>	<b>4.9</b>	<b>5.6</b>	▲ 0.6	▲ 0.5
L48 Power	34.4	39.7	37.1	38.7	39.7	42.1	▲ 2.4	▲ 3.3
L48 Residential & Commercial	8.4	8.3	7.9	8.2	8.3	8.1	▼ -0.1	▼ -0.1
L48 Industrial	20.0	21.5	19.7	19.8	20.0	21.4	▲ 1.4	▲ 1.2
L48 Lease and Plant Fuel	5.2	5.1	5.1	5.1	5.1	5.1	▲ 0.0	▲ 0.0
L48 Pipeline Distribution	2.1	2.4	2.1	2.2	2.3	2.4	▲ 0.1	▲ 0.1
<b>L48 Regional Gas Consumption</b>	<b>70.1</b>	<b>76.9</b>	<b>72.0</b>	<b>74.0</b>	<b>75.3</b>	<b>79.2</b>	▲ 3.8	▲ 4.6
<b>Net LNG Exports</b>	<b>10.3</b>	<b>11.2</b>	<b>11.0</b>	<b>10.8</b>	<b>10.5</b>	<b>10.8</b>	▲ 0.3	▼ -0.1
<b>Total Mexican Exports</b>	<b>7.6</b>	<b>7.2</b>	<b>7.1</b>	<b>7.1</b>	<b>7.0</b>	<b>7.0</b>	▲ 0.0	▼ -0.1
<b>Implied Daily Storage Activity</b>	<b>9.9</b>	<b>2.1</b>	<b>6.8</b>	<b>5.5</b>	<b>4.3</b>	<b>0.9</b>	-3.4	
<b>EIA Reported Daily Storage Activity</b>	<b>10.9</b>	<b>2.3</b>	<b>7.9</b>	<b>7.0</b>	<b>5.1</b>			
<b>Daily Model Error</b>	<b>-0.9</b>	<b>-0.2</b>	<b>-1.1</b>	<b>-1.5</b>	<b>-0.8</b>			

## Monthly Balances

	2Yr Ago Jul-19	LY Jul-20	Mar-21	Apr-21	May-21	Jun-21	MTD Jul-21	MoM	vs. LY
<b>Lower 48 Dry Production</b>	<b>91.9</b>	<b>89.1</b>	<b>91.5</b>	<b>92.3</b>	<b>92.2</b>	<b>92.8</b>	<b>92.1</b>	▼ -0.7	▲ 3.0
<b>Canadian Imports</b>	<b>5.0</b>	<b>4.4</b>	<b>4.8</b>	<b>4.7</b>	<b>4.5</b>	<b>4.9</b>	<b>5.2</b>	▲ 0.3	▲ 0.8
L48 Power	40.8	43.7	24.3	25.0	27.1	35.3	39.4	▲ 4.1	▼ -4.3
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	19.3	21.2	19.2	21.0	20.8	▼ -0.2	▲ 0.4
L48 Lease and Plant Fuel	5.0	4.9	5.0	5.1	5.1	5.1	5.1	▼ 0.0	▲ 0.2
L48 Pipeline Distribution	2.3	2.4	2.5	2.3	2.1	2.2	2.2	▲ 0.1	▼ -0.2
<b>L48 Regional Gas Consumption</b>	<b>77.8</b>	<b>79.4</b>	<b>80.6</b>	<b>73.3</b>	<b>66.7</b>	<b>72.0</b>	<b>75.7</b>	▲ 3.7	▼ -3.7
<b>Net LNG Exports</b>	<b>6.0</b>	<b>3.3</b>	<b>11.1</b>	<b>11.5</b>	<b>10.8</b>	<b>10.2</b>	<b>10.8</b>	▲ 0.6	▲ 7.5
<b>Total Mexican Exports</b>	<b>5.3</b>	<b>5.9</b>	<b>6.5</b>	<b>6.7</b>	<b>6.8</b>	<b>7.4</b>	<b>7.1</b>	▼ -0.4	▲ 1.2
<b>Implied Daily Storage Activity</b>	<b>7.8</b>	<b>5.0</b>	<b>-2.0</b>	<b>5.5</b>	<b>12.4</b>	<b>8.0</b>	<b>3.7</b>		
<b>EIA Reported Daily Storage Activity</b>									
<b>Daily Model Error</b>									

