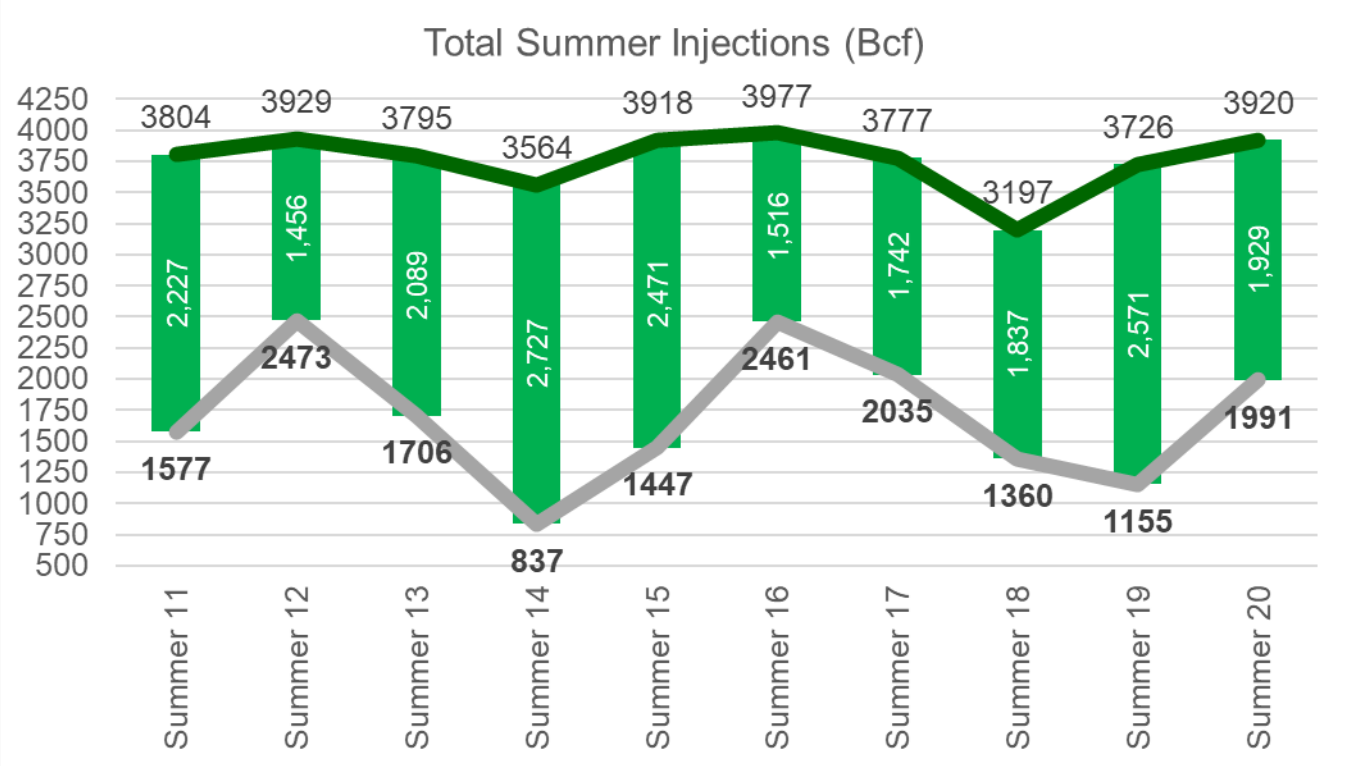
This week, we will review some slides from the Genscape natgas team. These are from a public webinar from Oct 22nd that dived into their winter outlook.

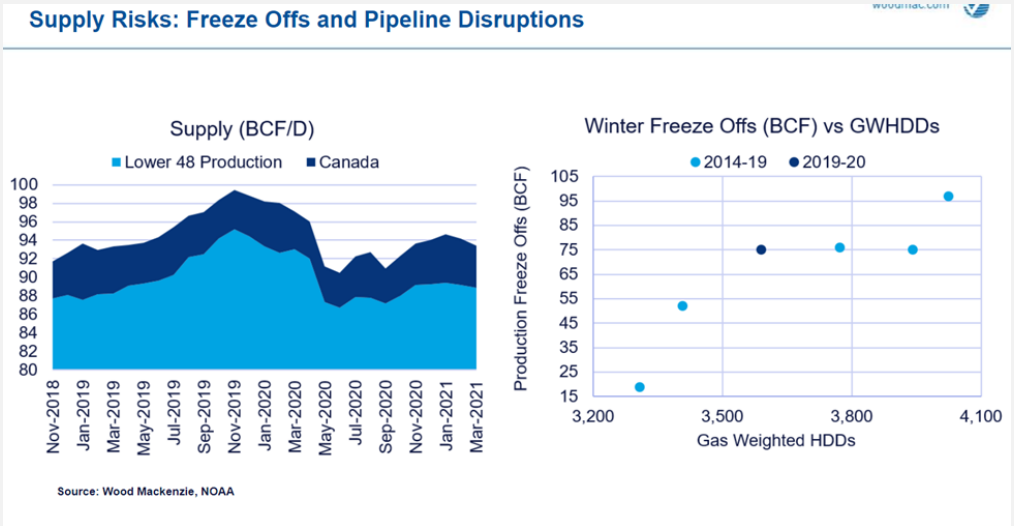
Their end of summer storage forecast was 3.95 Bcf on Oct 31, and it appears that is where things ultimately end up with a with draw expected for week ending Oct 30. We are projecting storage levels to be approximately 3930 on Oct 31, which points to 1929 Bcf being injected over the summer months. This is 642 Bcf less gas injected than Summer 19, but only 98 Bcf lower than the 5 Yr average summer injection.



Genscape's base case for end of winter is 1.45 Tcf, based on the winter strip as of 10/16 being at 3.21 and 30Y normal weather. On Friday, the winter strip closed at 3.24 (with Nov expiring at 2.99) and the expectations are for a warmer than normal winter; hence taking those two into account the end of winter could be slightly higher now with less C2G and warmer temps.

Below are some details on their individual S/D components that got them to their end of winter storage estimate.

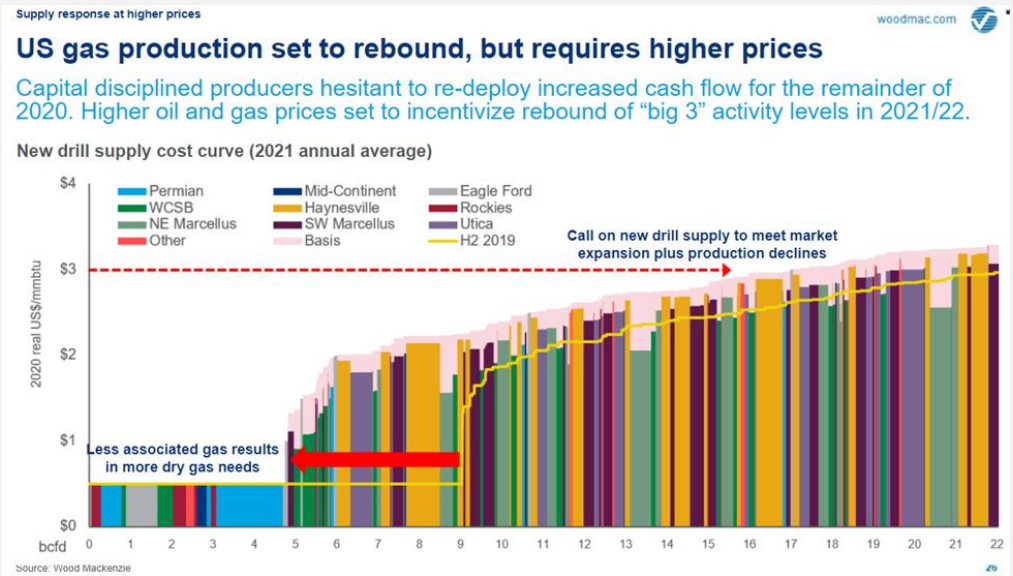
Production will be lower by 4.5 Bcf/d YoY, which includes a total of 65 Bcf lost through the winter due to freeze-offs.



