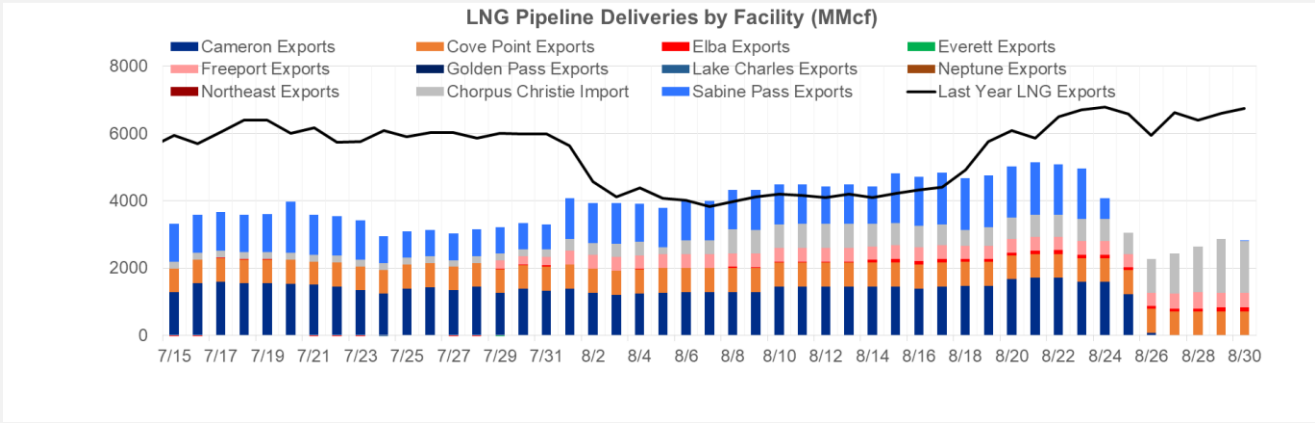
Market Report

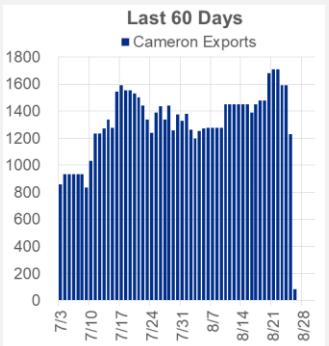
30 Aug 2020

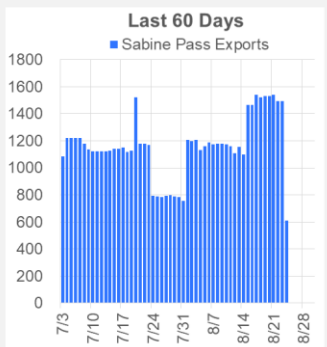
It's been quite a week. On Monday the Midwest experienced one of the hottest days of the year, while heat continued across many other parts of the country. Overall, the week ending August 27 showed record-high PWCDDs. The main weather event was the two hurricanes in the Gulf of Mexico. Marco fizzled into a non-event, while Laura made landfall over Cameron, Louisiana at 1 AM CT on Thursday. At landfall, it was a Cat 4 hurricane, with maximum sustained winds of 150 mph. Numerous LNG export plant and refinery operations were disrupted, and the true extent of the damage is still unknown.

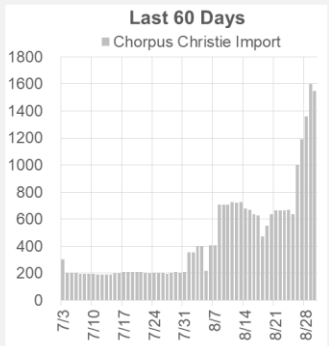
At Calcasieu Pass, the tide height peaked at greater than 11 feet, which is 5 feet higher than what is considered to be the major flood stage. At Sabine Pass, the tide height peaked at 5.2 feet, which is at the moderate flood stage. Wind gusts peaked at 133 mph in Lake Charles just before 2 AM as the station went offline.

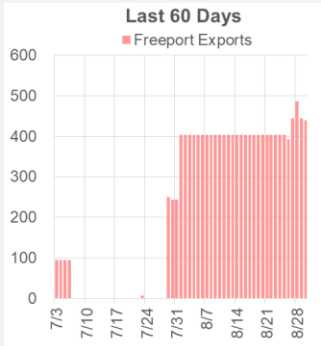
Marine traffic in the Gulf of Mexico started moving on Friday morning. Five LNG tankers were in the GoM, but it's unclear where they were all headed. ICIS noted that Sohshu Maru arrived at Corpus Christe on Friday, and some other vessels that were originally due to load at Sabine Pass were heading there as well (The 155,000cbm Gaslog Shanghai and the 139,000cbm Golar Arctic). As of this morning's nomination data, Sabine and Cameron are still not taking and feedgas. Corpus Christie on the other hand is operating at full capacity.



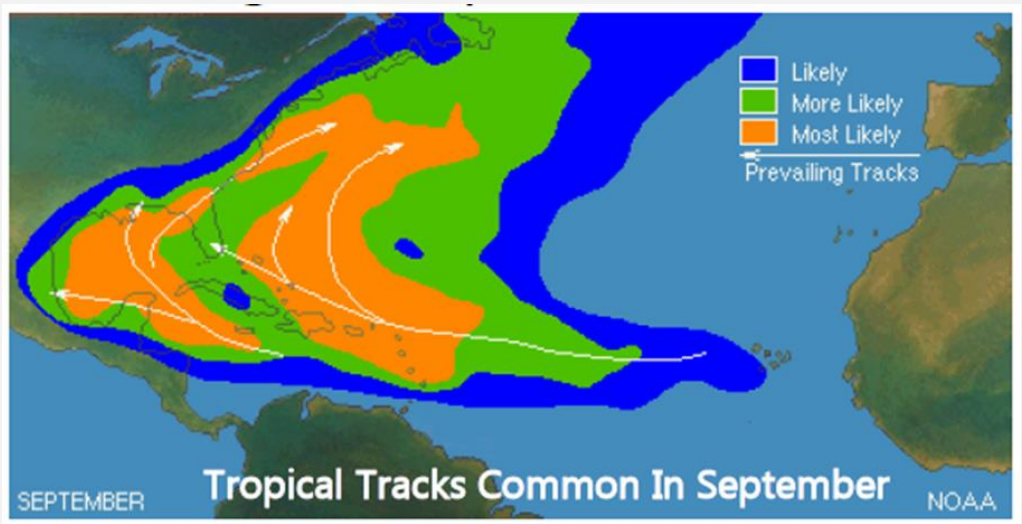


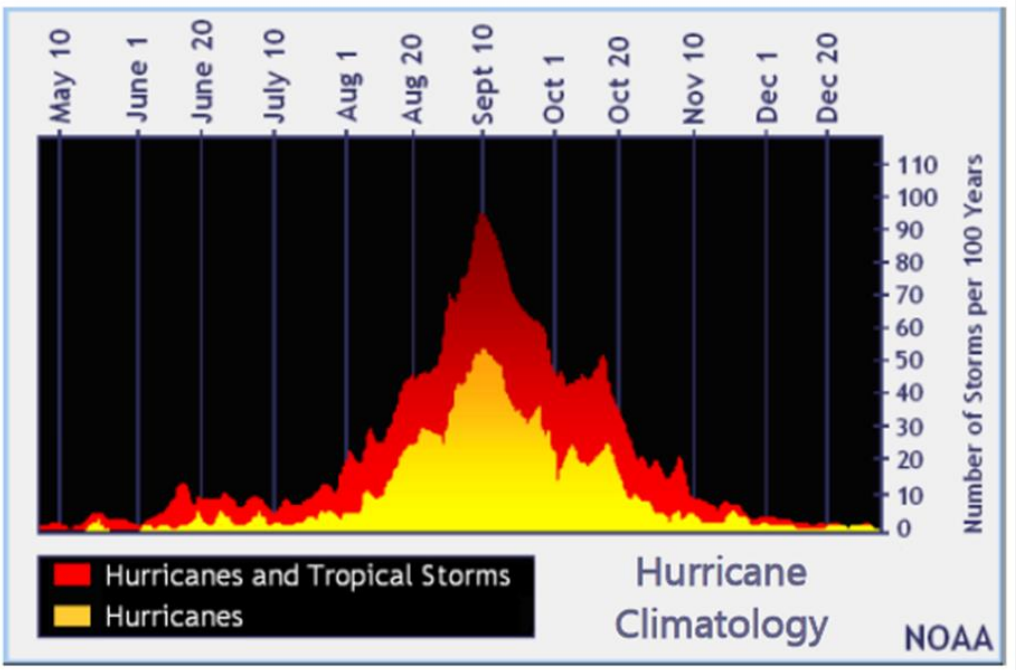






The peak of the Atlantic hurricane season occurs around September 10, but the month as a whole is often the most active of the season. In the past 10 years, September has averaged 6 named storms and 4 hurricanes, including 2 major hurricanes.

