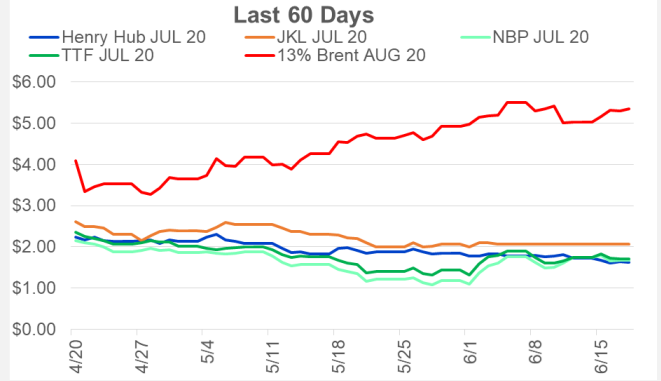
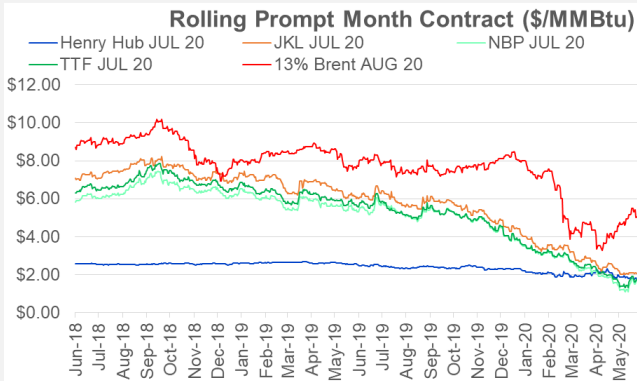
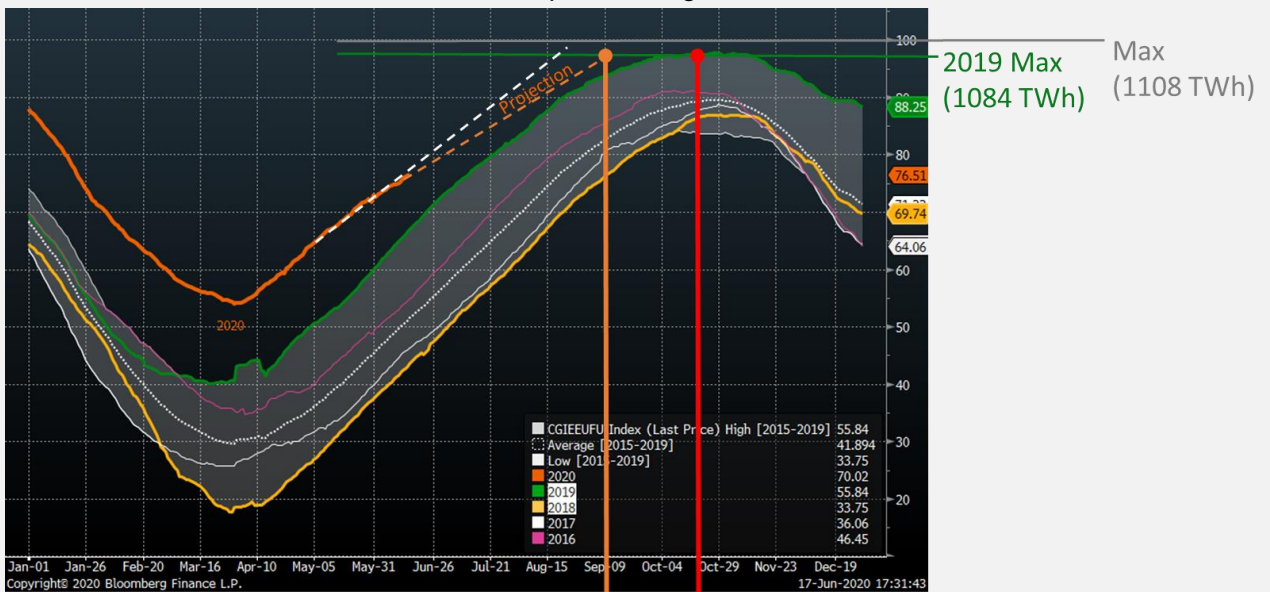


Global natural gas markets are under severe pressure with oversupply colliding with the destructive economic/demand impact of the Covid-19. This double whammy has driven down gas pricing benchmarks to record lows in Europe, the US and Asia.



These low global price and tight spreads have killed LNG shipping economics and with that we are getting LNG cargo cancellations. June has already been a brutal month for US LNG exports, but July could be worse with potentially 50 cargo being cancelled.

This week we dive a bit deeper in to **European storage inventories** and give some numbers around what could solve their balance. As of this week, European storage inventories are at 848 TWh or 77% full.



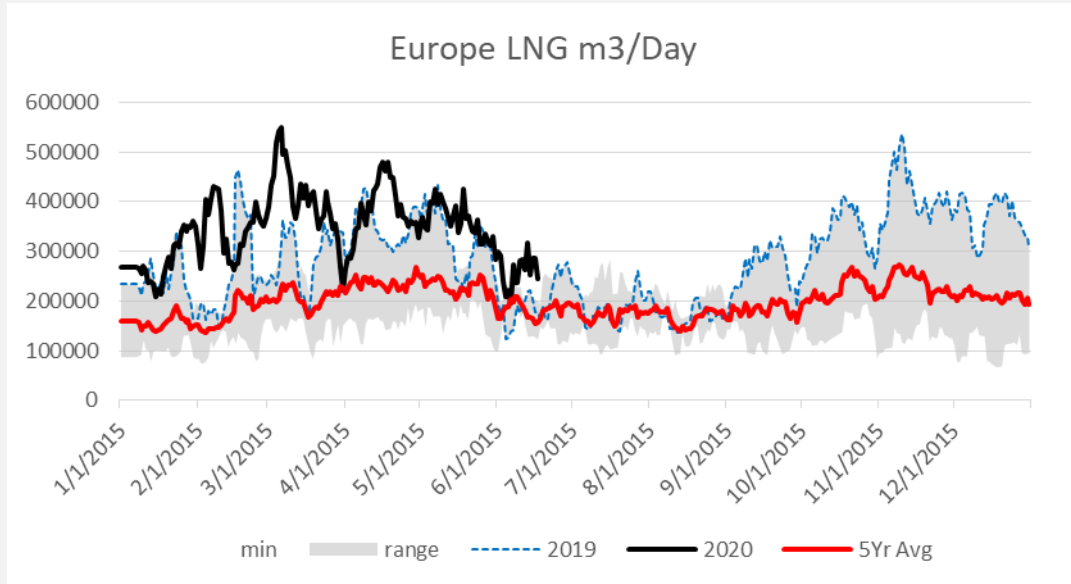
Max Reached ~50 Days Ahead of Schedule

Typical Date Max Reached

50 TWh ahead of schedule
 50 TWh = 170 Bcf pushed backed
 170 Bcf = ~52 LNG Cargo

To correct between June 15 to Nov 1 correction
 Burn an extra 1.2 Bcf/d
 or 12 fewer cargos per month (over 4.5 month)

As can be seen, the crash course prior to June (white line - based on the trajectory of fill) was late August, but the drop in price has started to correct some of the problem. The combination of LNG cargo cancellations, and increased power burns should fix the problem - although we have not seen a reduction in LNG receipts just yet. We are anticipating lower LNG receipts for the remainder of the month since big US cargo cancellations started June 1st and it take 2 weeks to travel to European destinations.



As for power burns, the rate of fuel switching in European countries in 2019 and 2020 has rapidly increased due to a combination of strength in carbon emission allowance prices and extreme weakness in gas markets. A good market to watch is Germany because of its vast gas and coal fleets. Over the first half June, gas-fired generation exceeded coal (lignite) output for the first time.