Production past the winter will need higher prices in order to rebound.

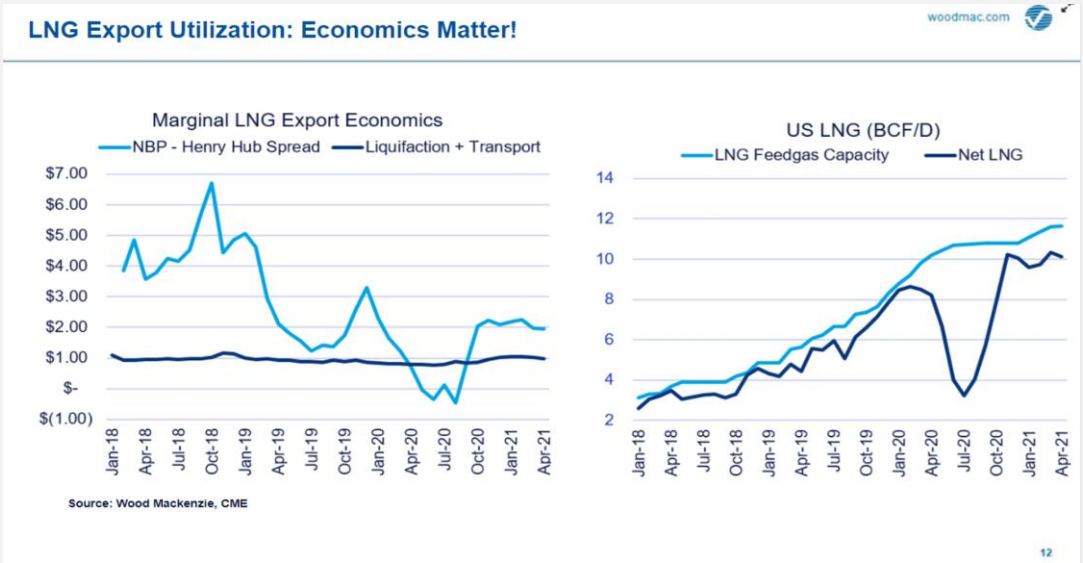
“Capital disciplined producers are hesitant to re-deploy increased cash flow for the remainder of 2020”.

SW Marcellus and Haynesville production look to the marginal molecules that needs to be activated to increase production substantially. The break-even for those wells is 2.50-$3.00/mmBtu.

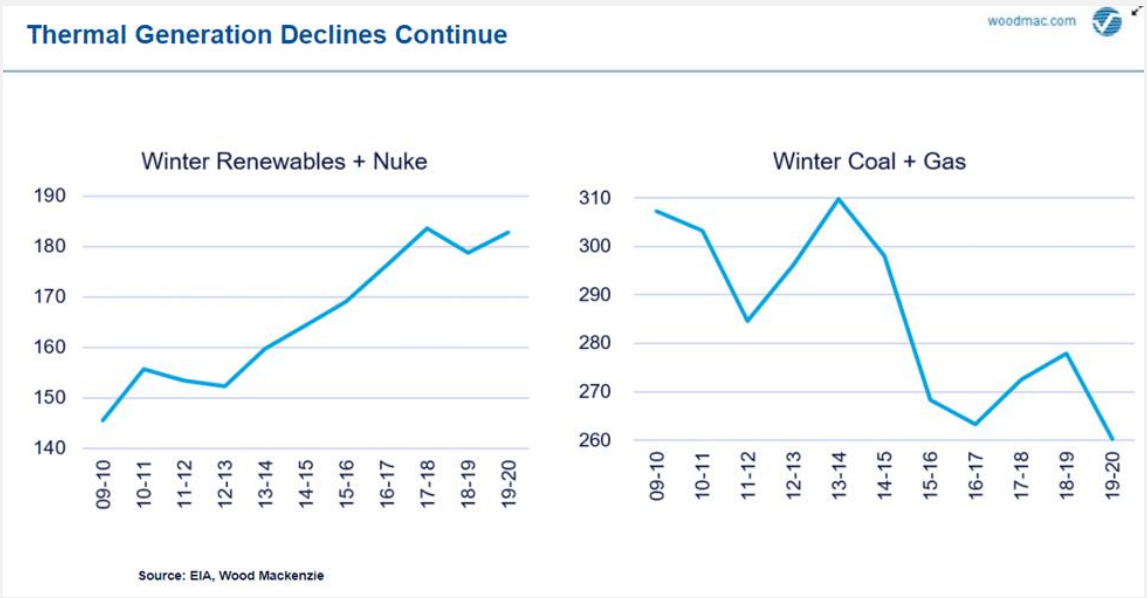


This past summer's LNG pushback contributed to 700 Bcf to our current storage level. Cargo cancellations started in April, and last through October.

Their LNG feedgas forecast is roughly 10 Bcf/d over the winter. Current spreads suggest that we should be flowing at those levels as we showed in a weekend report a couple of weeks back.

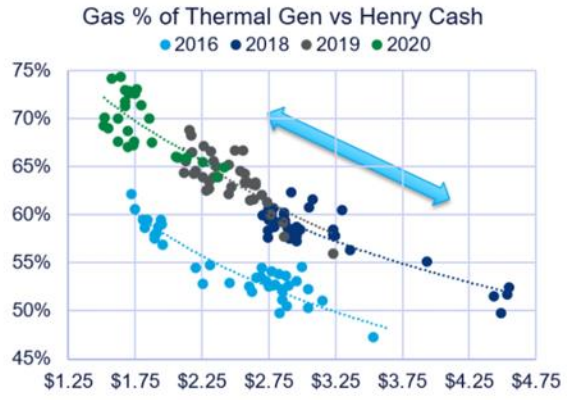


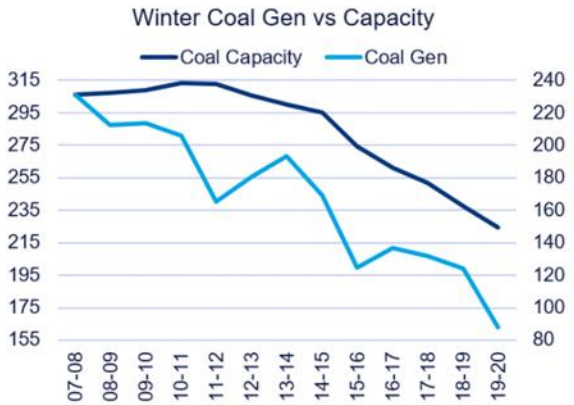
Power burns are expected to be ~3.5 Bcf/d lower year-on-year. This the result of higher prices this year pushing coal back in the power stack, and increased renewable penetration



