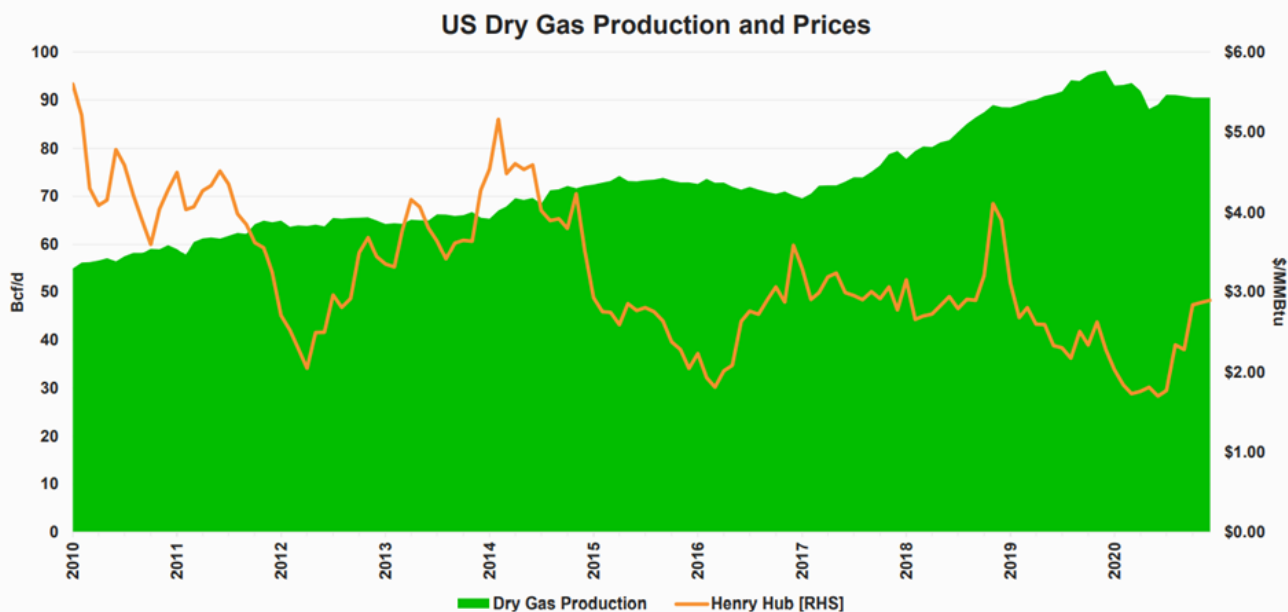


This week we drop some slides in from a recent presentation from Enverus titled “THE HANGOVER – From ’20 to ’21”. The report goes through the current trends in oil and gas price and production. This is the Q1 2021 installment of the Enverus FundamentalEdge Series.

“Natural gas operators responded quickly to stronger prices during the fourth quarter of 2020, increasing gas production by 1.7 Bcf/d in November alone. However, winter demand started weak, and prices quickly lost ground. On the demand side, LNG exports are back up from the lows observed in July as economics (Europe versus US price spread) continue to improve. Enverus expects gas prices to average \$3.25/MMBtu, levels higher than those currently observed in the forward curve, particularly in 2021 and 2022, when oil prices are expected to remain depressed at \$45-\$50/Bbl .”

Dry Gas Production 2010-2020

US dry gas production has experienced gains in 8 of the past 10 years. After growing by over 10 Bcf/d between 2010 and 2015, gas production saw a drop of over 2 Bcf/d in 2016. Since then, production increases were reported every year until 2020. Between December 2016 and December 2019, the United States added almost 26 Bcf/d of gas production. We estimate production has fallen over 5 Bcf/d since then. Prices have driven these declines, with 2016 and 2020 holding the lowest gas prices in the past 10 years, at \$2.46/MMBtu and \$2.08/MMBtu, respectively.



The following shows gas break-evens at \$45/bbl WTI.