Based on our simple storage projection (orange line), the European market is still 50 days ahead of schedule. This tell us that we should anticipate weak LNG economics throughout the summer as LNG imports in Europe will need to remain low to ensure storage injection keep at a low pace. This ultimately means that gas gets pushed back into the US markets adding to our 4 Tcf problem.

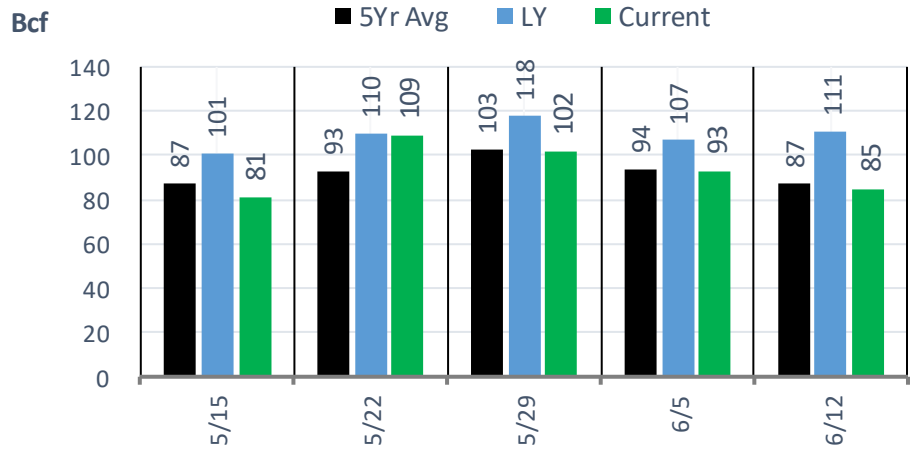
We end with a table showing storage levels in each European country vs LY and the 5Yr average. We'll continue to track this story as we progress through the summer.

European Natural Gas Storage Levels

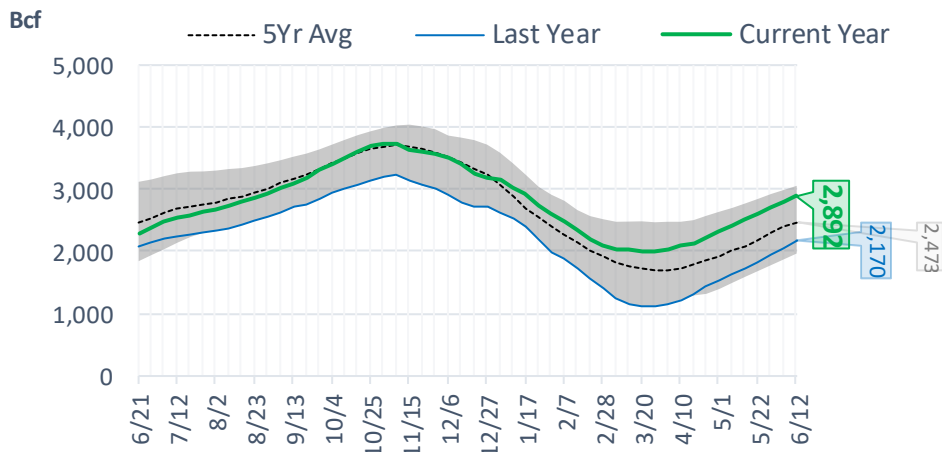
Country	Level (TWh)	Capacity (TWh)	% Utilization	YoY	vs. 5Yr Avg
	6/16/2020	6/16/2020	6/16/2020		
Europe	846.3	1106.2	77%	10%	25%
Germany	196.0	227.4	86%	10%	32%
France	94.6	128.8	73%	11%	30%
Netherlands Gas Storage (T	95.6	139.8	68%	-3%	14%
United Kingdom Gas Storage	7.8	12.3	63%	26%	36%
Belgium	8.4	9.0	94%	28%	59%
Italy	145.9	196.9	74%	8%	11%
Austria	83.2	94.5	88%	12%	40%
Slovakia	35.1	42.6	82%	6%	39%
Czech Republic Gas Storage	26.4	35.7	74%	4%	20%
Poland	21.9	35.6	61%	-2%	5%
Hungary	52.9	69.6	76%	21%	39%
Bulgaria	3.5	6.3	55%	4%	12%
Spain	26.4	34.3	77%	13%	14%
Denmark	7.9	10.2	77%	-6%	27%
Croatia	2.7	5.2	51%	-5%	-2%
Ireland	1.6	1.8	87%	87%	87%
Latvia	10.0	21.5	47%	47%	47%
Portugal	3.6	3.7	98%	18%	42%
Romania	23.6	33.0	72%	36%	34%
Sweden	0.0	0.1	44%	-27%	15%
Non-EU					
Ukraine	197.2	320.4	62%	21%	26%

EIA Storage Report

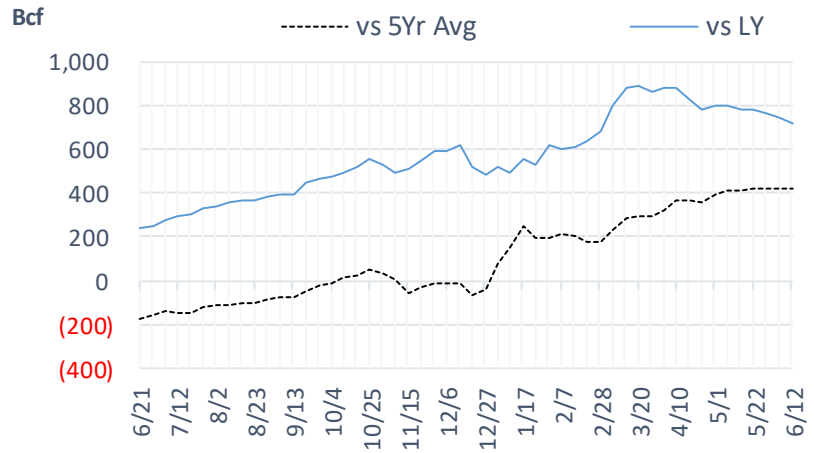
Total Lower 48 YoY Weekly Change



Total Lower 48 Storage Levels



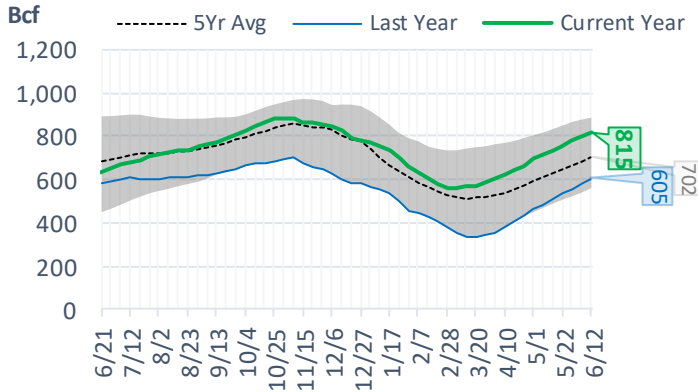
Total Lower 48 LY Surplus/Deficit



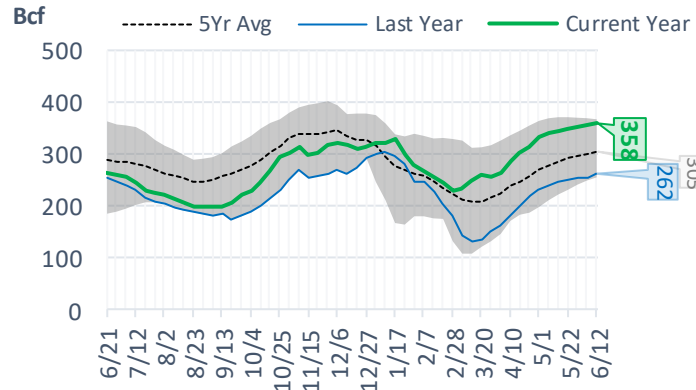
Natural Gas Storage Stats - Last 5 Weeks