Price Changes Drive Movement Along the Demand Curve

woodmac.com

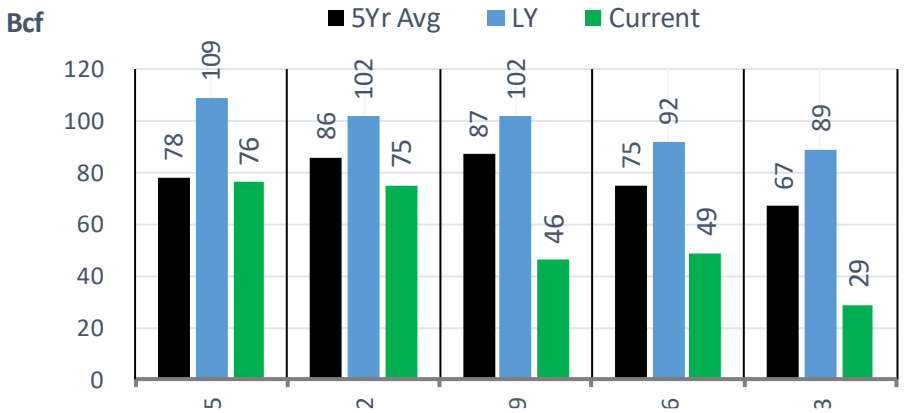




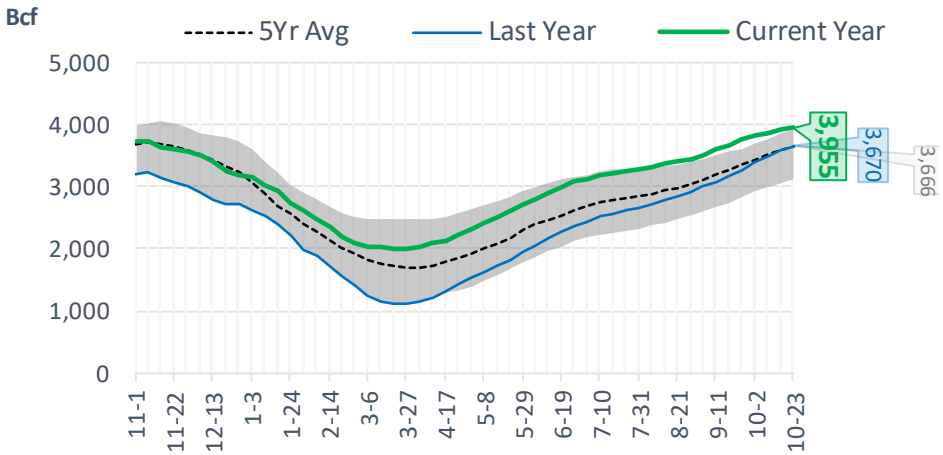
Source: NGI, Wood Mackenzie

EIA Storage Report

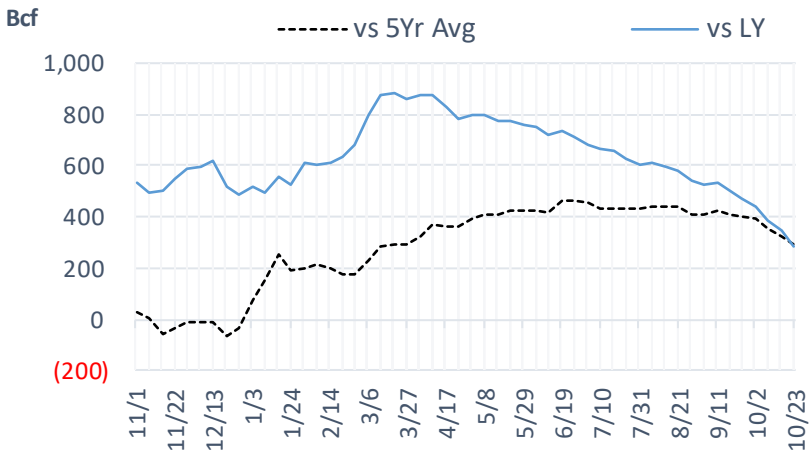
Total Lower 48 YoY Weekly Change



Total Lower 48 Storage Levels



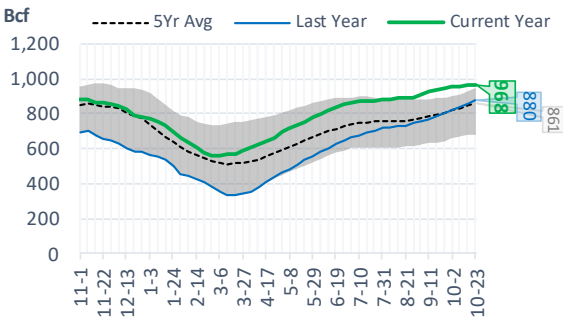
Total Lower 48 LY Surplus/Deficit



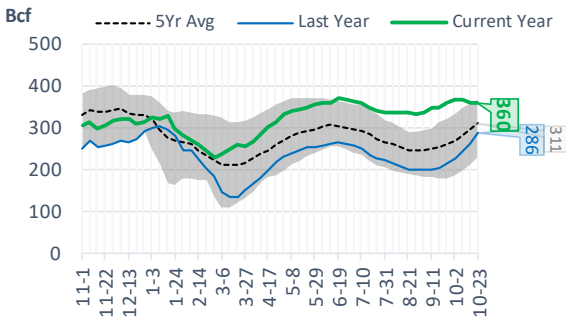
Natural Gas Storage Stats - Last 5 Weeks

Week Ending	Current 23-Oct	Week - 1 16-Oct	Week - 2 9-Oct	Week - 3 2-Oct	Week - 4 25-Sep	Week - 5 18-Sep
Total Lower 48 Storage Level	**3955**	3926	3877	3831	3756	3680
Weekly Change	**+29**	+49	+46	+75	+76	+66
vs LY	**+285**	+345	+388	+444	+471	+504
vs 5Yr Avg	**+289**	+327	+353	+394	+405	+407
S. Central Salt Storage Level	**360**	360	366	366	358	349
Weekly Change	**0**	-6	0	+8	+9	0
vs LY	**+74**	+98	+125	+140	+142	+144
vs 5Yr Avg	**+49**	+65	+85	+98	+99	+94
S. Central NonSalt Storage Level	**968**	969	960	955	945	934
Weekly Change	**-1**	+9	+5	+10	+11	+7
vs LY	**+88**	+108	+119	+135	+141	+149
vs 5Yr Avg	**+107**	+120	+125	+136	+139	+138
Midwest Storage Level	**1118**	1105	1081	1062	1033	1009
Weekly Change	**+13**	+24	+19	+29	+24	+26
vs LY	**+30**	+43	+47	+63	+71	+85
vs 5Yr Avg	**+54**	+66	+70	+83	+87	+95
East Storage Level	**941**	923	908	893	872	851
Weekly Change	**+18**	+15	+15	+21	+21	+26
vs LY	**+32**	+30	+35	+47	+55	+66
vs 5Yr Avg	**+41**	+34	+35	+41	+45	+48
Mountain Storage Level	**245**	245	241	236	231	225
Weekly Change	**0**	+4	+5	+5	+6	+4
vs LY	**+35**	+38	+37	+34	+33	+33
vs 5Yr Avg	**+30**	+32	+30	+27	+26	+24
Pacific Storage Level	**323**	323	320	318	316	312
Weekly Change	**0**	+3	+2	+2	+4	+2
vs LY	**+25**	+26	+24	+23	+26	+28
vs 5Yr Avg	**+8**	+10	+7	+8	+10	+9