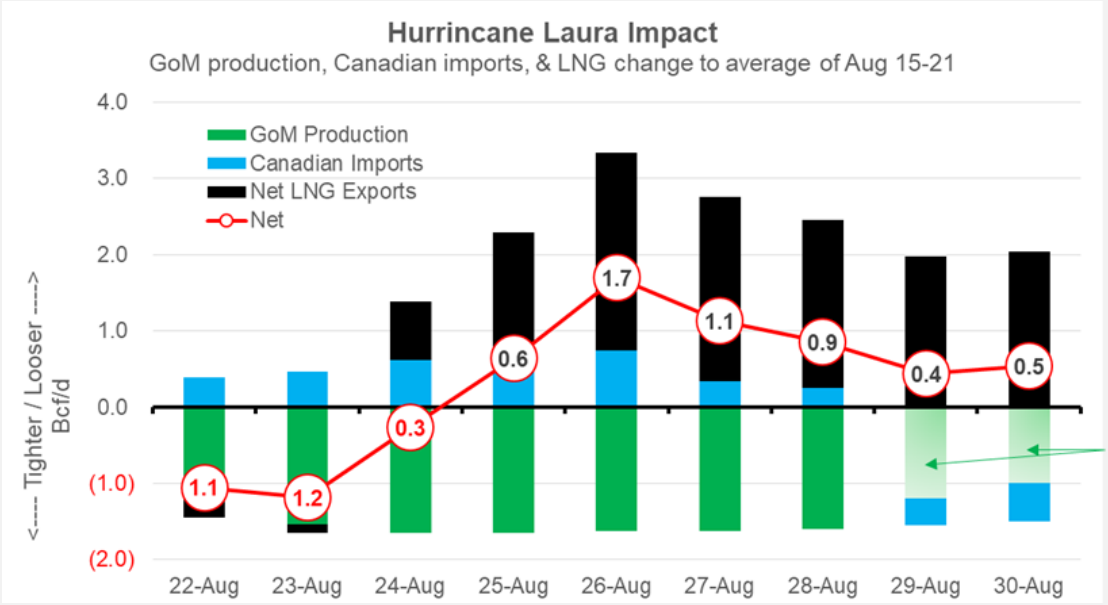




This continues to be a very hot summer in the West and nationally. The June to August period is forecast at 1032 PWCDDs, ranking 3rd hottest back to 1950.

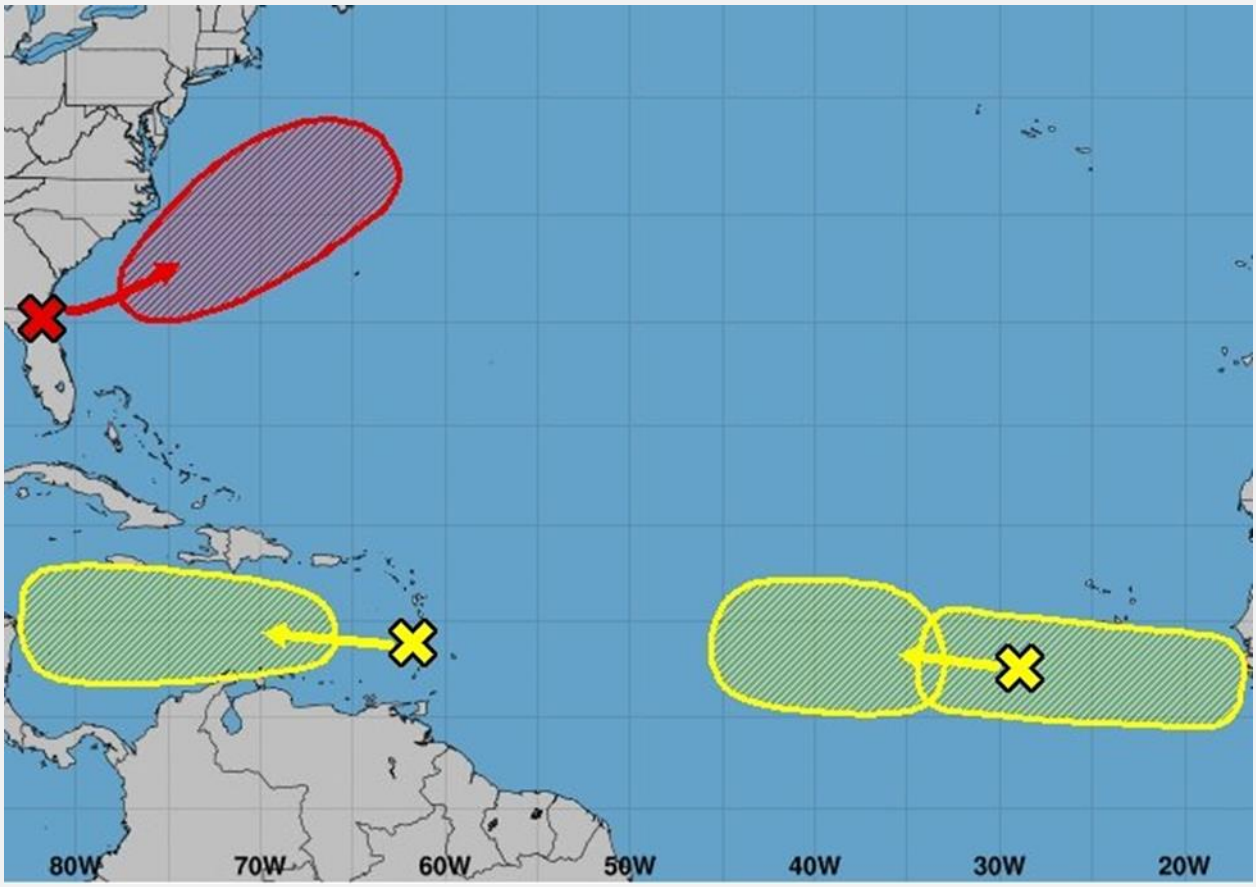
Here are some regional rankings from Maxar Weather:
Pacific at #7, Mountain at #1, South Central at #11, Midwest at #8 and East at #3. For RTO/ISO, summer is forecast to rank #7 in CAISO, #7 in ERCOT, #9 in MISO, #1 in NEISO, #1 in NYISO, #2 in PJM and #15 in SPP

Natural gas markets moved higher throughout the week, but looking at the fundamentals the event seems to point to looser balances. Marco and Laura knocked offshore production, but the demand destruction looks to be greater as of now. In the image below, we simply overlaid the reported drop in offshore production from BSEE.org, increased Canadian imports, and the drop in LNG utilization. As seen from Aug 22nd to Aug 30th, the net impact of these three factors is +2.8 Bcf looser.



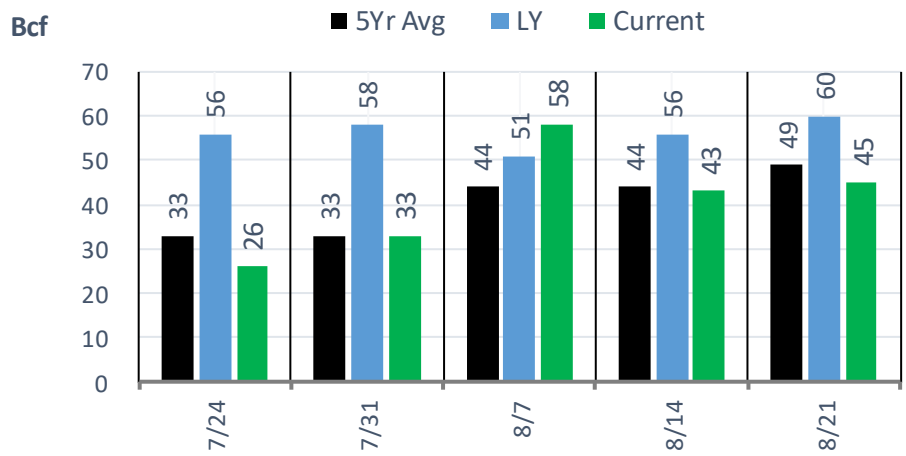
We recognize that this is quite simplistic, so here are some things to keep in mind:
1) Will the offshore production return quickly, or is there some long-term structural damage? (Bullish)
2) Was there any onshore production impacted, specifically in the Haynesville? (Bullish)
3) More 700,000 people lost power along the TX/LA border at the peak. The current number is 420,000 people. What was the impact of power outages on power burns, and how long until normal operations resume? (Bearish)
4) What was the power generation impacts as Laura travels North and then East? (Bearish)
5) Is there long-term damage to Sabine and Cameron? (Bearish)

Lastly, NOAA is monitoring two tropical waves moving west in the Atlantic, both of which have chances of becoming the next tropical depression or tropical storm. First, a wave about 550 miles east of the Windward Islands is gradually developing and moving at 15 mph. It has a 20% chance of developing over the next two days and a 30% chance of doing so in the next five, according to the NHC's 8 AM Sunday update. Second, a wave southwest of the Cabo Verde Islands is moving through unfavorable conditions but has a 30% chance of developing over the next five days.