Source: Bloomberg, analytix.ai

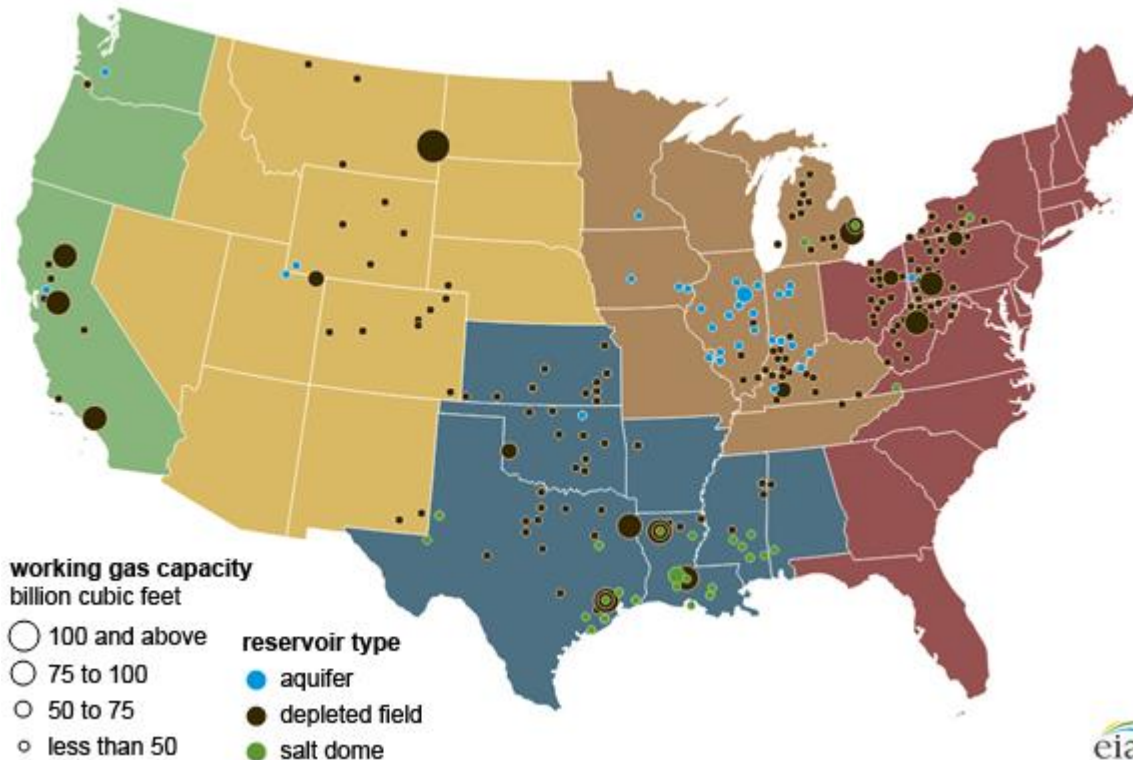
## Regional S/D Models Storage Projection

Week Ending 30-Jul

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	0.6	1.3	1.9	13
East	1.7	1.4	3.1	22
Midwest	2.4	-0.4	1.9	14
Mountain	4.6	-4.1	0.5	3
South Central	-7.4	4.4	-3.0	-21
Pacific	-0.6	0.0	-0.6	-4