Week Ending	Current 12-Jun	Week - 1 5-Jun	Week - 2 29-May	Week - 3 22-May	Week - 4 15-May	Week - 5 8-May
Total Lower 48 Storage Level	2892	2807	2714	2612	2503	2422
Weekly Change	+85	+93	+102	+109	+81	+103
vs LY	+722	+748	+762	+778	+779	+799
vs 5Yr Avg	+419	+421	+422	+423	+407	+413
S. Central Salt Storage Level	358	357	353	348	345	340
Weekly Change	+1	+4	+5	+3	+5	+9
vs LY	+96	+101	+98	+96	+99	+102
vs 5Yr Avg	+53	+55	+56	+57	+59	+61
S. Central NonSalt Storage Level	815	797	778	757	737	719
Weekly Change	+18	+19	+21	+20	+18	+24
vs LY	+210	+217	+220	+225	+230	+235
vs 5Yr Avg	+113	+111	+110	+109	+110	+111
Midwest Storage Level	688	662	634	606	576	554
Weekly Change	+26	+28	+28	+30	+22	+24
vs LY	+195	+202	+209	+217	+220	+226
vs 5Yr Avg	+143	+144	+145	+147	+144	+146
East Storage Level	586	563	536	504	469	452
Weekly Change	+23	+27	+32	+35	+17	+28
vs LY	+123	+130	+131	+130	+123	+131
vs 5Yr Avg	+96	+102	+103	+101	+93	+101
Mountain Storage Level	156	148	140	132	124	117
Weekly Change	+8	+8	+8	+8	+7	+6
vs LY	+40	+40	+41	+40	+37	+36
vs 5Yr Avg	+4	+2	0	-2	-5	-7
Pacific Storage Level	290	281	273	264	253	240
Weekly Change	+9	+8	+9	+11	+13	+12
vs LY	+58	+58	+64	+69	+70	+69