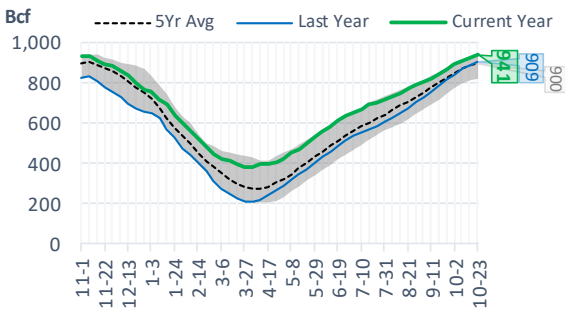
NonSalt Storage Levels



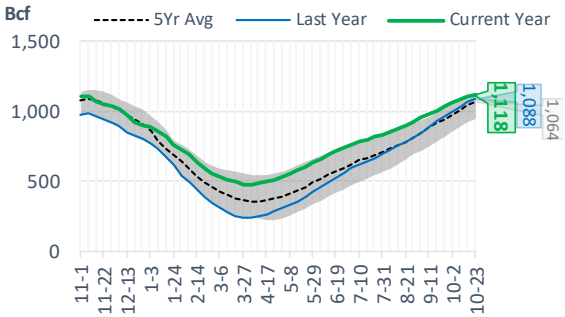
Salt Storage Levels



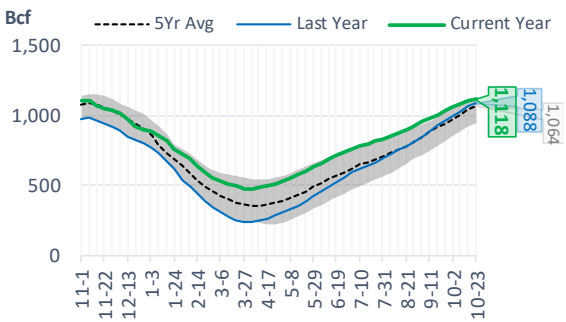
East Storage Levels



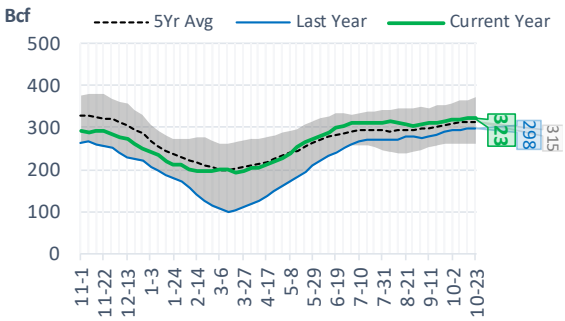
Midwest Storage Levels



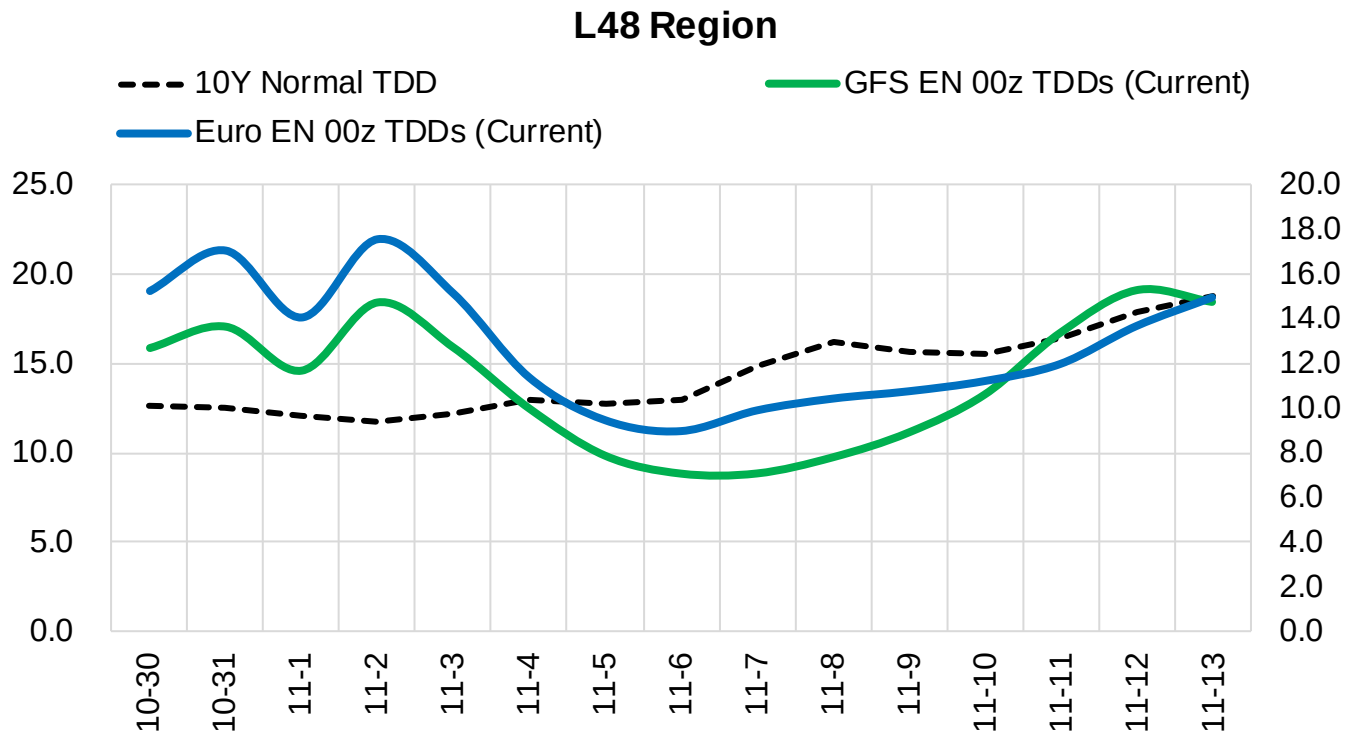
Midwest Storage Levels

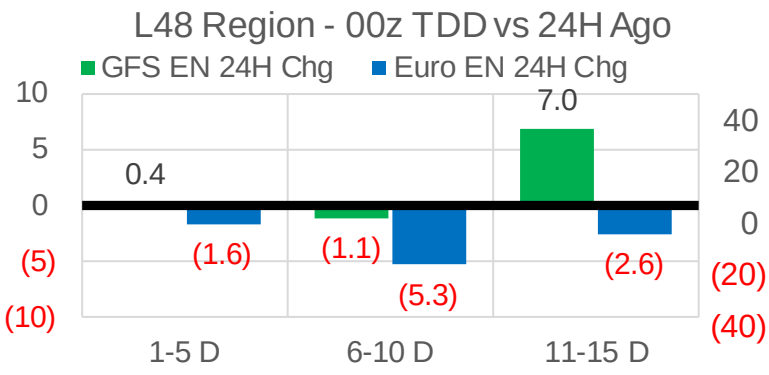


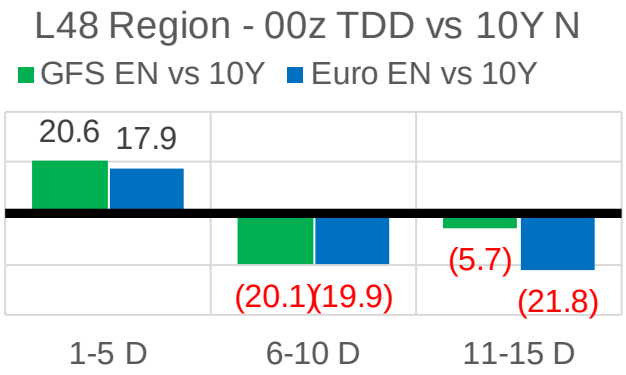
Pacific Storage Levels



Current Short-term Weather Model Outlooks (00z)







Source: WSI , Bloomberg

EIA Storage Week Balances

	25-Sep	2-Oct	9-Oct	16-Oct	23-Oct	30-Oct	WoW	vs. 4W
Lower 48 Dry Production	**86.9**	**87.3**	**87.2**	**85.8**	**89.1**	**87.3**	**-1.8**	**-0.1**
Canadian Imports	**3.6**	**3.9**	**4.5**	**4.0**	**3.6**	**4.8**	**1.2**	**0.8**
L48 Power	30.8	30.7	31.0	30.5	28.6	28.1	-0.5	-2.1
L48 Residential & Commercial	9.7	9.3	13.4	11.4	16.8	23.3	6.4	10.5
L48 Industrial	21.4	22.4	21.7	22.0	22.6	23.7	1.0	1.5
L48 Lease and Plant Fuel	4.8	4.8	4.8	4.7	4.9	4.8	-0.1	0.0
L48 Pipeline Distribution	2.0	2.0	2.2	2.1	2.2	2.5	0.3	0.4
L48 Regional Gas Consumption	**68.6**	**69.2**	**73.0**	**70.7**	**75.2**	**82.4**	**7.2**	**10.4**
Net LNG Exports	**5.8**	**6.8**	**7.5**	**6.9**	**8.0**	**9.2**	**1.2**	**1.9**
Total Mexican Exports	**6.4**	**6.3**	**6.2**	**6.2**	**6.3**	**6.3**	**-0.1**	**0.0**
Implied Daily Storage Activity	**9.7**	**9.0**	**5.1**	**6.0**	**3.2**	**-5.7**	**-8.9**	
EIA Reported Daily Storage Activity	**10.9**	**10.7**	**6.6**	**7.0**	**4.1**			
Daily Model Error	**-1.2**	**-1.8**	**-1.5**	**-1.0**	**-1.0**			