\*Adjustment Factor is calculated based on historical regional deltas

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

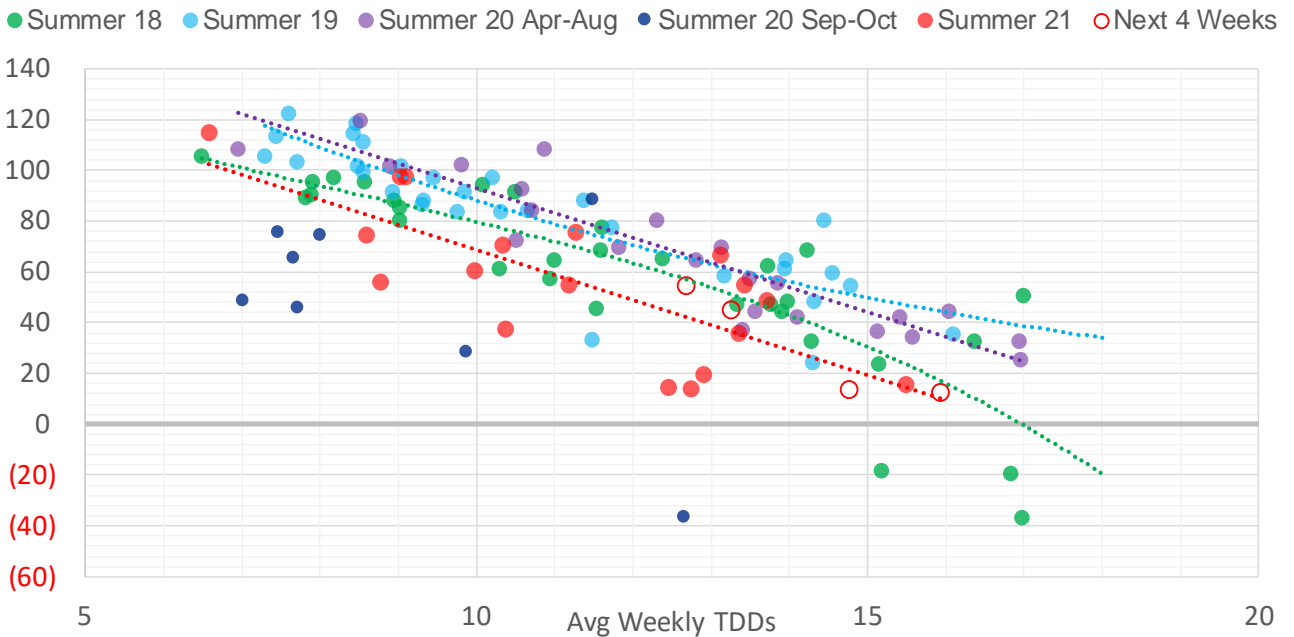




## Weather Model Storage Projection

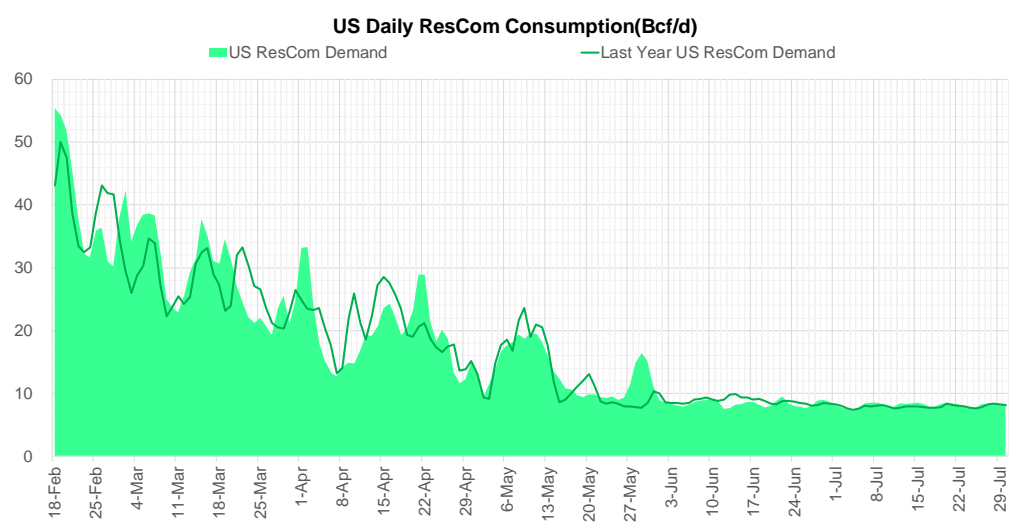