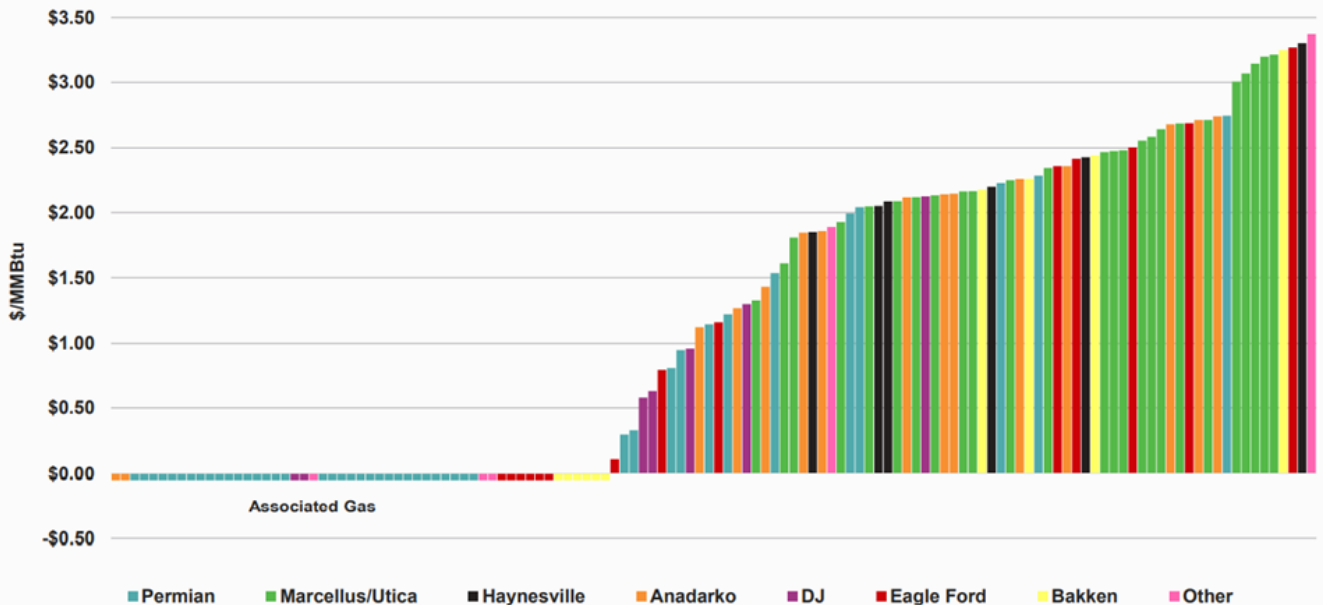
The prompt month WTI contract trades at \$52-52.50/bb, with the structure being backwardated. The 24month average is 49.5/bbl; hence with current higher price the natgas breakevens from the oily and rich gas plays are lower than represented in the chart. Interestingly, the Northeast dry gas plays show up amongst the most expensive in this chart.

This data comes out of the Enverus Prodcast product.