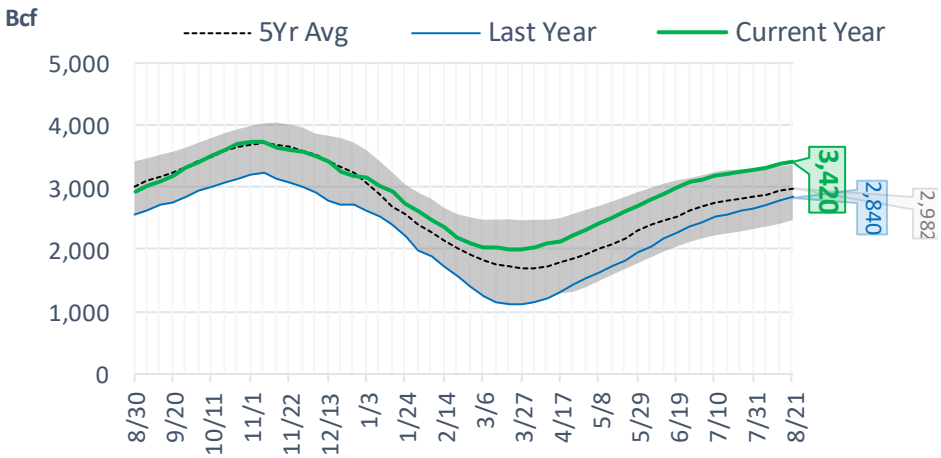


EIA Storage Report

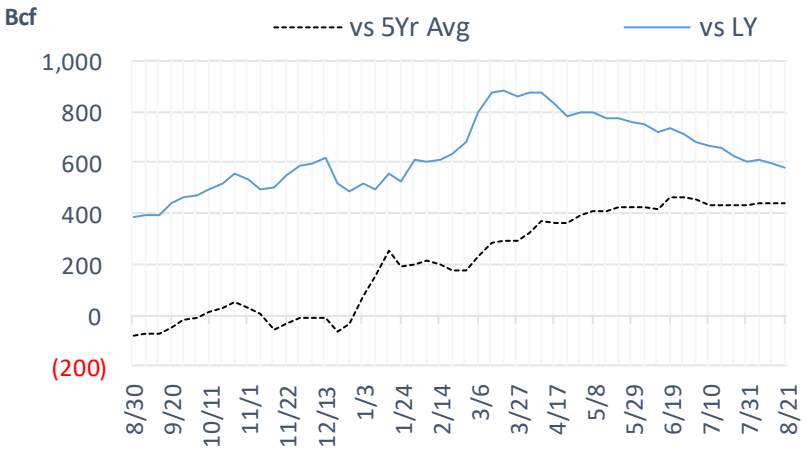
Total Lower 48 YoY Weekly Change



Total Lower 48 Storage Levels



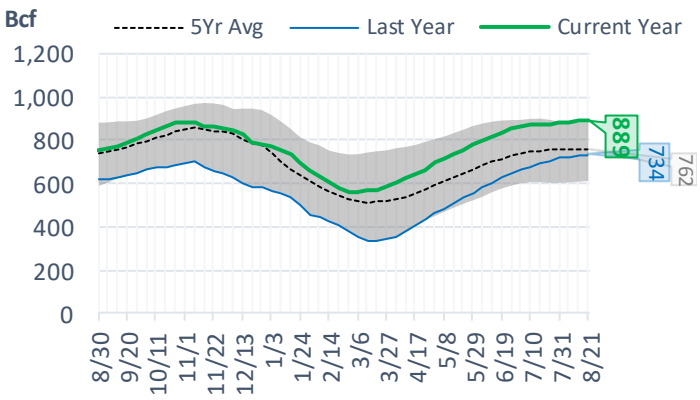
Total Lower 48 LY Surplus/Deficit



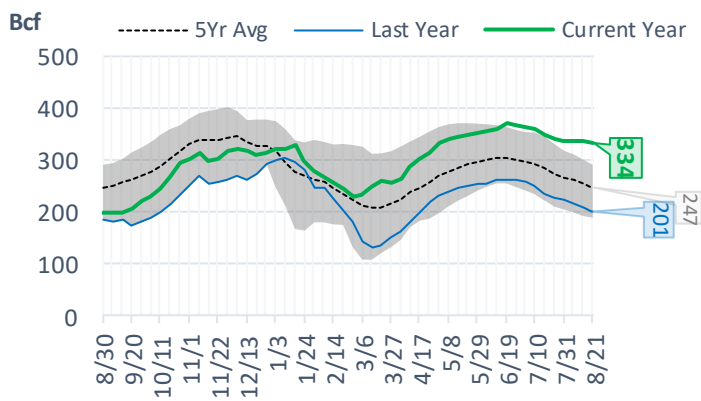
Natural Gas Storage Stats - Last 5 Weeks

Week Ending	Current 21-Aug	Week - 1 14-Aug	Week - 2 7-Aug	Week - 3 31-Jul	Week - 4 24-Jul	Week - 5 17-Jul
Total Lower 48 Storage Level	**3420**	3375	3332	3274	3241	3215
Weekly Change	**+45**	+43	+58	+33	+26	+37
vs LY	**+580**	+595	+608	+601	+626	+656
vs 5Yr Avg	**+438**	+442	+443	+429	+429	+436
S. Central Salt Storage Level	**334**	335	337	336	339	349
Weekly Change	**-1**	-2	+1	-3	-10	-10
vs LY	**+133**	+127	+121	+114	+112	+115
vs 5Yr Avg	**+87**	+82	+76	+70	+65	+65
S. Central NonSalt Storage Level	**889**	888	883	878	872	872
Weekly Change	**+1**	+5	+5	+6	0	+3
vs LY	**+155**	+159	+160	+162	+169	+183
vs 5Yr Avg	**+127**	+130	+126	+124	+118	+120
Midwest Storage Level	**904**	880	856	830	815	799
Weekly Change	**+24**	+24	+26	+15	+16	+19
vs LY	**+123**	+129	+135	+136	+146	+156
vs 5Yr Avg	**+121**	+123	+124	+123	+128	+132
East Storage Level	**775**	750	738	718	706	693
Weekly Change	**+25**	+12	+20	+12	+13	+21
vs LY	**+99**	+97	+110	+110	+115	+122
vs 5Yr Avg	**+66**	+62	+72	+73	+80	+86
Mountain Storage Level	**212**	209	206	202	196	190
Weekly Change	**+3**	+3	+4	+6	+6	+4
vs LY	**+40**	+42	+43	+42	+41	+40
vs 5Yr Avg	**+25**	+25	+25	+23	+20	+16
Pacific Storage Level	**306**	313	314	311	313	311
Weekly Change	**-7**	-1	+3	-2	+2	-1
vs LY	**+29**	+40	+42	+40	+43	+41