Monthly Balances

	2Yr Ago Oct-18	LY Oct-19	Jun-20	Jul-20	Aug-20	Sep-20	MTD Oct-20	MoM	vs. LY
Lower 48 Dry Production	**86.7**	**95.0**	**86.6**	**87.8**	**87.7**	**87.7**	**87.4**	**-0.3**	**-7.6**
Canadian Imports	**4.7**	**4.6**	**4.0**	**4.4**	**4.9**	**3.8**	**4.3**	**0.4**	**-0.4**
L48 Power	28.9	30.8	35.0	43.7	40.7	33.3	29.6	-3.7	-1.2
L48 Residential & Commercial	16.1	15.2	8.8	7.9	7.7	8.5	16.5	8.0	1.3
L48 Industrial	22.5	24.0	19.2	19.3	20.4	21.2	22.4	1.3	-1.5
L48 Lease and Plant Fuel	4.9	5.2	4.9	4.9	5.0	4.8	4.8	0.0	-0.4
L48 Pipeline Distribution	2.1	2.3	2.2	2.4	2.4	2.1	2.3	0.2	0.0
L48 Regional Gas Consumption	**74.5**	**77.4**	**70.1**	**78.4**	**76.1**	**69.8**	**75.6**	**5.8**	**-1.9**
Net LNG Exports	**3.3**	**6.7**	**4.0**	**3.3**	**4.0**	**5.9**	**7.9**	**2.0**	**1.3**
Total Mexican Exports	**5.0**	**5.5**	**5.7**	**6.1**	**6.3**	**6.4**	**6.3**	**-0.1**	**0.8**
Implied Daily Storage Activity	**8.6**	**10.0**	**10.9**	**4.4**	**6.1**	**9.4**	**1.9**		
EIA Reported Daily Storage Activity									
Daily Model Error									

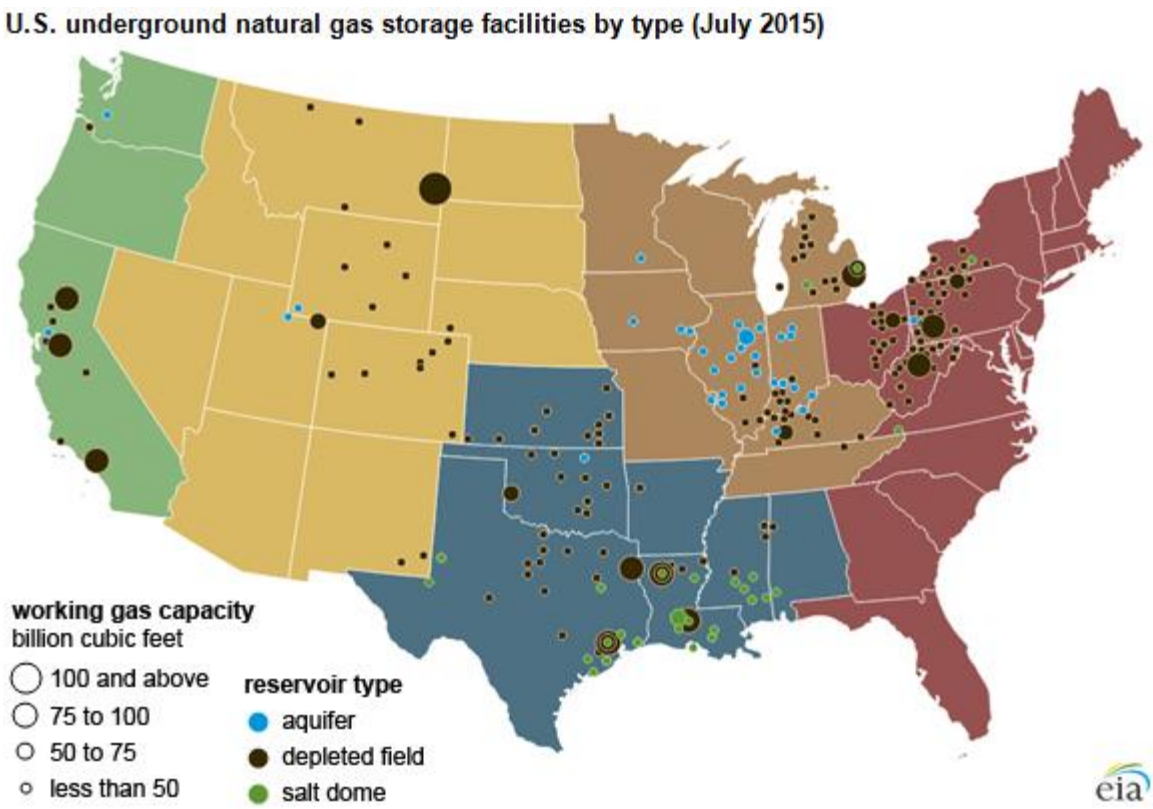
Source: Bloomberg, analytix.ai

Regional S/D Models Storage Projection

Week Ending 30-Oct

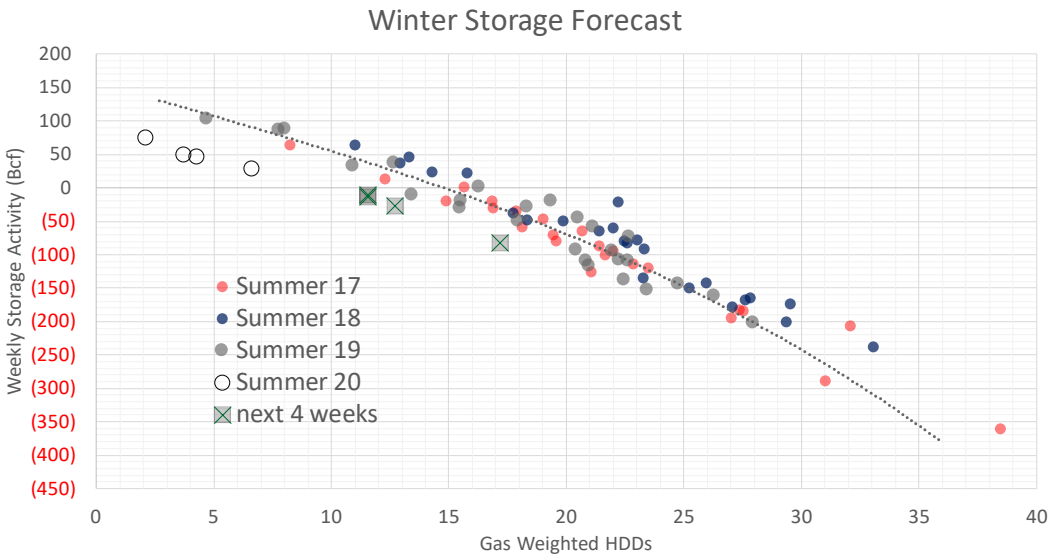
	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	-6.0	1.5	-4.5	-31
East	-1.2	2.0	0.9	6
Midwest	-1.2	1.2	0.0	0
Mountain	2.2	-3.2	-1.1	-7
South Central	-5.0	1.6	-3.4	-24
Pacific	-0.8	-0.1	-0.9	-6

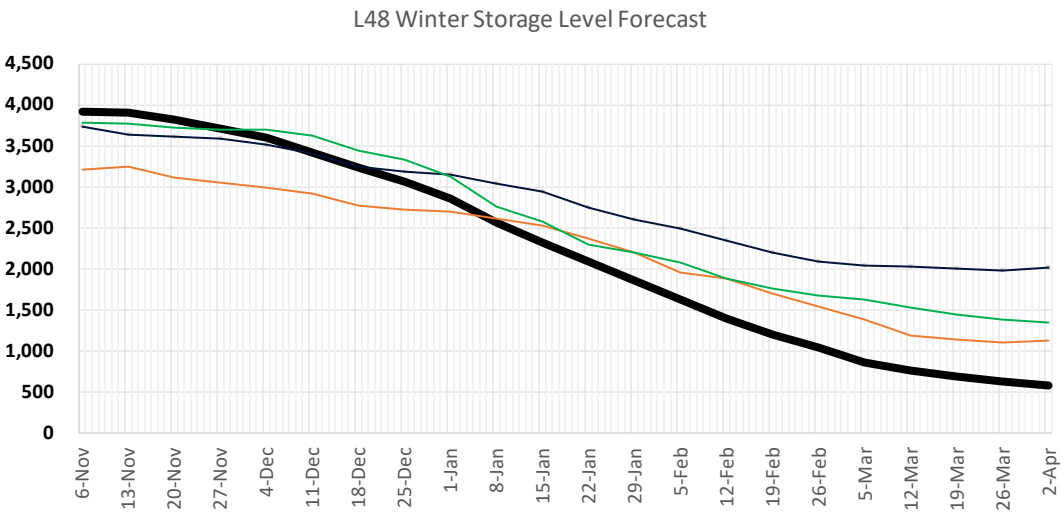
*Adjustment Factor is calcuated based on historical regional deltas