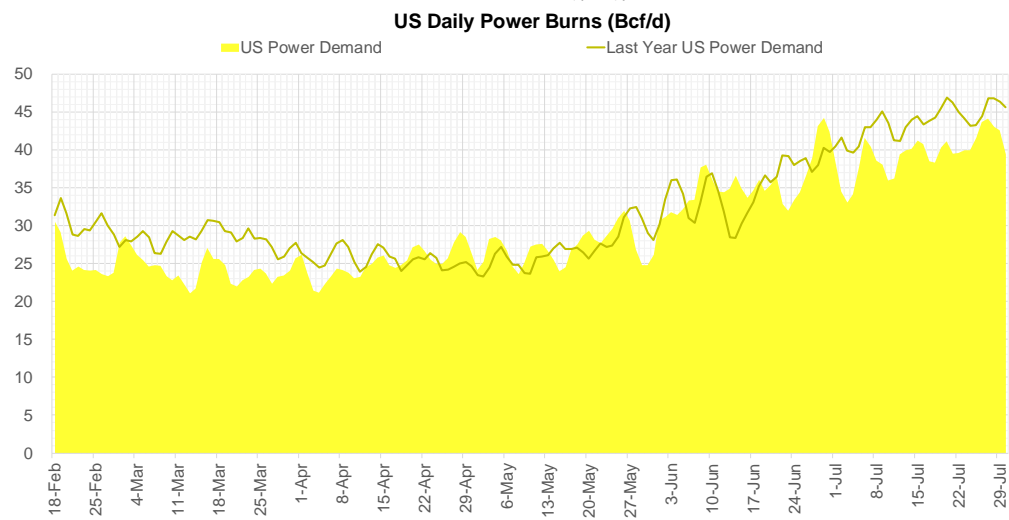
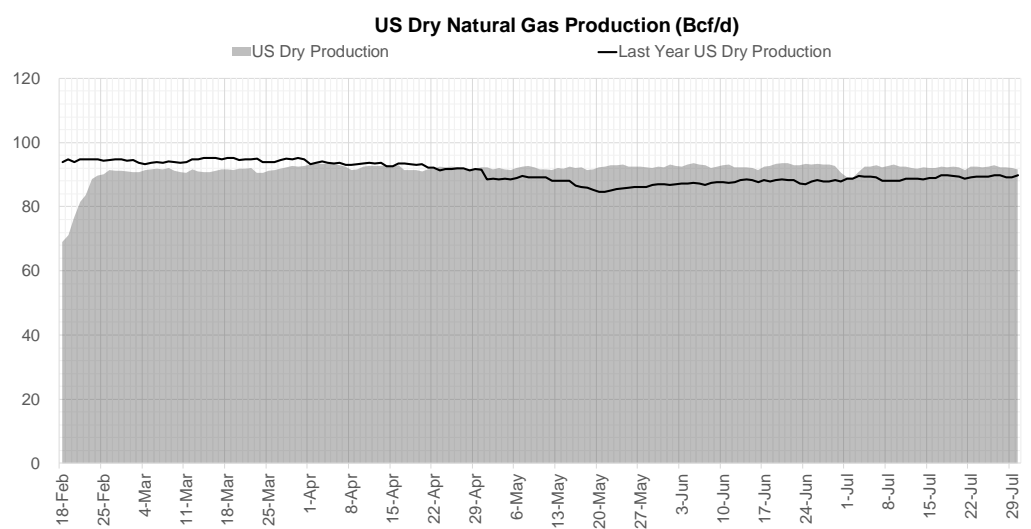
Next report and beyond		
Week Ending	Temp	Week Storage Projection
06-Aug	12.7	54
13-Aug	16.0	12
20-Aug	13.3	45