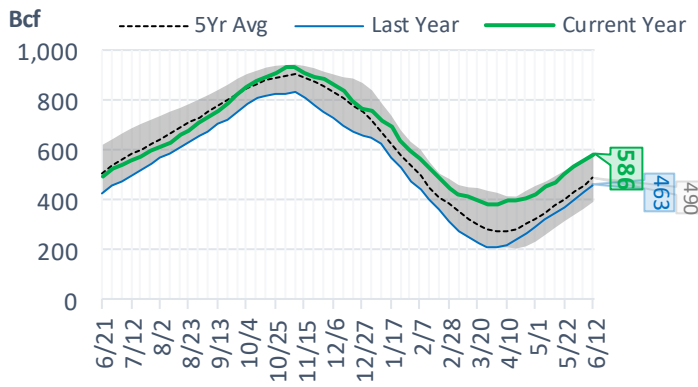
NonSalt Storage Levels



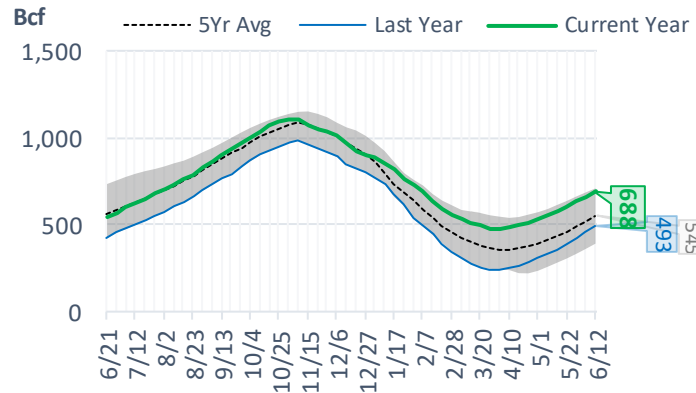
Salt Storage Levels



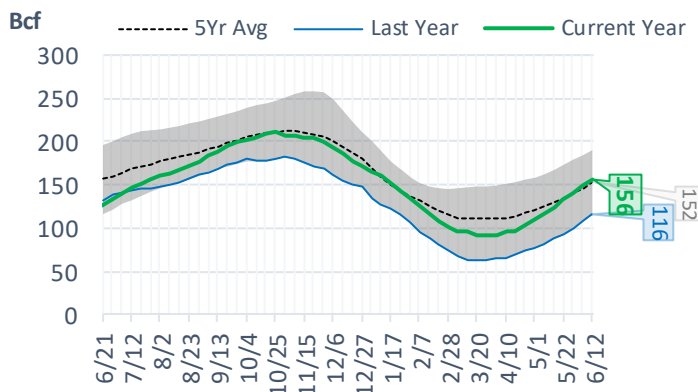
East Storage Levels



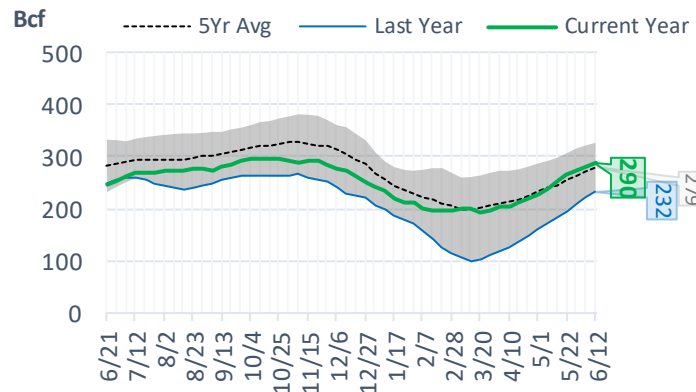
Midwest Storage Levels



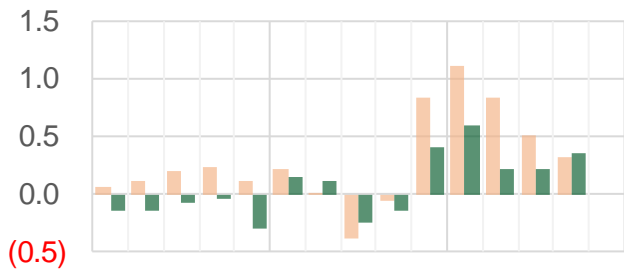
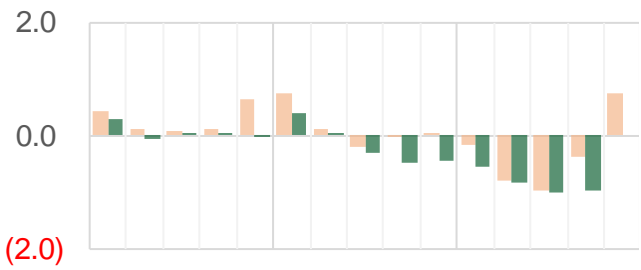
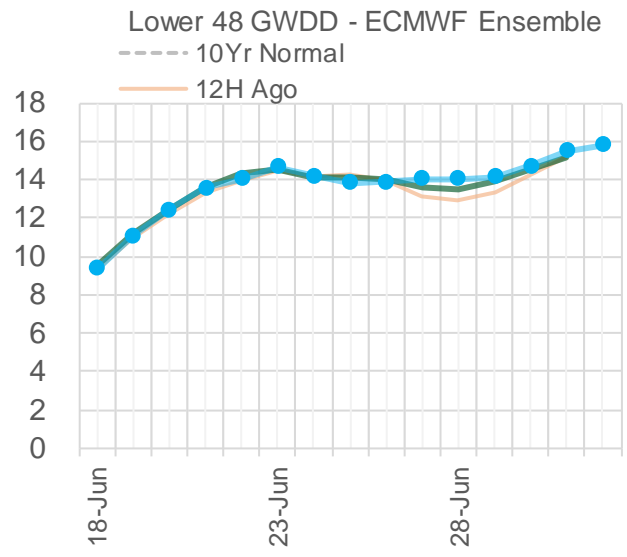
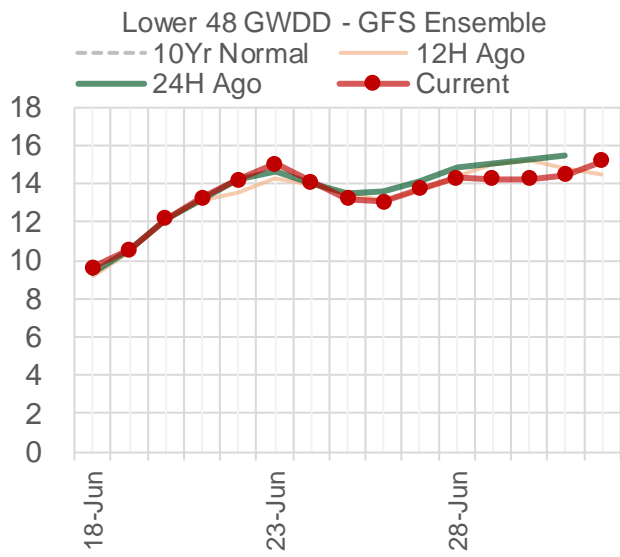
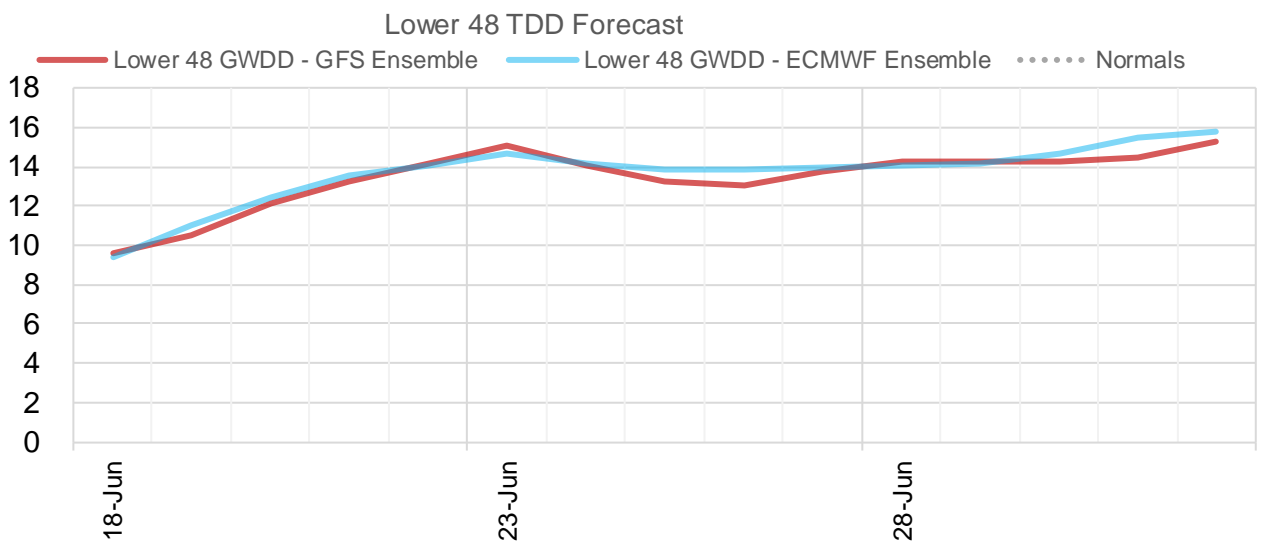
Mountain Storage Levels



Pacific Storage Levels



Current Short-term Weather Model Outlooks (00z)



Source: WSI, Bloomberg

EIA Storage Week Balances

	15-May	22-May	29-May	5-Jun	12-Jun	19-Jun	WoW	vs. 4W
Lower 48 Dry Production	86.6	84.0	84.0	84.5	84.3	84.5	▲ 0.2	▲ 0.3
Canadian Imports	4.0	4.1	4.1	4.2	3.8	3.7	▼ -0.1	▼ -0.3
L48 Power	24.8	27.1	29.7	32.7	34.6	30.6	▼ -4.0	▼ -0.4
L48 Residential & Commercial	19.3	10.8	8.2	8.5	8.1	8.3	▲ 0.2	▼ -0.6
L48 Industrial	17.3	19.0	19.6	19.6	18.6	19.3	▲ 0.7	▲ 0.1
L48 Lease and Plant Fuel	4.8	4.7	4.7	4.7	4.7	4.8	▲ 0.0	▲ 0.0
L48 Pipeline Distribution	2.2	1.8	1.9	2.0	2.0	1.9	▼ -0.1	▼ 0.0
L48 Regional Gas Consumption	68.5	63.4	64.0	67.5	68.0	64.8	▼ -3.2	▼ -0.9
Net LNG Exports	6.9	6.3	6.1	5.1	3.9	3.8	▼ -0.1	▼ -1.5
Total Mexican Exports	4.7	5.2	5.0	5.3	5.7	5.5	▼ -0.1	▲ 0.2
Implied Daily Storage Activity	10.4	13.2	13.0	10.9	10.5	14.1	3.6	
EIA Reported Daily Storage Activity	11.6	15.6	14.6	13.3	12.1			
Daily Model Error	-1.1	-2.4	-1.6	-2.4	-1.6			

Monthly Balances

	2Yr Ago Jun-18	LY Jun-19	Feb-20	Mar-20	Apr-20	May-20	MTD Jun-20	MoM	vs. LY
Lower 48 Dry Production	81.6	89.6	91.8	92.2	91.2	85.3	84.4	▼ -0.9	▼ -5.1
Canadian Imports	5.6	4.7	5.2	4.1	4.0	3.9	3.9	▲ 0.0	▼ -0.8
L48 Power	31.8	33.0	30.0	28.4	25.3	26.9	33.4	▲ 6.5	▲ 0.4
L48 Residential & Commercial	8.6	9.0	39.9	27.7	21.6	12.8	7.8	▼ -5.0	▼ -1.2
L48 Industrial	21.3	21.3	24.3	21.6	18.9	18.7	18.1	▼ -0.7	▼ -3.3
L48 Lease and Plant Fuel	4.5	5.0	5.2	5.2	5.2	4.8	4.5	▼ -0.2	▼ -0.5
L48 Pipeline Distribution	1.9	2.0	3.0	2.5	2.3	2.0	1.9	▼ -0.1	▼ -0.2
L48 Regional Gas Consumption	68.2	70.4	102.3	85.5	73.2	65.1	65.7	▲ 0.5	▼ -4.7
Net LNG Exports	3.2	5.5	8.5	8.5	8.2	6.7	3.9	▼ -2.8	▼ -1.6
Total Mexican Exports	4.5	5.3	5.3	5.6	4.9	4.9	5.6	▲ 0.7	▲ 0.3
Implied Daily Storage Activity	11.3	13.1	-19.0	-3.2	8.9	12.5	13.2		
EIA Reported Daily Storage Activity									
Daily Model Error									