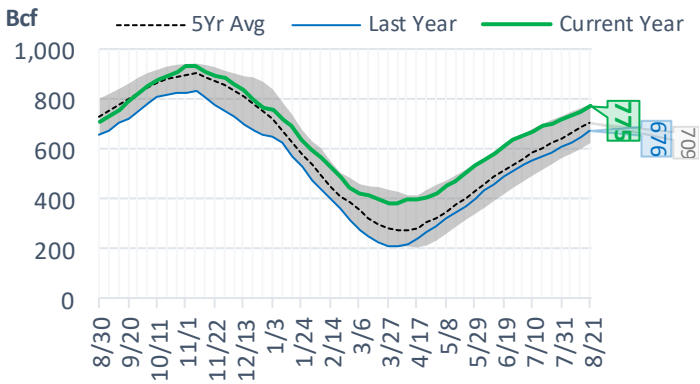
NonSalt Storage Levels



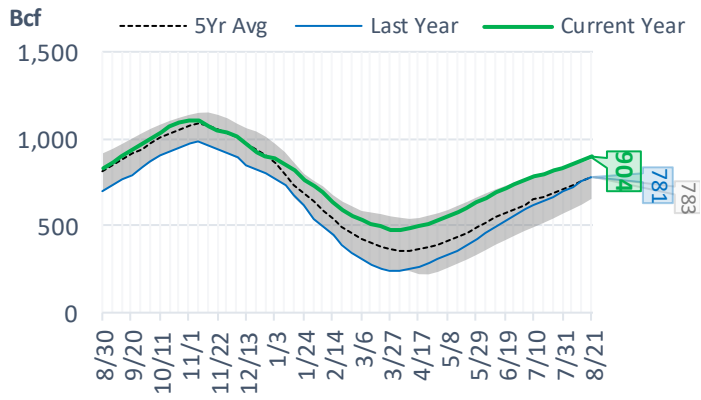
Salt Storage Levels



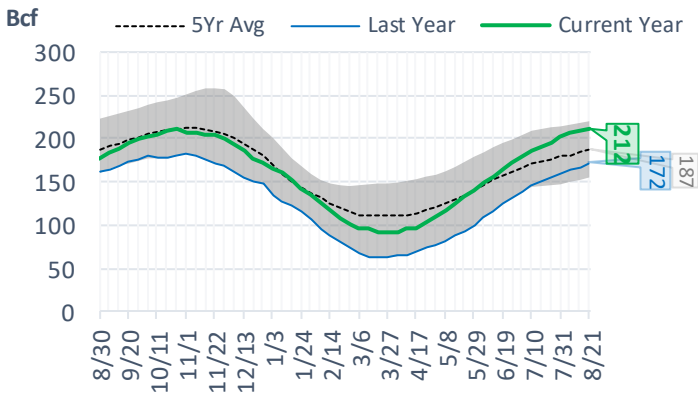
East Storage Levels



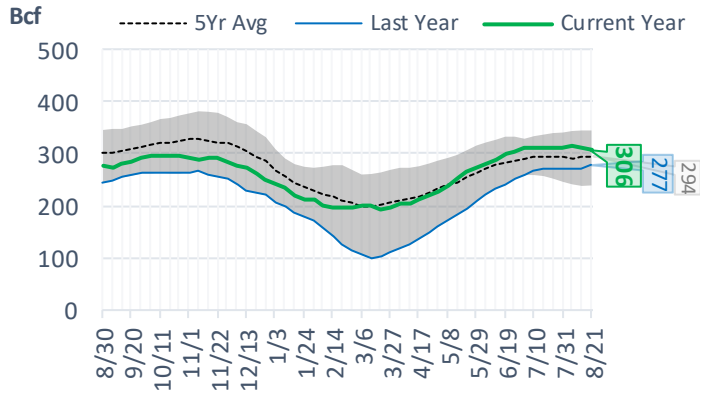
Midwest Storage Levels



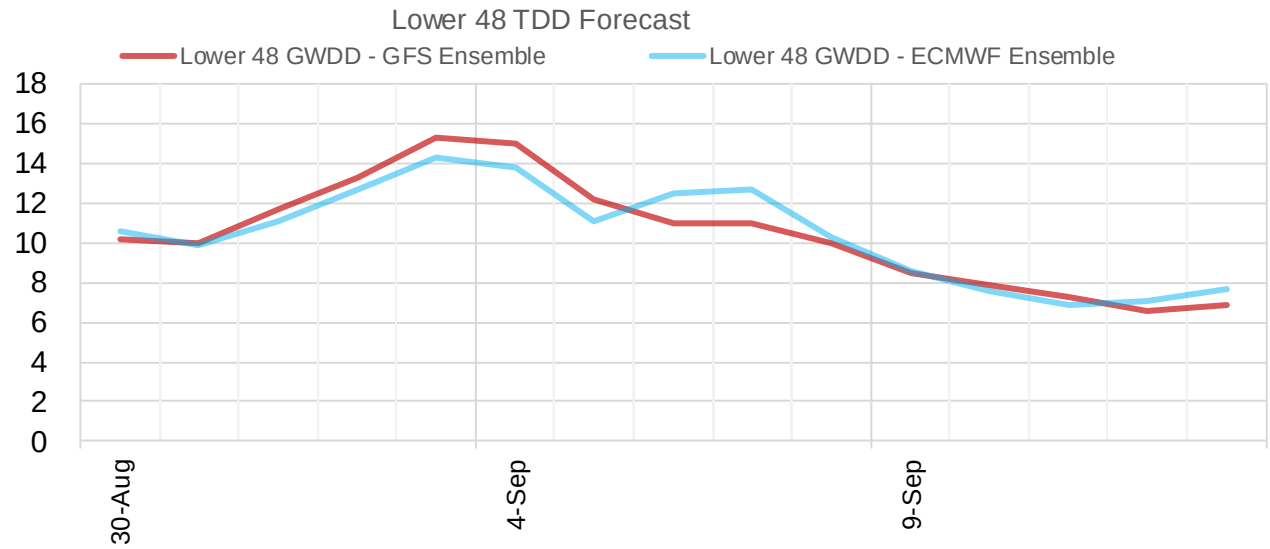
Mountain Storage Levels

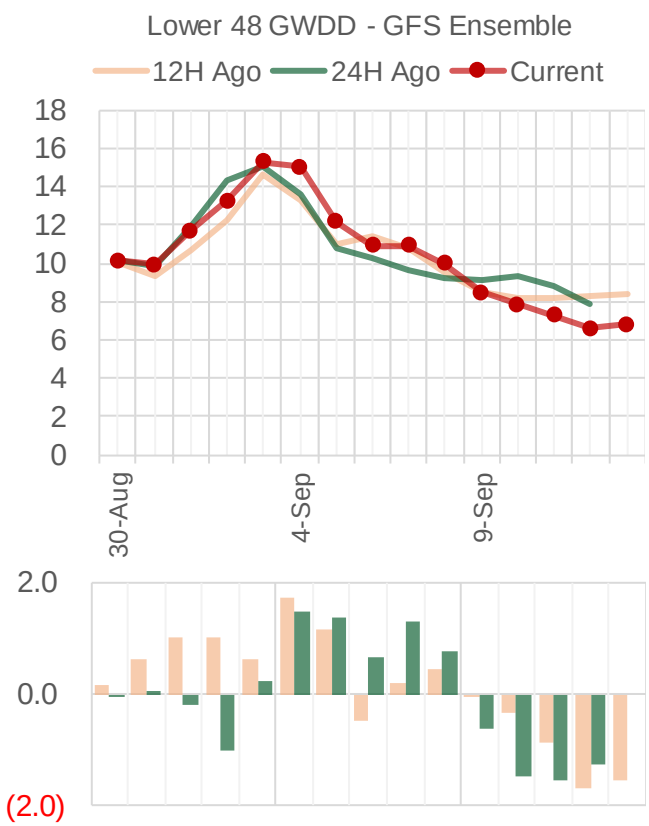


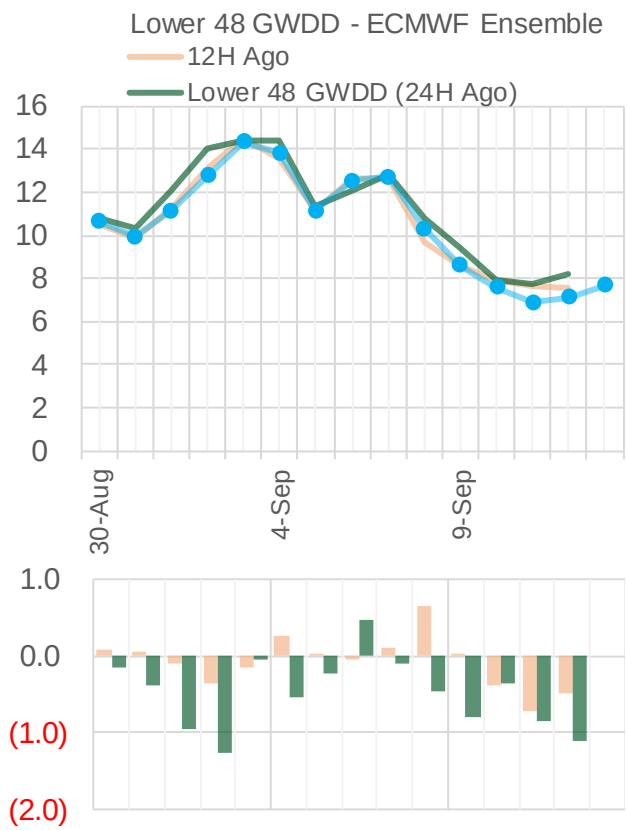
Pacific Storage Levels



Current Short-term Weather Model Outlooks (00z)