### 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

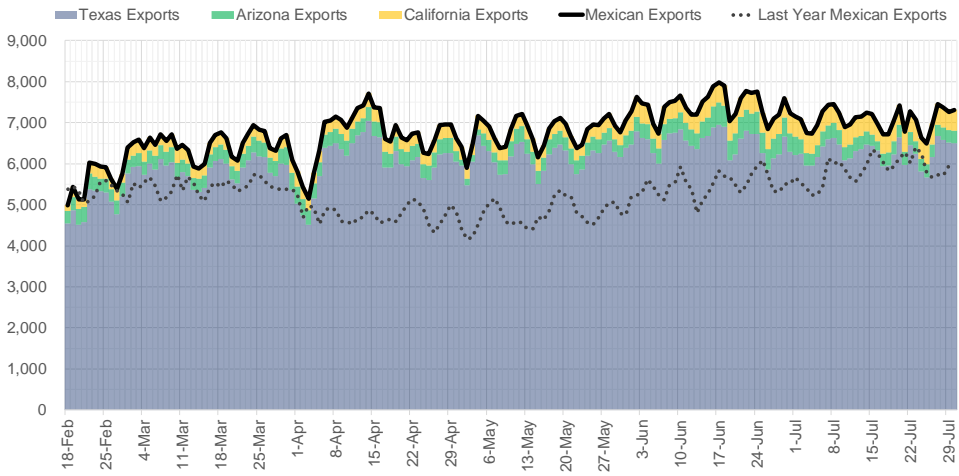
## Supply – Demand Trends



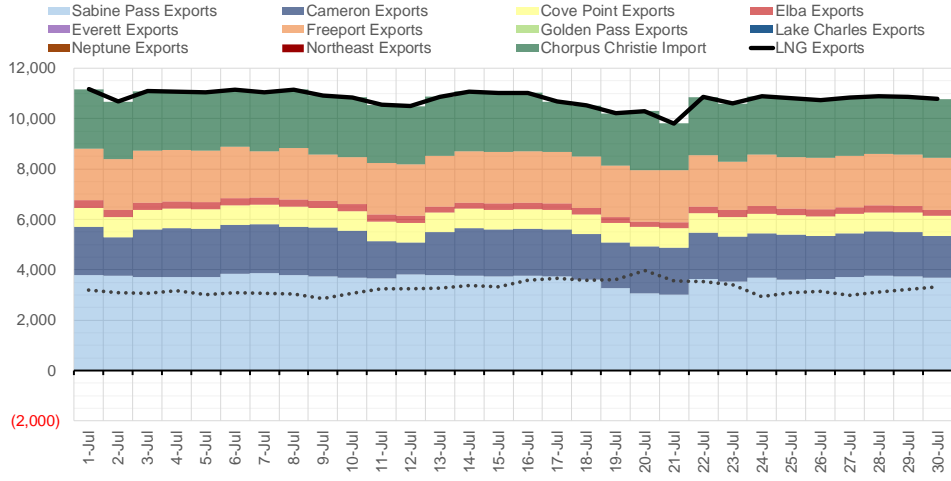
Source: Bloomberg

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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, ICE and Nasdaq Combined