Source: Bloomberg, analytix.ai

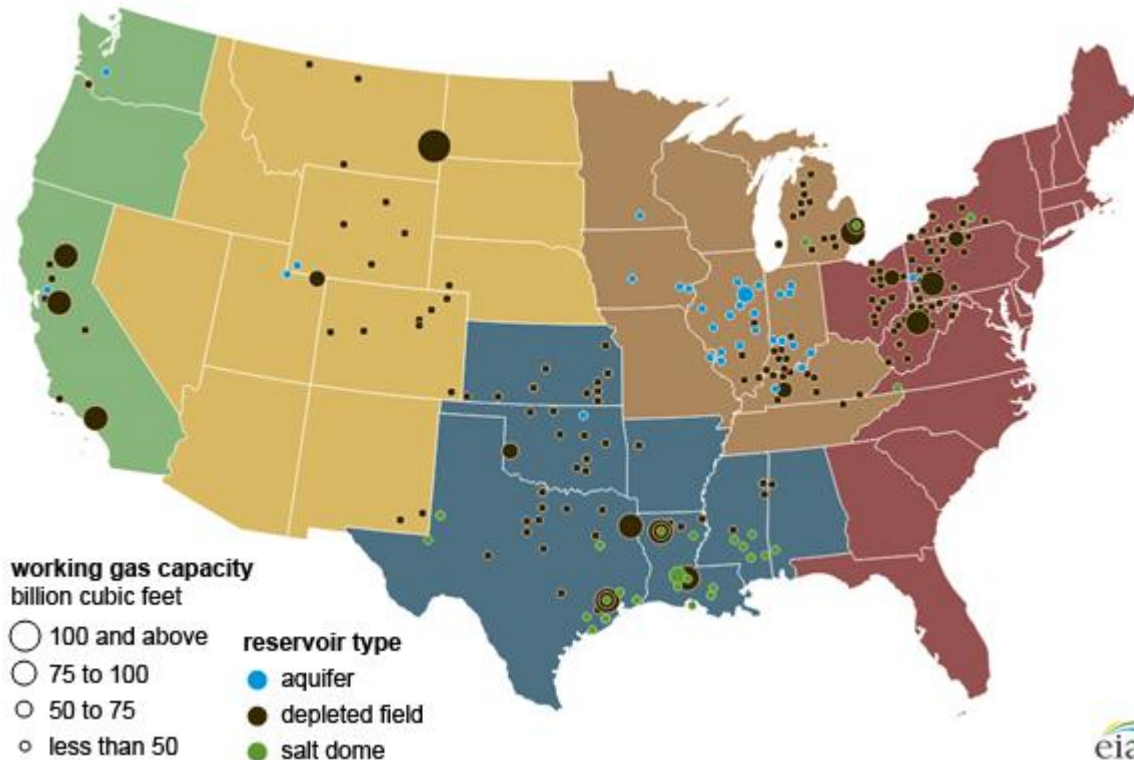
Regional S/D Models Storage Projection

Week Ending 19-Jun

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	13.8	2.2	16.1	113
East	3.0	1.6	4.6	32
Midwest	4.3	-0.3	4.0	28
Mountain	2.8	-1.7	1.0	7
South Central	2.2	2.8	5.0	35
Pacific	1.6	-0.1	1.6	11

*Adjustment Factor is calculated based on historical regional deltas

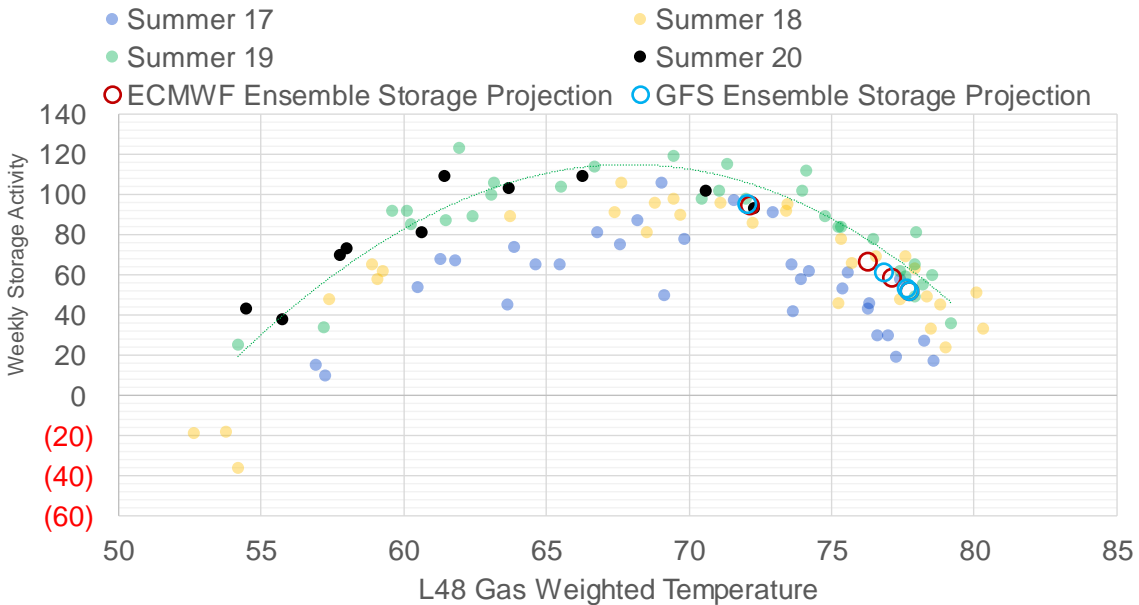
U.S. underground natural gas storage facilities by type (July 2015)



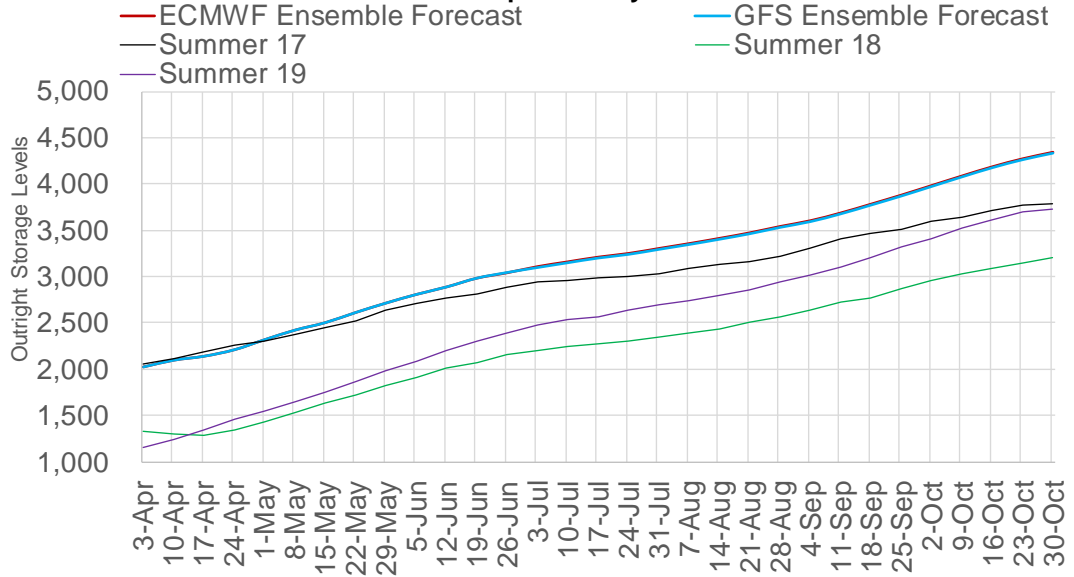
Weather Model Storage Projection

Next report and beyond	
Week Ending	Week Storage Projection
26-Jun	60
3-Jul	60
10-Jul	52

Weather Storage Model - Next 4 Week Forecast



Weather Based End of Winter Projection (Bcf) 10Y normals past 15 day forecast window



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Weather Model Storage Projection to End of Season