Source: WSI , Bloomberg

EIA Storage Week Balances

	24-Jul	31-Jul	7-Aug	14-Aug	21-Aug	28-Aug	WoW	vs. 4W
Lower 48 Dry Production	**86.6**	**86.5**	**86.6**	**86.7**	**86.5**	**85.3**	**-1.2**	**-1.3**
Canadian Imports	**4.4**	**4.5**	**4.6**	**5.0**	**4.7**	**5.2**	**0.5**	**0.5**
L48 Power	45.4	45.5	40.8	43.0	40.2	41.7	1.5	-0.7
L48 Residential & Commercial	8.1	8.1	7.7	7.8	7.8	8.0	0.1	0.1
L48 Industrial	17.4	17.2	18.5	18.6	20.0	19.1	-0.9	0.5
L48 Lease and Plant Fuel	4.8	4.8	4.8	4.8	4.8	4.7	-0.1	-0.1
L48 Pipeline Distribution	2.4	2.4	2.2	2.3	2.2	2.3	0.1	0.0
L48 Regional Gas Consumption	**78.2**	**78.2**	**74.0**	**76.5**	**75.0**	**75.8**	**0.8**	**-0.1**
Net LNG Exports	**3.6**	**3.1**	**3.9**	**4.4**	**4.7**	**3.9**	**-0.9**	**-0.2**
Total Mexican Exports	**6.4**	**6.2**	**6.1**	**6.0**	**6.2**	**6.6**	**0.4**	**0.5**
Implied Daily Storage Activity	**2.7**	**3.5**	**7.2**	**4.8**	**5.2**	**4.2**	**-1.0**	
EIA Reported Daily Storage Activity	**3.7**	**4.7**	**8.3**	**6.1**	**6.4**			
Daily Model Error	**-1.0**	**-1.2**	**-1.1**	**-1.3**	**-1.2**			

Monthly Balances

	2Yr Ago Aug-18	LY Aug-19	Apr-20	May-20	Jun-20	Jul-20	MTD Aug-20	MoM	vs. LY
Lower 48 Dry Production	**83.2**	**92.5**	**91.6**	**85.8**	**85.1**	**86.2**	**86.2**	**0.0**	**-6.3**
Canadian Imports	**5.0**	**4.4**	**3.9**	**3.9**	**4.0**	**4.4**	**4.9**	**0.5**	**0.5**
L48 Power	38.2	41.1	25.5	26.9	34.5	43.7	40.9	-2.8	-0.2
L48 Residential & Commercial	7.8	7.8	20.4	13.0	8.6	8.0	7.8	-0.2	-0.1
L48 Industrial	20.2	22.0	20.6	18.8	18.5	17.9	19.2	1.3	-2.8
L48 Lease and Plant Fuel	4.7	5.1	5.1	4.8	4.8	4.8	4.8	0.0	-0.3
L48 Pipeline Distribution	2.1	2.3	2.1	1.9	2.1	2.4	2.2	-0.1	0.0
L48 Regional Gas Consumption	**73.0**	**78.2**	**73.7**	**65.4**	**68.4**	**76.8**	**74.9**	**-1.9**	**-3.4**
Net LNG Exports	**3.3**	**5.2**	**8.2**	**6.7**	**4.0**	**3.3**	**4.1**	**0.8**	**-1.1**
Total Mexican Exports	**5.0**	**5.4**	**4.9**	**4.9**	**5.7**	**6.1**	**6.3**	**0.1**	**0.9**
Implied Daily Storage Activity	**6.9**	**8.0**	**8.7**	**12.7**	**10.9**	**4.4**	**5.8**		
EIA Reported Daily Storage Activity									
Daily Model Error									

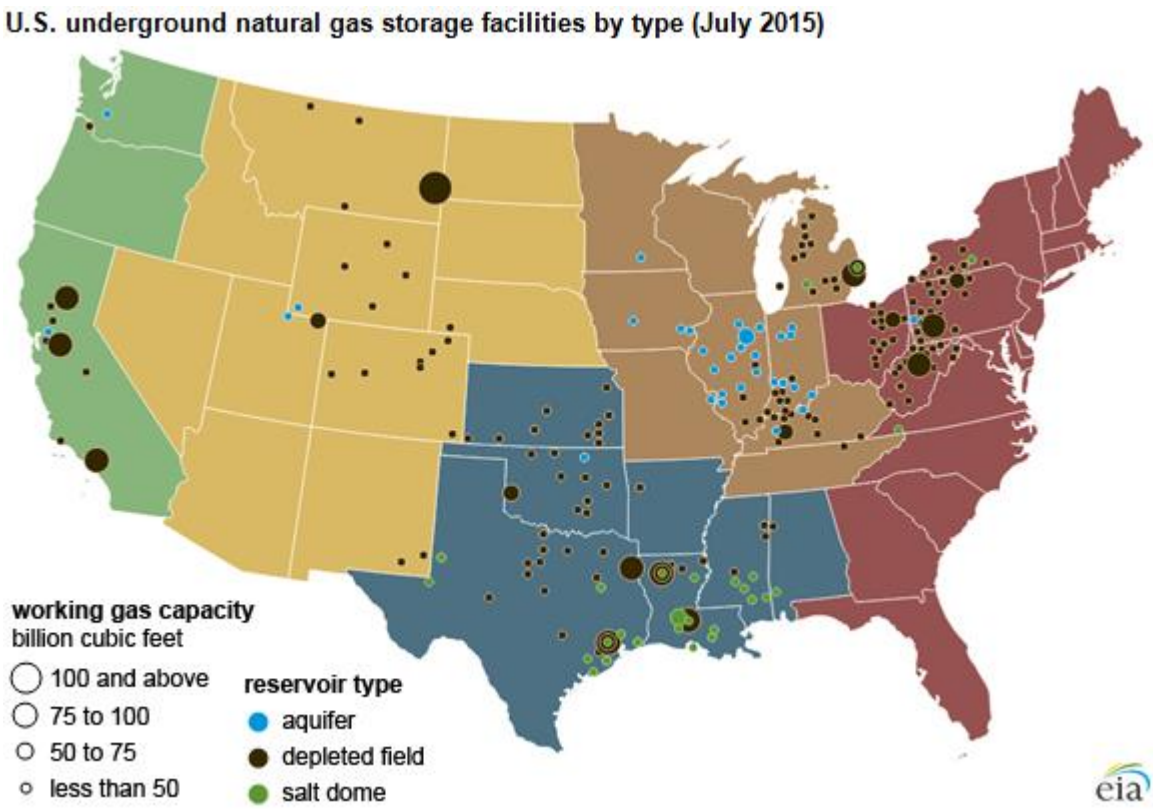
Source: Bloomberg, analytix.ai

Regional S/D Models Storage Projection

Week Ending 28-Aug

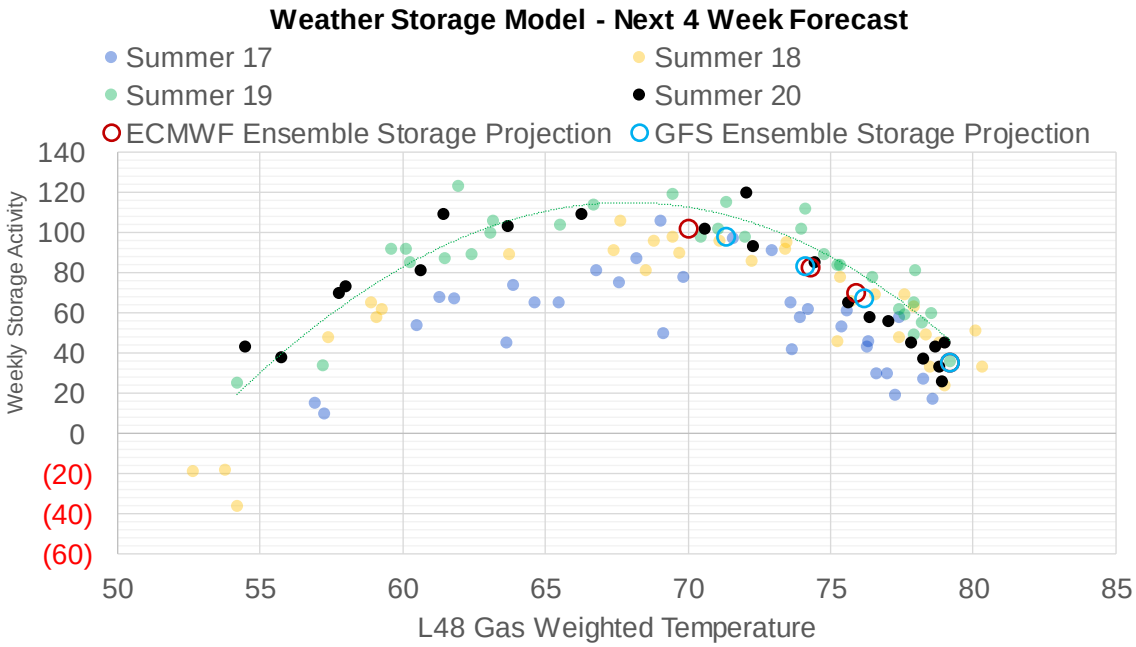
	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	4.0	1.4	5.4	38
East	0.6	1.8	2.4	17
Midwest	2.7	0.5	3.2	23
Mountain	3.2	-2.5	0.7	5
South Central	-2.8	2.3	-0.5	-4
Pacific	0.2	-0.7	-0.4	-3