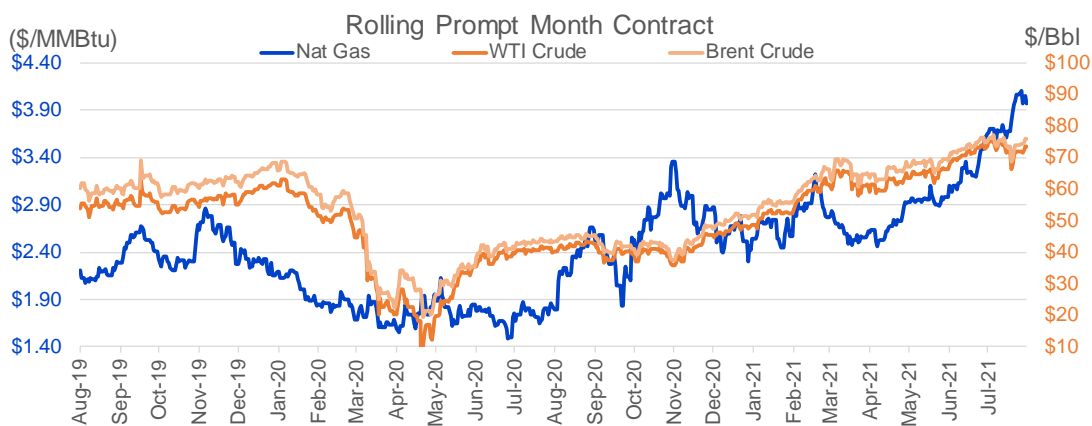
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
9	2021	P	3.75	7234	10	2021	C	4.00	41857
9	2021	P	3.50	5401	10	2021	C	5.00	33875
9	2021	P	3.60	4992	10	2021	C	3.50	33005
9	2021	C	4.50	4639	9	2021	C	4.00	30880
9	2021	C	4.25	4561	10	2021	P	2.50	30078
10	2021	C	4.50	3197	10	2021	C	4.50	29455
9	2021	C	5.00	3013	10	2021	C	3.25	28230
9	2021	P	3.40	2941	10	2021	P	2.75	26775
9	2021	C	4.75	2791	10	2021	P	2.00	26497
9	2021	P	3.25	2772	12	2021	P	2.75	24346
9	2021	C	4.00	2580	9	2021	P	2.50	23376
10	2021	C	4.35	2500	10	2021	P	3.50	23341
3	2022	P	3.50	2003	9	2021	C	3.50	23108
3	2022	P	3.00	2000	10	2021	P	3.00	22909
9	2021	P	3.45	1931	11	2021	C	4.00	22667
10	2021	C	5.00	1886	12	2021	C	4.00	21756
10	2021	P	3.00	1801	12	2021	P	2.50	21309
5	2022	P	2.50	1575	9	2021	P	2.00	20427
10	2021	C	4.75	1525	9	2021	P	3.00	20349
12	2021	P	2.50	1500	10	2021	P	2.25	19800
9	2021	C	5.25	1494	4	2022	C	3.00	19610
4	2022	P	2.50	1425	9	2021	C	3.25	18995
9	2021	C	3.90	1411	10	2021	C	3.00	18501
10	2021	P	3.60	1398	11	2021	P	3.00	18017
11	2021	C	5.25	1326	9	2021	C	4.50	17450
10	2021	P	2.75	1289	10	2021	C	3.75	16789
4	2022	P	2.25	1200	9	2021	C	4.25	16652
5	2022	P	2.25	1150	9	2021	P	3.50	16594
10	2021	P	3.50	1131	10	2021	C	6.00	16468
1	2022	C	10.00	1111	3	2022	C	5.00	16336
9	2021	P	3.80	1056	9	2021	C	5.00	16290
12	2021	C	4.50	1002	12	2021	P	3.00	16091
11	2021	C	10.00	1000	9	2021	P	2.75	15821
12	2021	C	10.00	1000	11	2021	C	3.75	15339
2	2022	C	10.00	1000	1	2022	C	4.00	14698
3	2022	C	10.00	1000	11	2021	C	5.00	14507
5	2022	C	3.75	1000	3	2022	C	3.00	14448
9	2021	P	3.70	991	1	2022	C	5.00	14215
11	2021	P	2.50	952	11	2021	P	2.50	13994
5	2022	C	4.00	950	12	2021	P	2.00	13889
10	2021	P	3.35	947	9	2021	P	2.60	13814
9	2021	C	5.10	900	9	2021	P	3.25	13800
9	2021	P	5.00	900	9	2021	P	1.90	13773
9	2021	P	5.10	900	2	2022	C	5.00	13595
9	2021	C	4.20	899	2	2022	C	4.00	13562
3	2022	P	2.50	850	5	2022	C	3.00	13050
9	2021	P	3.65	845	9	2021	P	2.25	12762
11	2021	C	4.00	805	6	2022	C	3.00	12755
9	2021	P	2.90	792	9	2021	C	3.00	12592
					7	2022	C	3	12547