Weather Model Storage Projection

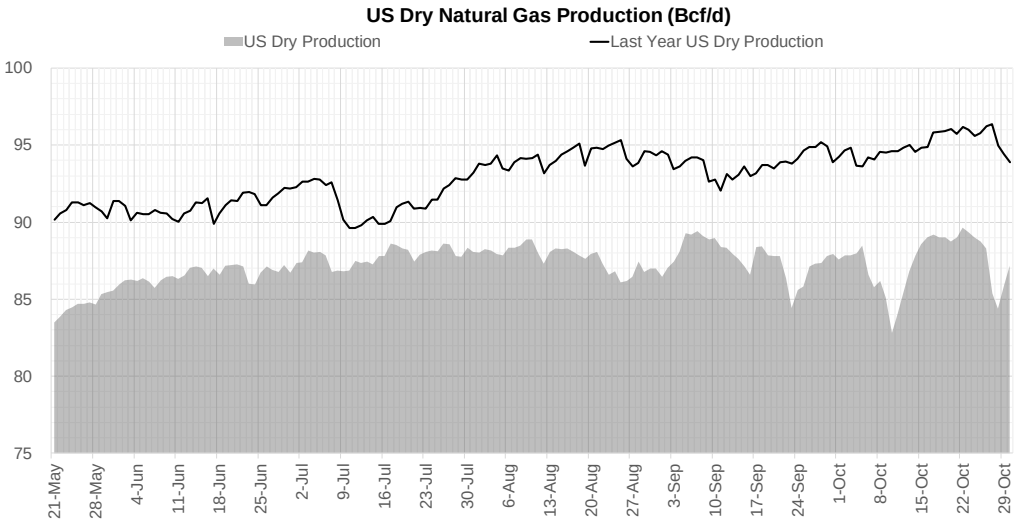
Next report and beyond		
Week Ending	Temp	Week Storage Projection
06-Nov	12.7	-26
13-Nov	11.6	-14
20-Nov	17.2	-82

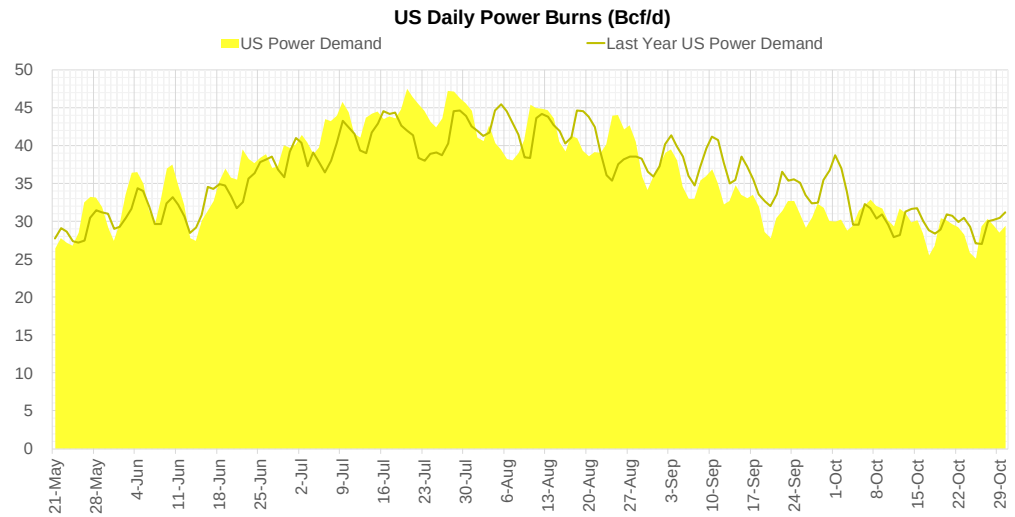


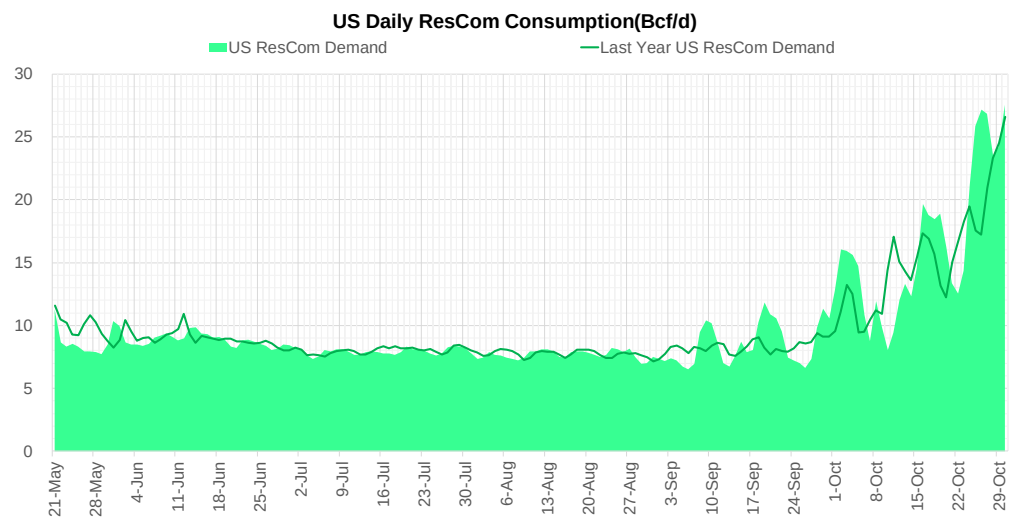


Note: this is not our official end of season forecast. This chart signifies where storage levels end with 10-year normal weather and current market tightness relative to last year