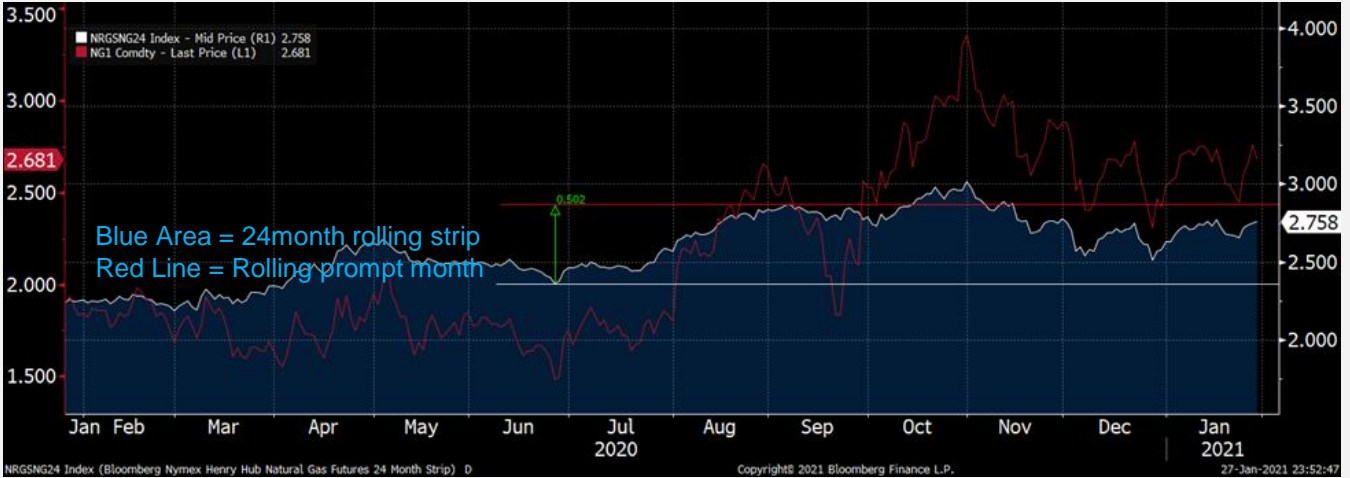
Gas Breakevens ≤ \$3.50/MMBtu

With WTI prices expected to average \$45/bbl in 2021, some associated gas is expected to come from the Permian, DJ, and even Eagle Ford. Marcellus/Utica and Haynesville are the gas-focused areas that will bring significant amounts of production to help meet expected demand growth.

Henry Hub Breakevens @ 20% MARR & \$45/bbl WTI



As can be seen in the chart below, total gas hedges grow in Q3. This coincided with gas prices moving higher in Q3 as fear set in with massive production declines. We looked at the nat gas 24 month strip to see its move during Q3. The stripped moved from a low of 2.39 to a high of \$2.89/MMBtu.



Total gas hedges at the end of 3Q20 totaled 18.9 Bcf/d.

Gas Hedges

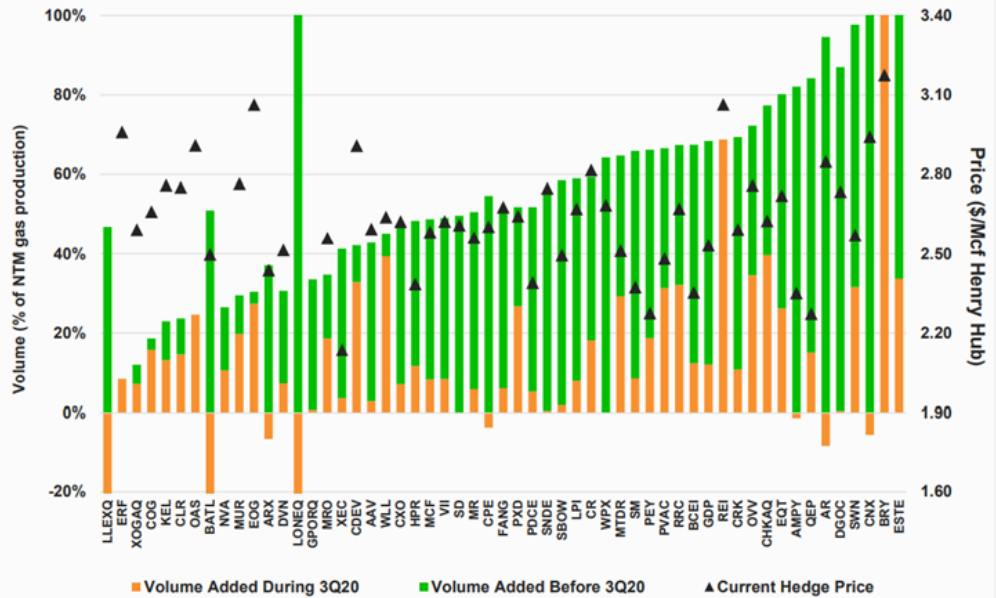
Operators seize the opportunity to increase hedged volumes presented by gas futures rally

Gas saw a sizeable uptick in incremental hedge activity during the 3Q20 reporting season. In aggregate, this group collectively increased 2021-dated gas hedge volume by 51%, bringing the total volume to 18.9 Bcf/d. A rally in gas futures enabled the group to increase its volume-weighted average hedge price by 4% to \$2.70/Mcf Henry Hub. We believe a key factor in this surge was due to futures prices reaching a level that will enable companies to execute on free cash flow targets closely monitored by investors.