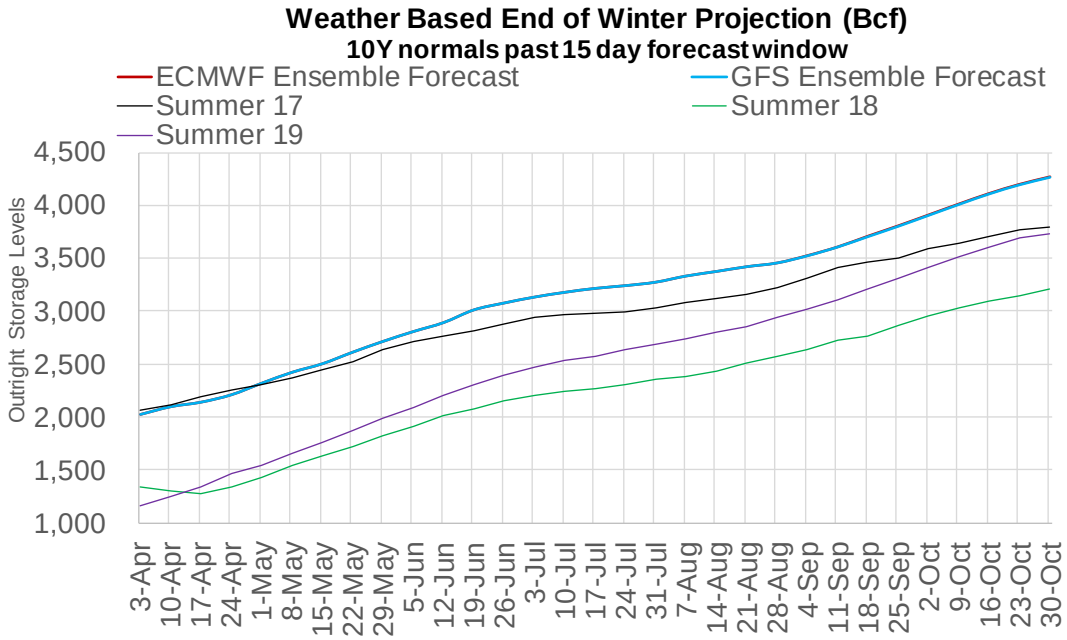
*Adjustment Factor is calcuated based on historical regional deltas



Weather Model Storage Projection

Next report and beyond	
Week Ending	Week Storage Projection
4-Sep	69
11-Sep	83
18-Sep	100





Weather Model Storage Projection to End of Season

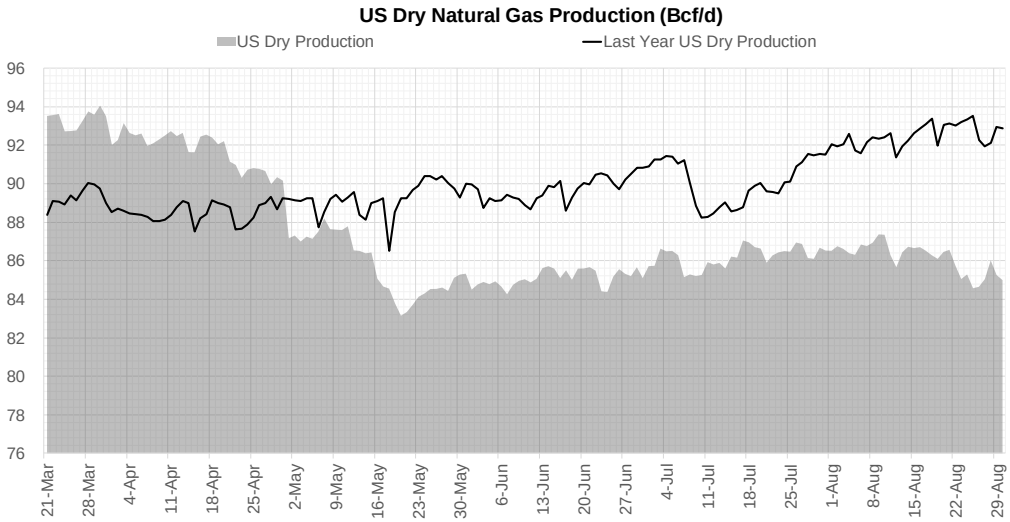
L48 Storage Trajectory from Weather Model

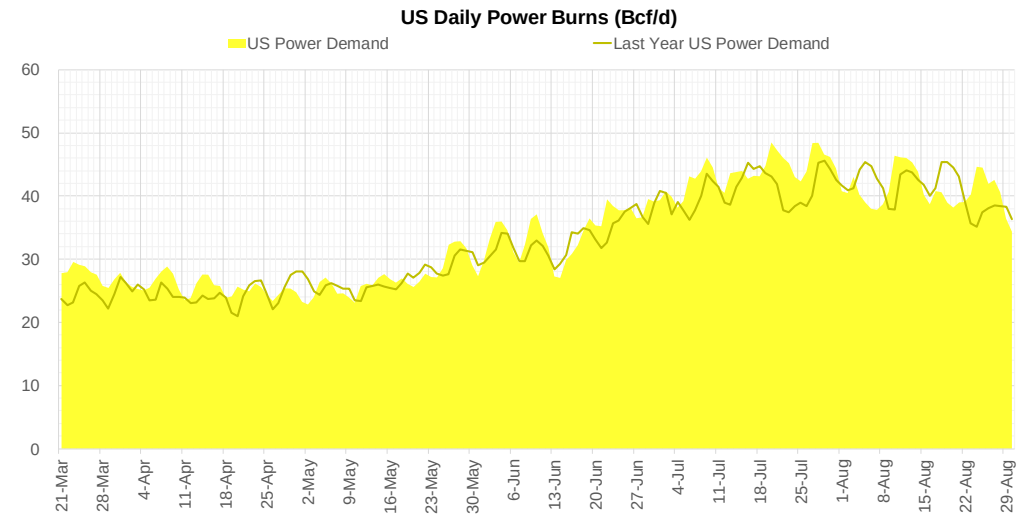
Forecast Storage Levels

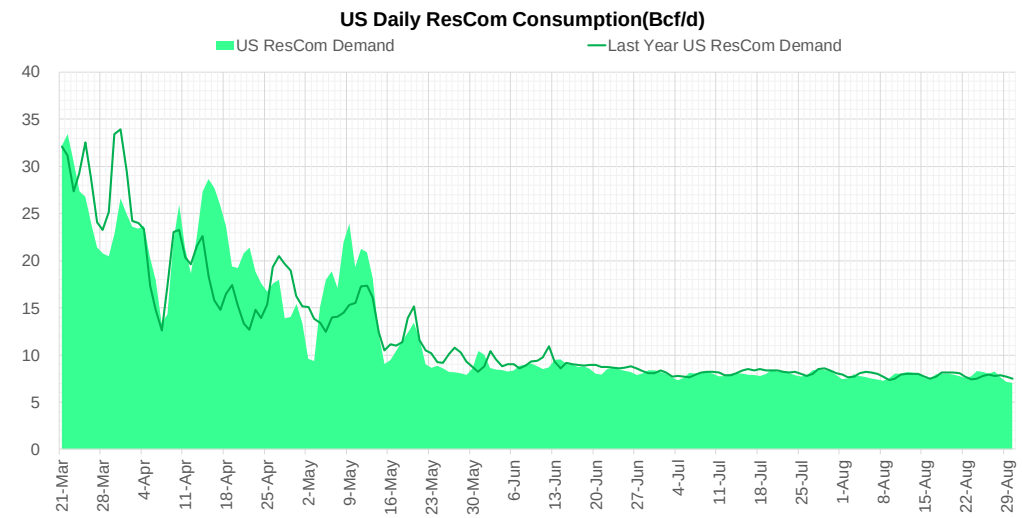
	Report Storage Level	vs. LY	vs 5Yr Avg	Reported Chg	Estimate Chg *	LY Chg	vs. LY	5Yr Avg Chg	vs. 5Yr
3-Apr-20	2024	876	324	38		25	13	6	32
10-Apr-20	2097	876	370	73		73	0	27	46
17-Apr-20	2140	827	364	43		92	(49)	49	(6)
24-Apr-20	2210	783	360	70		114	(44)	74	(4)
1-May-20	2319	796	395	109		96	13	74	35
8-May-20	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	85		111	(26)	87	(2)
19-Jun-20	3012	739	466	120		103	17	73	47
26-Jun-20	3077	712	466	65		92	(27)	65	0
3-Jul-20	3133	685	454	56		83	(27)	68	(12)
10-Jul-20	3178	663	436	45		67	(22)	63	(18)
17-Jul-20	3215	656	436	37		44	(7)	37	0
24-Jul-20	3241	626	429	26		56	(30)	33	(7)
31-Jul-20	3274	601	429	33		58	(25)	33	0
7-Aug-20	3332	608	443	58		51	7	44	14
14-Aug-20	3375	595	442	43		56	(13)	44	(1)
21-Aug-20	3420	580	438	45		60	(15)	49	(4)
28-Aug-20					35	77	(42)	66	(31)
4-Sep-20					69	80	(11)	68	1
11-Sep-20					83	82	1	77	6
18-Sep-20					100	97	3	80	20
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
			2281	**2596**	**(315)**	**2024**	**257**		