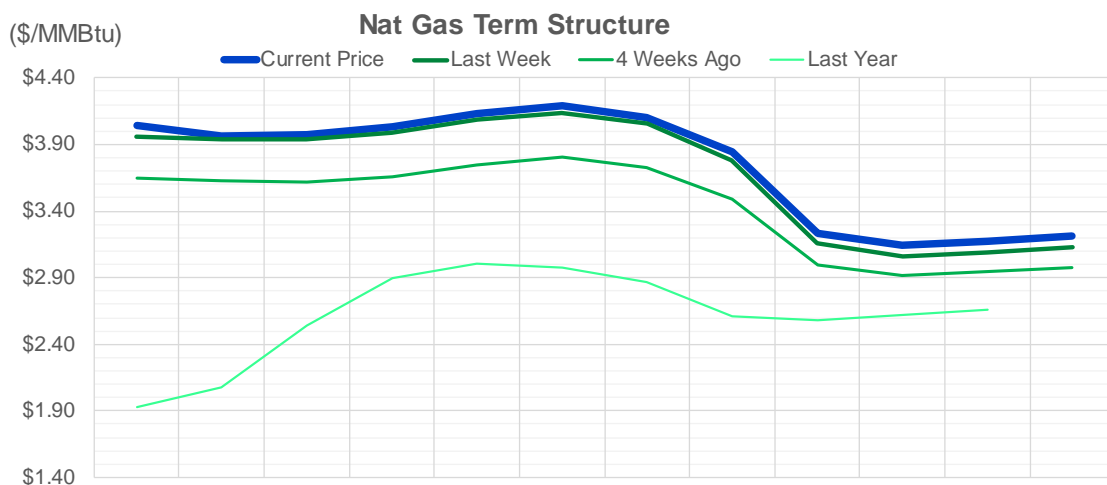
Source: CME, Nasdaq, ICE

## 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
SEP 21	337445	337112	333	SEP 21	95341	95346	-5
OCT 21	159132	160811	-1679	OCT 21	106366	104662	1704
NOV 21	122605	122735	-130	NOV 21	72308	73141	-833
DEC 21	74047	74015	32	DEC 21	73283	72888	396
JAN 22	120738	120648	90	JAN 22	78105	78832	-728
FEB 22	50703	50853	-150	FEB 22	68937	68753	184
MAR 22	101561	99043	2518	MAR 22	68021	68250	-229
APR 22	104005	102553	1452	APR 22	66483	66108	375
MAY 22	87284	86872	412	MAY 22	66812	66786	27
JUN 22	28733	28997	-264	JUN 22	55866	55639	227
JUL 22	23709	23111	598	JUL 22	54946	54775	171
AUG 22	24263	24256	7	AUG 22	56387	56239	148
SEP 22	24357	24759	-402	SEP 22	56030	55835	195
OCT 22	59506	60715	-1209	OCT 22	60394	58977	1417
NOV 22	25268	25258	10	NOV 22	48272	48265	8
DEC 22	21619	21804	-185	DEC 22	50477	50453	23
JAN 23	16470	15778	692	JAN 23	30650	30559	91
FEB 23	5646	5682	-36	FEB 23	26344	26278	66
MAR 23	7595	7517	78	MAR 23	27963	27860	103
APR 23	9491	9417	74	APR 23	22838	22657	182
MAY 23	5770	5718	52	MAY 23	23821	23690	131
JUN 23	2366	2378	-12	JUN 23	22134	22009	126
JUL 23	2572	2566	6	JUL 23	22407	22270	137
AUG 23	1770	1770	0	AUG 23	22423	22284	139
SEP 23	1987	2014	-27	SEP 23	21783	21656	127
OCT 23	2653	2652	1	OCT 23	23442	23302	140
NOV 23	1213	1213	0	NOV 23	22334	22281	53
DEC 23	1742	1742	0	DEC 23	21773	21724	49
JAN 24	993	993	0	JAN 24	12918	12948	-30
FEB 24	993	993	0	FEB 24	12918	12948	-30