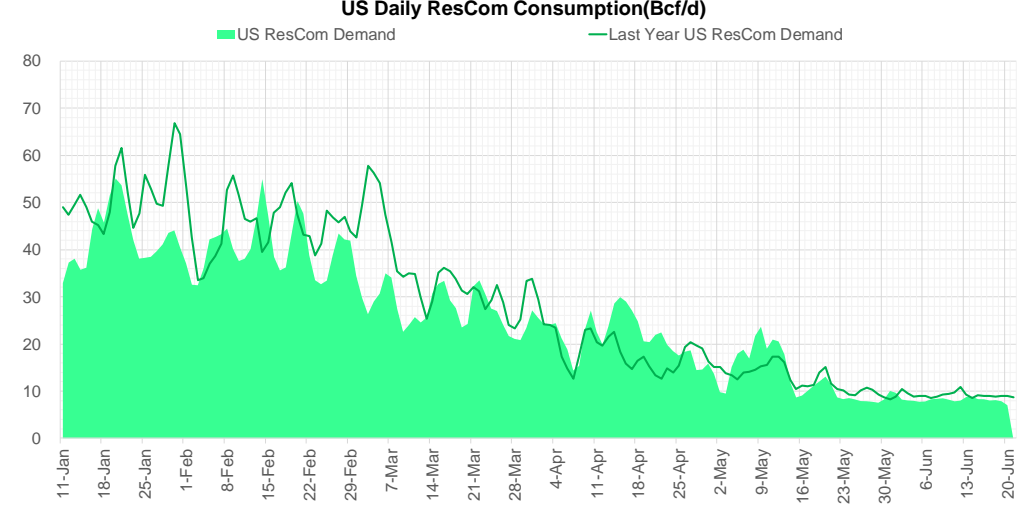
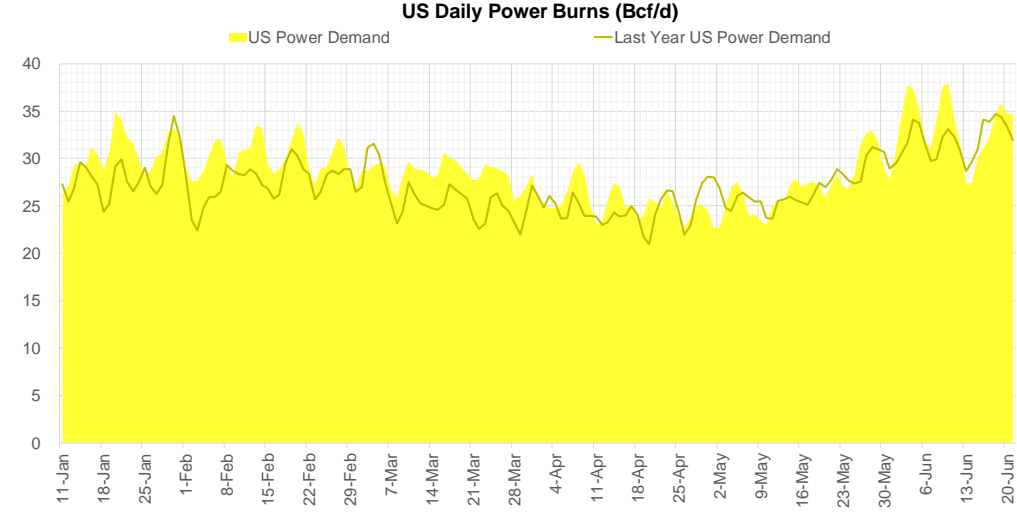
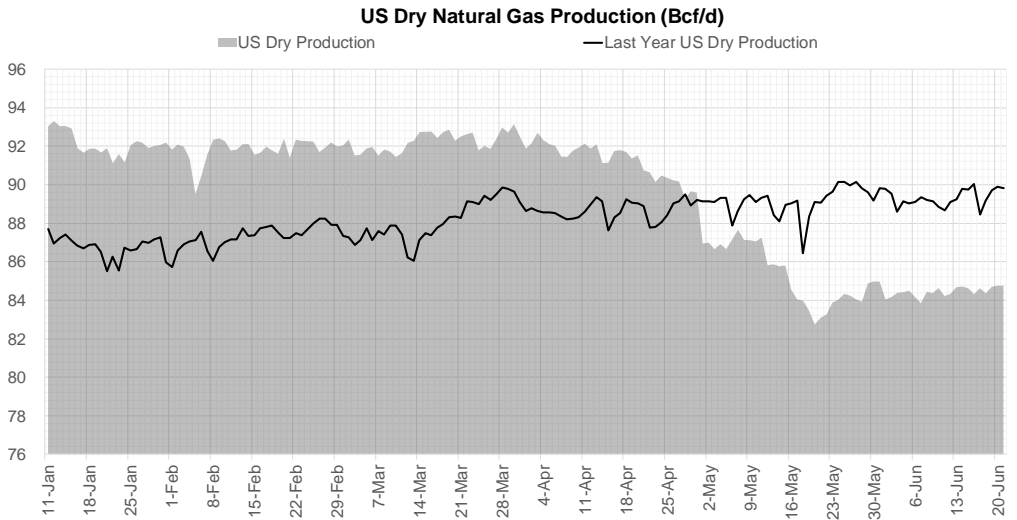
L48 Storage Trajectory from Weather Model

Forecast Storage Levels

	Report		vs 5Yr	Reported	Estimate	Forecast Storage Levels			
	Storage Level	vs. LY	Avg	Chg	Chg *	LY Chg	vs. LY	5Yr Avg Chg	vs. 5Yr
3-Apr-20	2024	876	324	38		25	13	6	32
10-Apr-20	2097	876	370	73		73	0	27	46
17-Apr-20	2140	827	364	43		92	(49)	49	(6)
24-Apr-20	2210	783	360	70		114	(44)	74	(4)
1-May-20	2319	796	395	109		96	13	74	35
8-May-20	2422	799	413	103		100	3	85	18
15-May-20	2503	779	407	81		101	(20)	87	(6)
22-May-20	2612	778	423	109		110	(1)	93	16
29-May-20	2714	762	422	102		118	(16)	103	(1)
5-Jun-20	2807	748	421	93		107	(14)	94	(1)
12-Jun-20	2892	722	419		81	111	(30)	87	(6)
19-Jun-20					95	103	(8)	73	22
26-Jun-20					60	92	(32)	65	(5)
3-Jul-20					60	83	(23)	68	(8)
10-Jul-20					52	67	(15)	63	(11)
17-Jul-20					51	44	7	37	14
24-Jul-20					40	56	(16)	33	7
31-Jul-20					54	58	(4)	33	21
7-Aug-20					53	51	2	44	9
14-Aug-20					56	56	0	44	12
21-Aug-20					60	60	(0)	49	11
28-Aug-20					69	77	(8)	66	3
4-Sep-20					62	80	(18)	68	(6)
11-Sep-20					83	82	1	77	6
18-Sep-20					95	97	(2)	80	15
25-Sep-20					98	109	(11)	78	20
2-Oct-20					103	102	1	86	17
9-Oct-20					103	102	1	87	16
16-Oct-20					99	92	7	75	24
23-Oct-20					86	89	(3)	67	19
30-Oct-20					71	49	22	52	19
			2352	2596	(244)	2024	328		