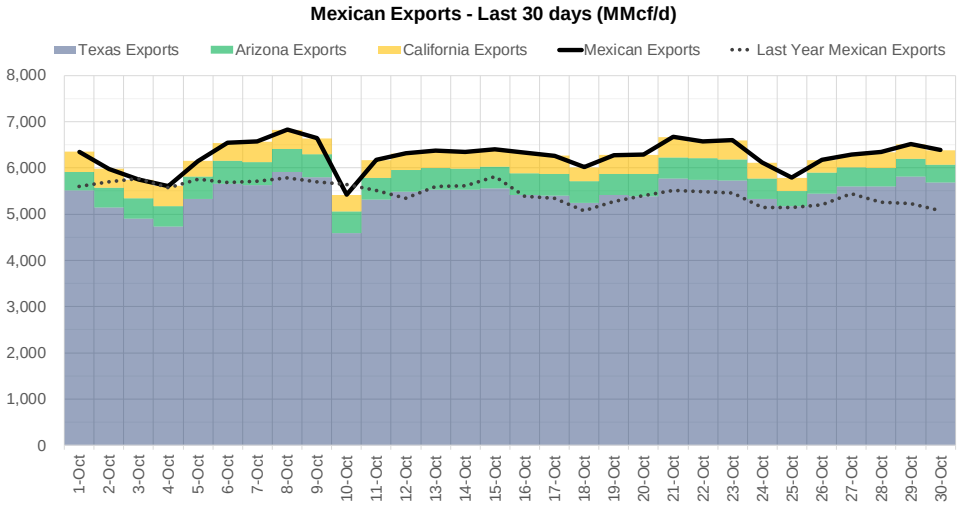
Supply – Demand Trends

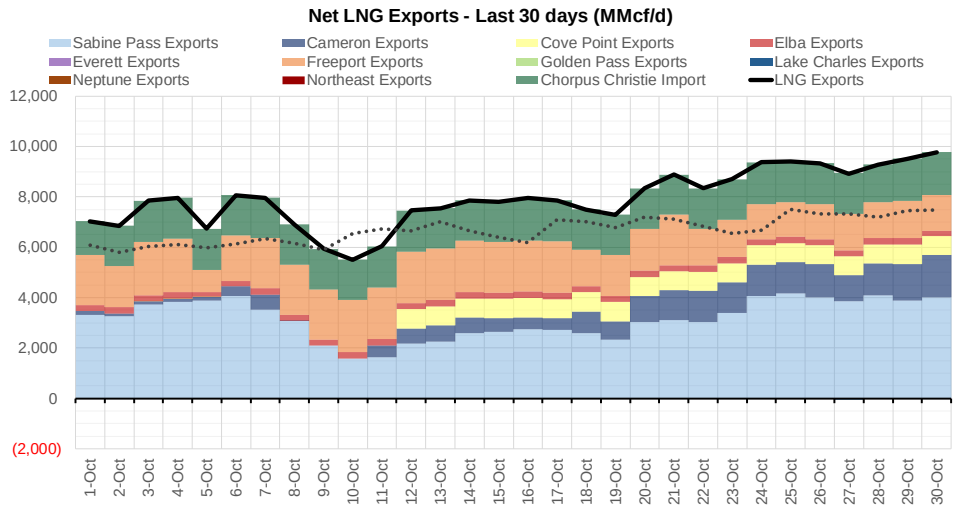






Source: Bloomberg





Source: Bloomberg

Nat Gas Options Volume and Open Interest

CME, ICE and Nasdaq Combined

CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL
12	2020	C	4.00	11831
3	2021	C	4.50	7005
12	2020	C	4.25	6679
3	2021	C	5.00	6480
6	2021	C	3.25	4420
6	2021	P	2.50	4400
12	2020	P	3.00	4019
1	2021	C	4.00	3623
12	2020	C	4.50	3526
12	2020	C	3.75	3411
12	2020	P	2.50	3403
12	2020	C	5.00	3114
2	2021	C	4.00	2768
3	2021	C	4.00	2436
3	2021	P	2.50	2303
12	2020	C	3.80	2201
12	2020	P	2.75	2094
3	2021	C	3.50	2003
1	2021	C	5.00	1674
5	2021	C	3.00	1625
3	2022	C	3.50	1500
3	2021	P	2.00	1432
1	2021	C	4.50	1387
5	2021	C	4.00	1350
12	2020	C	3.50	1321
10	2021	C	3.00	1150
1	2021	C	3.50	1135
4	2021	C	3.50	1126
4	2021	P	2.75	1120
12	2020	P	2.60	1106
10	2021	P	3.00	1100
12	2020	P	2.30	1055
2	2021	C	5.25	1050
2	2021	C	6.00	1029
12	2020	C	3.25	934
12	2020	P	2.40	920
2	2021	C	4.50	901
3	2021	C	8.00	900
1	2021	P	2.75	795
2	2021	C	5.00	779
1	2021	P	2.50	734
1	2021	P	3.00	691
12	2020	C	3.40	662
3	2021	C	7.00	660
4	2021	P	2.00	650
4	2021	C	3.00	625
12	2020	P	3.25	622
1	2021	C	4.25	622
12	2020	C	4.20	618

CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
3	2021	P	2.00	36359
12	2020	P	2.00	32583
3	2021	C	6.00	31814
3	2021	C	5.00	29863
1	2021	C	4.50	28929
10	2021	C	4.00	28035
3	2021	C	3.25	28019
4	2021	C	5.00	27042
3	2021	C	4.00	26137
1	2021	C	3.50	25959
3	2021	C	7.00	25651
10	2021	C	3.25	25615
12	2020	P	2.50	24835
12	2020	C	3.75	24088
4	2021	C	4.00	23748
12	2020	C	4.00	22630
12	2020	C	4.50	22075
1	2021	C	6.00	21759
3	2021	C	3.50	21703
3	2021	C	3.00	21072
1	2021	P	2.50	20456
2	2021	C	5.00	19954
8	2021	C	4.00	19799
12	2020	C	3.50	19734
2	2021	P	2.25	19037
12	2020	C	5.00	19007
1	2021	P	2.25	18164
3	2021	P	2.50	17894
8	2021	P	2.25	17742
12	2020	P	2.75	17539
1	2021	C	3.00	17131
1	2021	C	3.75	16937
2	2021	C	3.50	16840
10	2021	C	5.00	16815
1	2021	C	5.00	16693
2	2021	P	2.50	16106
12	2020	P	3.00	15525
1	2021	C	7.00	15152
1	2021	C	4.00	14813
12	2020	P	1.50	14450
2	2021	C	4.00	14412
4	2021	C	3.00	14110
4	2021	P	2.00	13747
10	2021	C	3.00	13665
12	2020	C	3.25	13531
3	2021	C	4.50	13478
5	2021	C	3.00	13398
1	2021	C	3.25	13176
1	2021	P	2.00	13142
5	2021	C	3.5	12704