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
<b>Current Price</b>	<b>\$4.044</b>	<b>\$3.967</b>	<b>\$3.969</b>	<b>\$4.030</b>	<b>\$4.130</b>	<b>\$4.190</b>	<b>\$4.106</b>	<b>\$3.841</b>	<b>\$3.234</b>	<b>\$3.147</b>	<b>\$3.175</b>	<b>\$3.210</b>
Last Week	\$3.959	\$3.938	\$3.935	\$3.990	\$4.084	\$4.141	\$4.053	\$3.781	\$3.157	\$3.064	\$3.092	\$3.126
vs. Last Week	\$0.085	\$0.029	\$0.034	\$0.040	\$0.046	\$0.049	\$0.053	\$0.060	\$0.077	\$0.083	\$0.083	\$0.084
4 Weeks Ago	\$3.650	\$3.624	\$3.619	\$3.658	\$3.743	\$3.807	\$3.725	\$3.488	\$2.998	\$2.917	\$2.943	\$2.977
vs. 4 Weeks Ago	\$0.394	\$0.343	\$0.350	\$0.372	\$0.387	\$0.383	\$0.381	\$0.353	\$0.236	\$0.230	\$0.232	\$0.233
Last Year	\$1.854	\$1.930	\$2.079	\$2.538	\$2.896	\$3.010	\$2.975	\$2.871	\$2.609	\$2.576	\$2.615	\$2.662
vs. Last Year	\$2.190	\$2.037	\$1.890	\$1.492	\$1.234	\$1.180	\$1.131	\$0.970	\$0.625	\$0.571	\$0.560	\$0.548

	Units	Current Price	vs. Last Week	vs. 4 Weeks Ago	vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	0.443	▲ 0.084	▲ 0.437	▲ 0.431
NatGas Oct21/Nov21	\$/MMBtu	0.059	▲ 0.002	▲ 0.017	▲ 0.008
NatGas Oct21/Jan22	\$/MMBtu	0.216	▲ 0.011	▲ 0.025	▼ -0.064
NatGas Apr22/Oct22	\$/MMBtu	-0.018	▲ 0.001	▼ -0.010	▼ -0.085
WTI Crude	\$/Bbl	73.62	▲ 1.710	▼ -1.610	▲ 33.700
Brent Crude	\$/Bbl	76.05	▲ 2.260	▲ 0.210	▲ 33.110
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	▲ 0.000	▲ 0.000	▲ 0.000
Heating Oil	cents/Gallon	218.94	▲ 5.680	▲ 3.320	▲ 97.750
Propane, Mt. Bel	cents/Gallon	1.09	▲ 0.003	▼ -0.007	▲ 0.603
Ethane, Mt. Bel	cents/Gallon	0.31	▲ 0.001	▲ 0.012	▲ 0.098
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					
7/30/2021					
Baker Hughes 					
U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago
Oil	385	-2	387	205	180
Gas	103	-1	104	34	69
Miscellaneous	0	0	0	-2	2
Directional	29	-4	33	7	22
Horizontal	442	3	439	226	216
Vertical	17	-2	19	4	13
Canada Breakout	This Week	+/-	Last Week	+/-	Year Ago
Oil	93	0	93	82	11
Gas	59	4	55	26	33
Miscellaneous	1	0	1	0	1
Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago
Ardmore Woodford	2	0	2	1	1
Arkoma Woodford	1	0	1	1	0
Cana Woodford	16	0	16	10	6
DJ-Niobrara	11	0	11	7	4
Eagle Ford	32	0	32	20	12
Granite Wash	3	1	2	2	1
Haynesville	47	-1	48	15	32
Marcellus	29	1	28	4	25
Permian	243	1	242	119	124
Utica	11	1	10	5	6
Williston	19	1	18	8	11