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

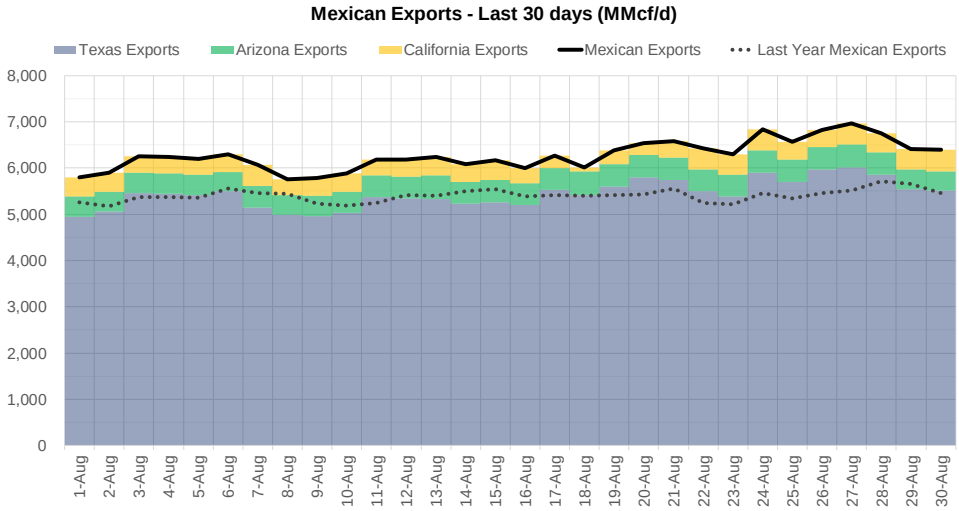
Supply – Demand Trends

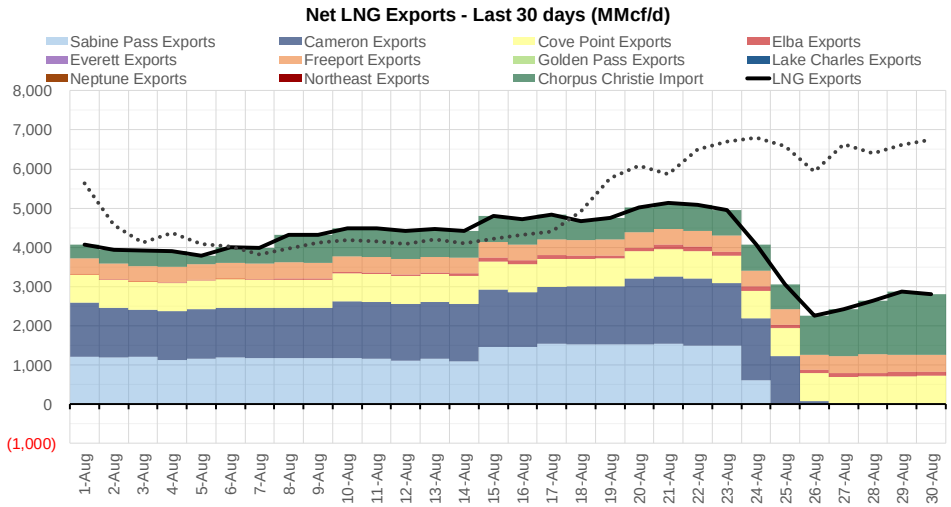






Source: Bloomberg





Source: Bloomberg

Nat Gas Options Volume and Open Interest

CME, ICE and Nasdaq Combined

CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL
10	2020	C	2.75	9167
10	2020	P	2.25	8509
10	2020	C	3.00	8226
10	2020	P	2.00	7765
10	2020	P	2.50	5329
11	2020	C	5.00	5150
10	2020	C	4.00	4630
11	2020	P	2.20	4081
12	2020	P	2.20	4000
10	2020	C	3.25	3691
10	2020	P	2.40	3469
10	2020	C	3.50	3210
10	2020	P	2.20	3154
11	2020	P	2.50	3143
11	2020	P	2.25	2674
10	2020	C	2.50	2634
10	2020	P	2.15	2627
10	2020	C	2.85	2506
11	2020	C	3.00	2501
11	2020	P	1.90	2243
12	2020	P	2.50	2124
7	2021	C	4.00	2050
12	2020	P	1.90	2015
10	2020	C	2.70	1876
4	2021	C	5.00	1600
4	2021	C	3.25	1575
11	2020	C	3.25	1540
1	2022	C	5.00	1500
2	2022	C	5.00	1500
3	2022	C	5.00	1500
12	2020	P	2.25	1490
10	2020	P	1.80	1438
7	2021	P	2.00	1400
8	2021	P	2.00	1400
9	2021	P	2.00	1400
10	2021	P	2.00	1400
11	2020	P	2.60	1293
10	2020	C	3.75	1185
10	2020	P	2.45	1115
4	2021	C	4.00	1100
4	2021	P	2.00	1100
10	2020	C	2.80	1093
11	2020	P	2.40	1058
4	2021	P	2.25	1050
5	2021	C	4.00	1050
6	2021	C	4.00	1050
8	2021	C	4.00	1050
9	2021	C	4.00	1050
10	2021	C	4.00	1050

CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
10	2020	P	1.50	47338
10	2020	P	2.00	43849
10	2020	C	2.75	42775
10	2020	C	3.00	39362
10	2020	C	2.50	35967
10	2020	P	1.60	34051
3	2021	P	2.00	31292
10	2020	P	1.75	30503
10	2020	P	1.25	28894
11	2020	C	3.50	24763
10	2020	P	1.00	24016
1	2021	C	4.50	22941
12	2020	P	2.00	22563
3	2021	C	3.00	22214
10	2020	C	2.10	21985
10	2020	P	2.10	21490
10	2020	P	2.25	20781
1	2021	C	3.50	20746
11	2020	P	2.00	20493
3	2021	C	6.00	19955
10	2020	C	3.50	19438
3	2021	C	3.50	19280
10	2020	P	1.30	19115
10	2020	C	2.00	18666
11	2020	C	3.00	18610
4	2021	C	5.00	17981
10	2020	C	3.25	17560
10	2020	P	1.80	17416
10	2020	C	2.25	17294
1	2021	C	3.00	16666
2	2021	C	5.00	15569
12	2020	C	4.00	15022
11	2020	C	2.75	14899
1	2021	C	5.00	14819
4	2021	C	3.00	14724
11	2020	C	3.25	14580
1	2021	C	3.75	14327
1	2021	P	2.25	14304
10	2020	C	2.40	14048
10	2020	P	1.40	13909
11	2020	P	2.50	13408
12	2020	P	2.50	13371
4	2021	P	2.00	13244
1	2021	P	2.50	13228
10	2020	P	2.20	13180
3	2021	C	5.00	13166
1	2021	P	2.00	13121
11	2020	C	4.00	12784
10	2021	C	3.00	12750
10	2020	P	1.2	12674