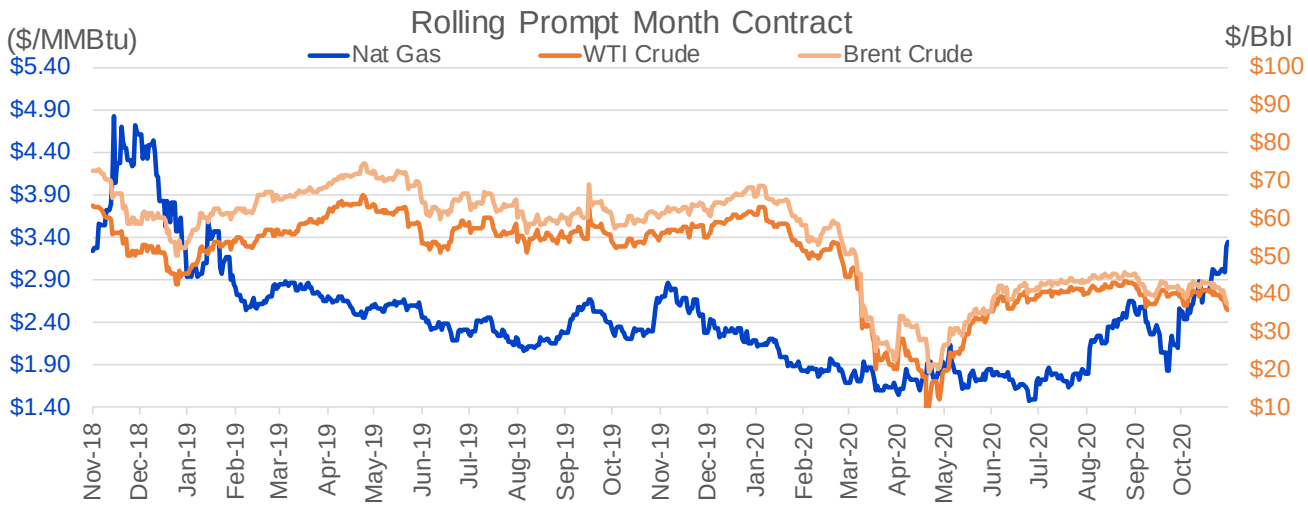
Source: CME, Nasdaq, ICE

Nat Gas Futures Open Interest

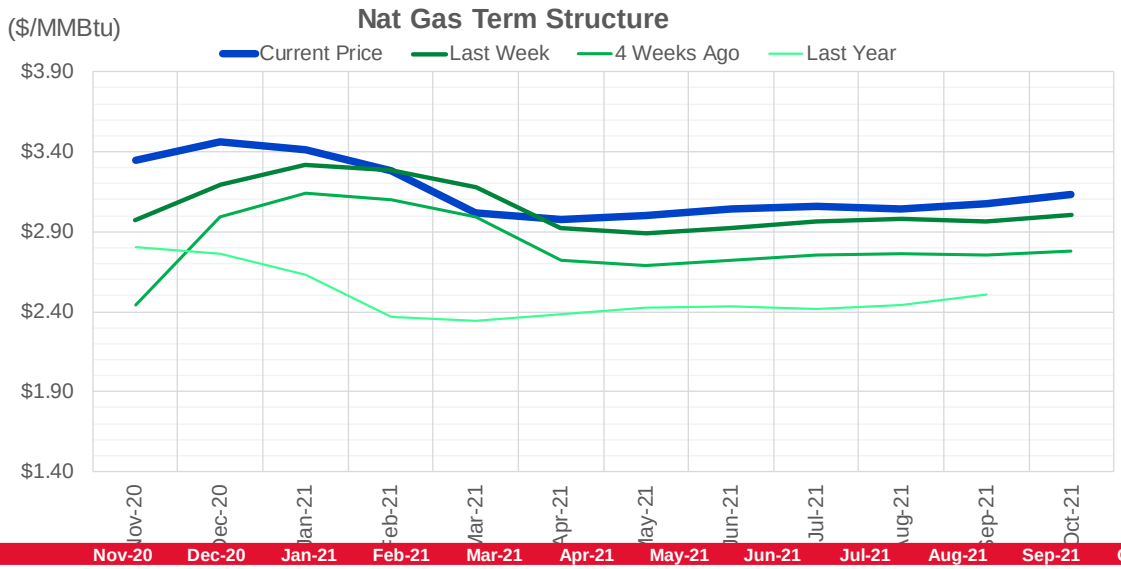
CME, ICE and Nasdaq Combined

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
DEC 20	174612	177980	-3368	DEC 20	81884	82400	-516
JAN 21	206326	205600	726	JAN 21	90328	89947	380.5
FEB 21	84458	84683	-225	FEB 21	65117	64864	252.75
MAR 21	133971	134147	-176	MAR 21	87841	86678	1162.75
APR 21	73645	73760	-115	APR 21	69018	68647	371
MAY 21	50601	52084	-1483	MAY 21	66458	65724	733.5
JUN 21	34201	34891	-690	JUN 21	57701	57362	339.5
JUL 21	26893	26498	395	JUL 21	59494	59389	104.5
AUG 21	28275	27689	586	AUG 21	63370	62980	389.75
SEP 21	40045	39495	550	SEP 21	57549	57379	170.5
OCT 21	94435	94789	-354	OCT 21	66368	65832	536.25
NOV 21	34242	34101	141	NOV 21	52680	52274	406.25
DEC 21	29008	28501	507	DEC 21	47646	47554	92.25
JAN 22	32569	31864	705	JAN 22	46271	46018	252.5
FEB 22	21335	20494	841	FEB 22	37502	37444	57.75
MAR 22	22346	22563	-217	MAR 22	40281	40323	-42.25
APR 22	21955	21915	40	APR 22	38031	38106	-75.25
MAY 22	9788	9711	77	MAY 22	29359	29531	-172.5
JUN 22	5266	5181	85	JUN 22	28132	28283	-150.5
JUL 22	4572	4564	8	JUL 22	30050	30018	32
AUG 22	3323	3323	0	AUG 22	28475	28323	152.5
SEP 22	3388	3384	4	SEP 22	27862	27869	-7
OCT 22	4329	4337	-8	OCT 22	32344	32229	114.5
NOV 22	3641	3575	66	NOV 22	27293	27442	-148.25
DEC 22	4328	4274	54	DEC 22	30791	30960	-168.75
JAN 23	4227	3777	450	JAN 23	14689	14692	-2.5
FEB 23	944	944	0	FEB 23	13716	13719	-3.25
MAR 23	2310	2310	0	MAR 23	13776	13784	-7.25
APR 23	1548	1548	0	APR 23	12732	12702	30.5
MAY 23	382	0	382	MAY 23	11353	11298	54.25

Source: CME, ICE



Market Report



	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21
Current Price	**$3.347**	**$3.461**	**$3.412**	**$3.280**	**$3.014**	**$2.974**	**$3.003**	**$3.045**	**$3.056**	**$3.043**	**$3.077**	**$3.137**
Last Week	$2.971	$3.195	$3.322	$3.285	$3.175	$2.927	$2.892	$2.924	$2.966	$2.979	$2.968	$3.004
vs. Last Week	$0.376	$0.266	$0.090	-$0.005	-$0.161	$0.047	$0.111	$0.121	$0.090	$0.064	$0.109	$0.133
4 Weeks Ago	$2.438	$2.991	$3.138	$3.100	$2.993	$2.725	$2.687	$2.718	$2.757	$2.766	$2.752	$2.782
vs. 4 Weeks Ago	$0.909	$0.470	$0.274	$0.180	$0.021	$0.249	$0.316	$0.327	$0.299	$0.277	$0.325	$0.355
Last Year	$2.714	$2.802	$2.762	$2.631	$2.371	$2.345	$2.381	$2.423	$2.429	$2.413	$2.442	$2.506
vs. Last Year	$0.633	$0.659	$0.650	$0.649	$0.643	$0.629	$0.622	$0.622	$0.627	$0.630	$0.635	$0.631

	Units	Current Price	vs. Last Week	vs. 4 Weeks Ago	vs. Last Year
NatGas Jan/Apr	$/MMBtu	-0.45	▼ -0.052	▼ -0.034	▲ 0.010
NatGas Mar/Apr	$/MMBtu	-0.266	▼ -0.018	▼ -0.534	▼ -0.548
NatGas Oct/Nov	$/MMBtu	0.90	▲ 0.025	▲ 0.558	▲ 0.831
NatGas Oct/Jan	$/MMBtu	1.36	▲ 0.139	▲ 0.323	▲ 1.012
WTI Crude	$/Bbl	35.73	▼ -4.120	▼ -1.320	▼ -20.470
Brent Crude	$/Bbl	37.46	▼ -4.310	▼ -1.810	▼ -24.230
Fuel Oil, NY Harbour 1%	$/Bbl	98.03	▲ 0.000	▲ 0.000	▲ 0.000
Heating Oil	cents/Gallon	108.40	▼ -6.730	▼ -0.100	▼ -84.910
Propane, Mt. Bel	cents/Gallon	0.52	▼ -0.003	▲ 0.035	▲ 0.001
Ethane, Mt. Bel	cents/Gallon	0.22	▲ 0.001	▲ 0.025	▲ 0.020
Coal, PRB	$/MTon	12.30	▲ 0.000	▲ 0.000	▲ 0.050
Coal, ILB	$/MTon	31.05	▲ 0.000	▲ 0.000	▼ -4.500

Source: CME, Bloomberg

Baker Hughes Rig Counts

Rotary Rig Count

10/30/2020

Baker Hughes

U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago
Oil	221	10	211	-470	691
Gas	72	-1	73	-58	130
Miscellaneous	3	0	3	2	1
Directional	22	1	21	-31	53
Horizontal	254	9	245	-463	717
Vertical	20	-1	21	-32	52
Canada Breakout	**This Week**	**+/-**	**Last Week**	**+/-**	**Year Ago**
Oil	40	-2	42	-53	93
Gas	46	5	41	-3	49
Major Basin Variances	**This Week**	**+/-**	**Last Week**	**+/-**	**Year Ago**
Ardmore Woodford	0	0	0	-1	1
Arkoma Woodford	0	-1	1	-3	3
Barnett	0	0	0	-4	4
Cana Woodford	8	1	7	-20	28
DJ-Niobrara	3	0	3	-19	22
Eagle Ford	17	1	16	-46	63
Haynesville	37	0	37	-14	51
Marcellus	26	0	26	-14	40
Mississippian	0	0	0	-2	2
Permian	142	9	133	-274	416
Utica	6	0	6	-5	11
Williston	12	0	12	-41	53