* first 15D change is an average of the GFS Ensemble and ECMWF Ensemble

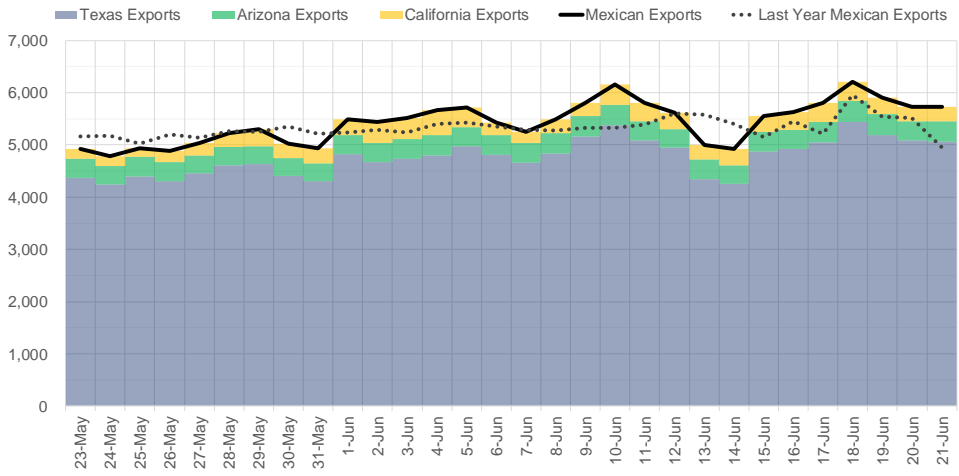
Supply – Demand Trends



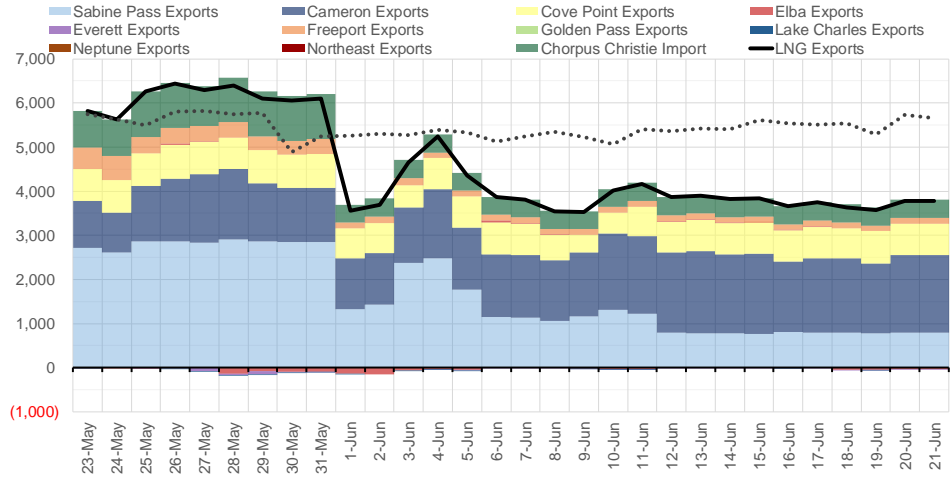
Source: Bloomberg

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Mexican Exports - Last 30 days (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

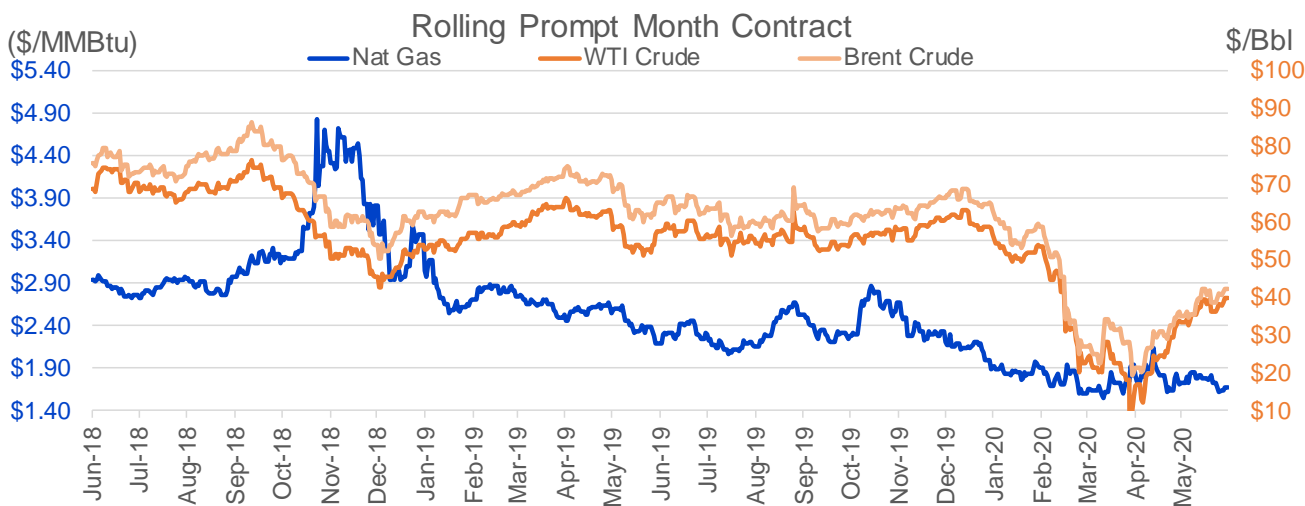
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
9	2020	P	1.50	7755	10	2020	P	1.50	42625
7	2020	P	1.60	6706	10	2020	C	2.75	36888
8	2020	P	1.50	5335	7	2020	P	1.50	33820
8	2020	C	2.50	4886	10	2020	C	3.00	33713
7	2020	P	1.50	4709	7	2020	P	1.75	33183
8	2020	C	2.25	3601	3	2021	P	2.00	32975
10	2020	P	1.00	3268	10	2020	P	1.60	32488
7	2020	C	1.75	3167	8	2020	P	1.50	30800
10	2020	P	1.25	3150	9	2020	P	1.20	30646
8	2020	P	1.60	3120	10	2020	C	2.50	29814
10	2020	P	1.40	3100	10	2020	P	2.00	28782
9	2020	P	1.60	2998	9	2020	C	2.50	26542
9	2020	P	0.85	2528	7	2020	C	2.50	25708
9	2020	P	0.55	2525	10	2020	P	1.25	24798
7	2020	P	1.55	2352	8	2020	C	2.50	24093
7	2020	P	1.40	2182	10	2020	P	1.75	23844
8	2020	P	1.40	2125	9	2020	P	1.50	22927
9	2020	P	1.40	2111	9	2020	P	1.00	22528
11	2020	C	4.00	2101	7	2020	C	2.25	21030
10	2020	C	2.25	2025	9	2020	P	1.75	19804
8	2020	C	1.75	2017	9	2020	C	2.75	19735
9	2020	C	1.80	2000	7	2020	P	2.00	19733
8	2020	P	1.65	1879	7	2020	C	2.00	19669
8	2020	C	2.10	1763	7	2020	C	3.00	19520
10	2020	P	1.20	1743	8	2020	P	1.20	19512
10	2020	P	1.50	1701	10	2020	P	1.20	18746
10	2020	C	2.50	1700	10	2020	C	3.25	18342
8	2020	P	1.75	1557	10	2020	P	2.10	18144
9	2020	P	1.75	1516	7	2020	C	2.30	18037
9	2020	P	1.00	1487	7	2020	P	1.60	17745
9	2020	P	0.50	1421	1	2021	C	3.50	17506
9	2020	C	2.25	1404	8	2020	P	1.00	17399
10	2020	P	1.30	1231	10	2020	C	2.25	16969
9	2020	C	2.30	1171	1	2021	C	3.00	16661
8	2020	C	2.00	1113	10	2020	P	1.00	16387
7	2020	P	1.65	1063	7	2020	C	2.75	16365
9	2020	P	1.20	1026	7	2020	P	1.70	15916
8	2020	C	2.45	1001	3	2021	C	3.00	15647
8	2020	C	2.35	1000	3	2021	C	7.00	15285
3	2021	C	7.00	1000	8	2020	P	1.30	15223
9	2020	C	2.00	900	4	2021	C	3.00	14670
11	2020	C	3.50	801	8	2020	C	3.00	14664
10	2020	P	1.75	750	9	2020	C	2.25	14133
8	2020	P	1.30	721	9	2020	C	3.00	14125
7	2020	C	1.70	704	7	2020	P	1.25	14057
9	2020	P	1.30	616	8	2020	P	1.25	13788
7	2020	C	1.65	602	11	2020	C	4.00	13507
8	2020	P	1.70	598	9	2020	P	2.00	13495
8	2020	P	1.25	595	8	2020	C	2.75	13425
					8	2020	C	2.25	13407.75