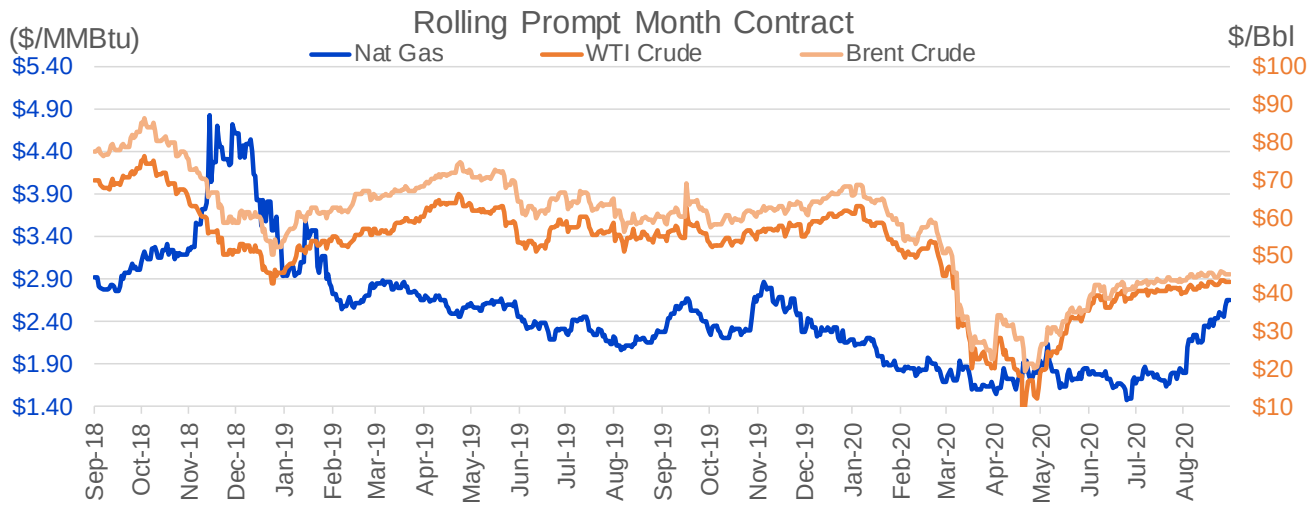
Source: CME, Nasdaq, ICE

Nat Gas Futures Open Interest

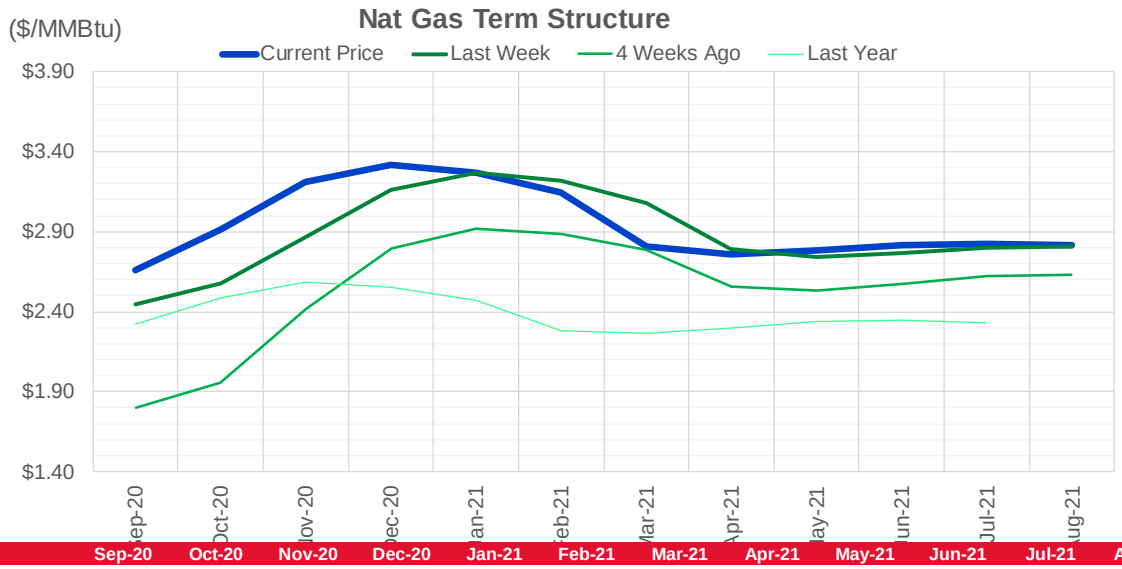
CME, ICE and Nasdaq Combined

CME Henry Hub Futures (10,000 MMBtu)				ICE Henry Hub Futures Contract Equivalent (10,000 MM			
	Current	Prior	Daily Change	FOR JUNE 26	Current	Prior	Daily Change
OCT 20	187	2800	-2613	OCT 20	62959	63405	-446
NOV 20	239165	233286	5879	NOV 20	87805	81636	6169.25
DEC 20	199292	196441	2851	DEC 20	78192	77076	1116
JAN 21	103002	99086	3916	JAN 21	71807	71281	526.25
FEB 21	132363	130950	1413	FEB 21	87936	87576	359.75
MAR 21	45175	45358	-183	MAR 21	55740	55134	606.25
APR 21	89788	89432	356	APR 21	76887	75075	1812.75
MAY 21	80444	80950	-506	MAY 21	64114	63723	391.25
JUN 21	45936	44992	944	JUN 21	52832	52252	580
JUL 21	26032	25038	994	JUL 21	49615	49249	366.5
AUG 21	19246	19168	78	AUG 21	51319	51240	78.25
SEP 21	18882	18633	249	SEP 21	51053	50533	519.75
OCT 21	24841	24691	150	OCT 21	47921	47621	299.75
NOV 21	62074	59894	2180	NOV 21	71674	70172	1502
DEC 21	26323	26801	-478	DEC 21	41903	41973	-69.75
JAN 22	21822	21394	428	JAN 22	42376	42111	264.75
FEB 22	20431	20336	95	FEB 22	35789	35653	135.75
MAR 22	12107	12145	-38	MAR 22	31298	31051	246.75
APR 22	17764	17513	251	APR 22	33084	32999	85.75
MAY 22	19133	19005	128	MAY 22	33461	32748	713
JUN 22	5965	5813	152	JUN 22	24224	23942	282
JUL 22	3148	3146	2	JUL 22	23523	23273	250.5
AUG 22	2681	2569	112	AUG 22	24021	23704	316.5
SEP 22	1940	1931	9	SEP 22	23838	23580	258.25
OCT 22	2123	2122	1	OCT 22	22966	22715	250.5
NOV 22	3193	2965	228	NOV 22	24235	24221	14
DEC 22	2019	2019	0	DEC 22	21943	21860	82.5
JAN 23	2057	2050	7	JAN 23	22720	22589	130.5
FEB 23	2866	2861	5	FEB 23	12388	12319	69.75
MAR 23	861	861	0	MAR 23	11290	11241	49

Source: CME, ICE



Market Report



	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21
Current Price	**$2.657**	**$2.916**	**$3.208**	**$3.316**	**$3.271**	**$3.146**	**$2.807**	**$2.761**	**$2.786**	**$2.818**	**$2.826**	**$2.813**
Last Week	$2.448	$2.573	$2.866	$3.158	$3.266	$3.216	$3.079	$2.788	$2.745	$2.769	$2.802	$2.810
vs. Last Week	$0.209	$0.343	$0.342	$0.158	$0.005	-$0.070	-$0.272	-$0.027	$0.041	$0.049	$0.024	$0.003
4 Weeks Ago	$1.799	$1.957	$2.418	$2.793	$2.915	$2.884	$2.788	$2.556	$2.529	$2.572	$2.622	$2.634
vs. 4 Weeks Ago	$0.858	$0.959	$0.790	$0.523	$0.356	$0.262	$0.019	$0.205	$0.257	$0.246	$0.204	$0.179
Last Year	$2.285	$2.324	$2.485	$2.588	$2.556	$2.473	$2.277	$2.261	$2.297	$2.336	$2.345	$2.329
vs. Last Year	$0.372	$0.592	$0.723	$0.728	$0.715	$0.673	$0.530	$0.500	$0.489	$0.482	$0.481	$0.484

	Units	Current Price	vs. Last Week	vs. 4 Weeks Ago	vs. Last Year
NatGas Jan/Apr	$/MMBtu	-0.51	-0.031	-0.150	-0.121
NatGas Mar/Apr	$/MMBtu	-0.339	-0.048	-0.571	-0.584
NatGas Oct/Nov	$/MMBtu	0.26	-0.034	-0.202	0.195
NatGas Oct/Jan	$/MMBtu	0.66	-0.034	-0.299	0.312
WTI Crude	$/Bbl	42.97	0.630	2.700	-12.130
Brent Crude	$/Bbl	45.05	0.700	1.750	-15.380
Fuel Oil, NY Harbour 1%	$/Bbl	98.03	0.000	0.000	0.000
Heating Oil	cents/Gallon	121.62	0.820	-0.090	-61.200
Propane, Mt. Bel	cents/Gallon	0.51	0.001	0.014	0.103
Ethane, Mt. Bel	cents/Gallon	0.24	-0.003	0.026	0.083
Coal, PRB	$/MTon	12.30	0.000	0.000	0.150
Coal, ILB	$/MTon	31.05	0.000	0.000	-4.500

Source: CME, Bloomberg

Baker Hughes Rig Counts

Oil rigs decreased by 3, while nat gas increased by 3. The weekly changes for the major basins are listed below.

Rotary Rig Count

8/28/2020

Baker Hughes

U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago
Oil	180	-3	183	-562	742
Gas	72	3	69	-90	162
Miscellaneous	2	0	2	2	0
Directional	20	0	20	-50	70
Horizontal	221	0	221	-563	784
Vertical	13	0	13	-37	50

Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago
Ardmore Woodford	0	0	0	-3	3
Arkoma Woodford	1	0	1	-3	4
Barnett	0	0	0	-1	1
Cana Woodford	6	0	6	-39	45
DJ-Niobrara	4	0	4	-19	23
Eagle Ford	9	0	9	-58	67
Granite Wash	1	0	1	-2	3
Haynesville	35	3	32	-14	49
Marcellus	26	0	26	-26	52
Mississippian	0	0	0	-3	3
Permian	125	-2	127	-304	429
Utica	5	0	5	-8	13
Williston	10	0	10	-41	51