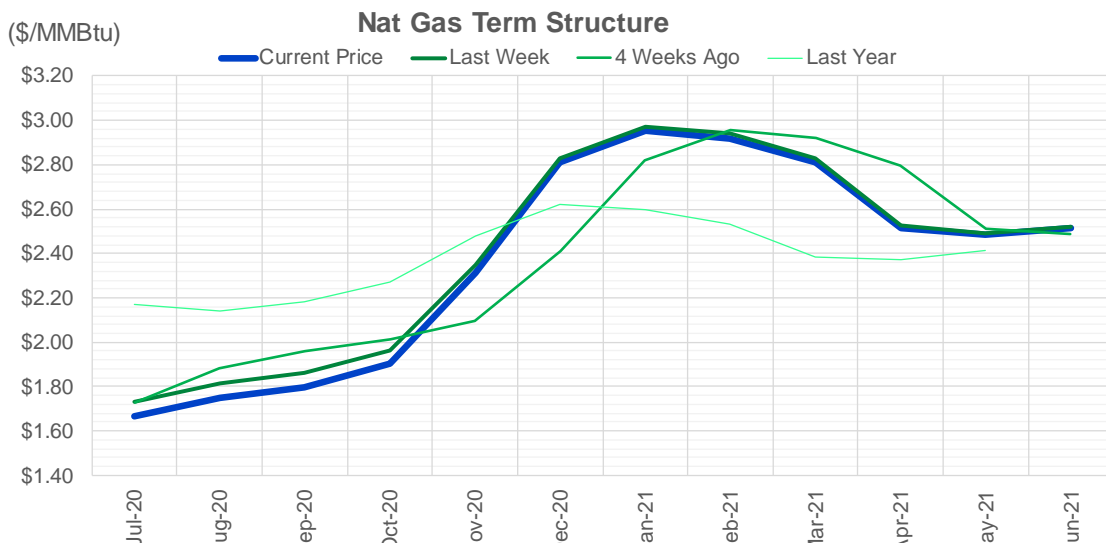
Source: CME, Nasdaq, ICE

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
JUL 20	98070	134605	-36535	JUL 20	83398	78773	4625
AUG 20	238650	228209	10441	AUG 20	88935	81290	7645.75
SEP 20	187261	185907	1354	SEP 20	70728	70509	218.5
OCT 20	118592	119357	-765	OCT 20	79951	80646	-695.5
NOV 20	59952	56867	3085	NOV 20	63074	62122	952
DEC 20	67567	64800	2767	DEC 20	58721	58229	492
JAN 21	115196	114292	904	JAN 21	74189	74079	110.75
FEB 21	39284	39046	238	FEB 21	46471	45815	656
MAR 21	79476	78313	1163	MAR 21	62478	62444	33.75
APR 21	69175	69214	-39	APR 21	48993	49435	-442
MAY 21	27010	26575	435	MAY 21	45513	45809	-296.25
JUN 21	17659	17434	225	JUN 21	43240	43616	-376.25
JUL 21	15567	15531	36	JUL 21	44136	44207	-71.75
AUG 21	11739	11590	149	AUG 21	44670	44939	-268.25
SEP 21	13848	13897	-49	SEP 21	42350	42764	-414
OCT 21	33310	33125	185	OCT 21	54898	54615	283
NOV 21	18959	19000	-41	NOV 21	36513	36845	-331.5
DEC 21	15869	15791	78	DEC 21	37366	37646	-279.25
JAN 22	11872	11798	74	JAN 22	29253	29509	-255.75
FEB 22	8321	8308	13	FEB 22	25792	26136	-343.5
MAR 22	14559	15105	-546	MAR 22	27248	27841	-593.5
APR 22	11761	11361	400	APR 22	26215	26025	189.5
MAY 22	4664	4664	0	MAY 22	22147	22373	-226
JUN 22	2023	2023	0	JUN 22	21839	21814	24.75
JUL 22	1792	1792	0	JUL 22	22375	22400	-24.75
AUG 22	1251	1250	1	AUG 22	21502	21477	25.5
SEP 22	1328	1328	0	SEP 22	21557	21923	-365.75
OCT 22	1891	1890	1	OCT 22	23822	24052	-230
NOV 22	1394	1424	-30	NOV 22	19140	19506	-366
DEC 22	1294	1272	22	DEC 22	19829	20221	-392

Source: CME, ICE






	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21
Current Price	\$1.669	\$1.748	\$1.799	\$1.904	\$2.312	\$2.810	\$2.951	\$2.920	\$2.810	\$2.517	\$2.484	\$2.517
Last Week	\$1.731	\$1.815	\$1.865	\$1.960	\$2.346	\$2.831	\$2.972	\$2.939	\$2.829	\$2.525	\$2.491	\$2.523
vs. Last Week	-\$0.062	-\$0.067	-\$0.066	-\$0.056	-\$0.034	-\$0.021	-\$0.021	-\$0.019	-\$0.019	-\$0.008	-\$0.007	-\$0.006
4 Weeks Ago	\$1.731	\$1.881	\$1.958	\$2.013	\$2.095	\$2.408	\$2.817	\$2.957	\$2.920	\$2.795	\$2.511	\$2.485
vs. 4 Weeks Ago	-\$0.062	-\$0.133	-\$0.159	-\$0.109	\$0.217	\$0.402	\$0.134	-\$0.037	-\$0.110	-\$0.278	-\$0.027	\$0.032
Last Year	\$2.186	\$2.169	\$2.143	\$2.182	\$2.274	\$2.479	\$2.619	\$2.598	\$2.531	\$2.384	\$2.372	\$2.413
vs. Last Year	-\$0.517	-\$0.421	-\$0.344	-\$0.278	\$0.038	\$0.331	\$0.332	\$0.322	\$0.279	\$0.133	\$0.112	\$0.104

	Units	Current Price	vs. Last Week	vs. 4 Weeks Ago	vs. Last Year
NatGas Jan/Apr	\$/MMBtu	-0.43	▲ 0.013	▲ 0.012	▼ -0.088
NatGas Mar/Apr	\$/MMBtu	-0.293	▲ 0.011	▼ -0.577	▼ -0.514
NatGas Oct/Nov	\$/MMBtu	0.41	▲ 0.022	▲ 0.095	▲ 0.337
NatGas Oct/Jan	\$/MMBtu	1.05	▲ 0.035	▲ 0.185	▲ 0.702
WTI Crude	\$/Bbl	39.75	▲ 3.490	▲ 6.500	▼ -17.680
Brent Crude	\$/Bbl	42.19	▲ 3.460	▲ 7.060	▼ -23.010
Fuel Oil, NY Harbour 1%	\$/Bbl	98.03	▲ 0.000	▲ 0.000	▲ 0.000
Heating Oil	cents/Gallon	121.14	▲ 11.000	▲ 22.940	▼ -70.440
Propane, Mt. Bel	cents/Gallon	0.50	▲ 0.008	▲ 0.093	▲ 0.060
Ethane, Mt. Bel	cents/Gallon	0.22	▲ 0.000	▲ 0.004	▲ 0.049
Coal, PRB	\$/MTon	12.30	▲ 0.000	▲ 0.000	▼ -0.050
Coal, ILB	\$/MTon	31.05	▲ 0.000	▲ 0.000	▼ -9.500

Source: CME, Bloomberg

Baker Hughes Rig Counts

This week we once again see a big change to rig counts. Oil rigs dropped by -10, while nat gas rigs decreased -3. The weekly changes for the major basins are listed below.

Rotary Rig Count						Baker Hughes 
6/19/2020						
U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago	
Oil	189	-10	199	-600	789	
Gas	75	-3	78	-102	177	
Miscellaneous	2	0	2	1	1	
Directional	18	-4	22	-50	68	
Horizontal	234	-12	246	-612	846	
Vertical	14	3	11	-39	53	
Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago	
Ardmore Woodford	1	0	1	-5	6	
Arkoma Woodford	0	-1	1	-2	2	
Barnett	2	0	2	1	1	
Cana Woodford	5	0	5	-40	45	
DJ-Niobrara	5	0	5	-23	28	
Eagle Ford	11	-2	13	-62	73	
Granite Wash	0	0	0	-6	6	
Haynesville	32	-1	33	-21	53	
Marcellus	27	-1	28	-31	58	
Mississippian	0	0	0	-3	3	
Permian	132	-5	137	-307	439	
Utica	9	0	9	-8	17	
Williston	10	-1	11	-46	56	