This figure shows the percentage of gas NTM production volume added prior to Q3 2020 and throughout Q3 2020. While most gas-weighted producers are in line with having at least two-thirds of NTM gas production hedged, a few fall short, with MR (now part of SWN) at 51%, GPORQ at 34%, and COG only at 19%.

How operators capitalized on the buoyed winter gas strip prices will drive activity in early 2021.

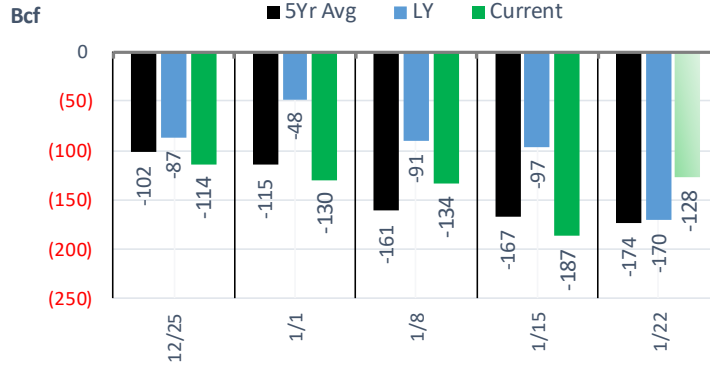
Gas Hedge Positions: Proportion of NTM Production Hedged and Hedge Prices



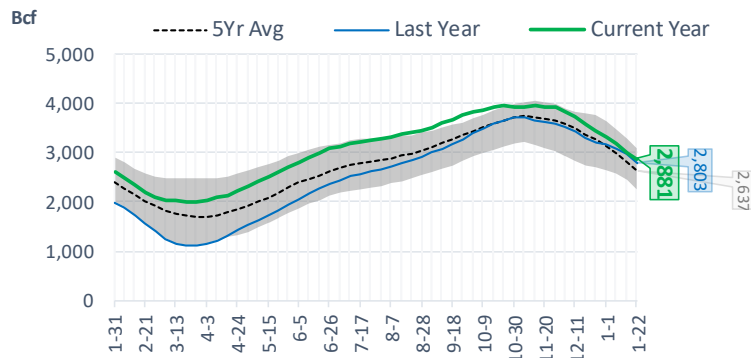
The complete report can be downloaded here: <https://www.enverus.com/2021-1-upstream-fundamentale-edge-report-preview-january-2021/>

EIA Storage Report

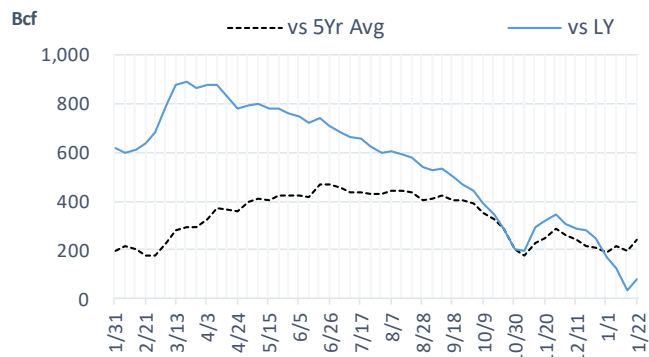
Total Lower 48 YoY Weekly Change



Total Lower 48 Storage Levels



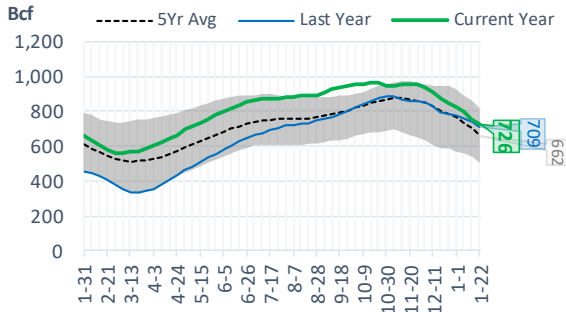
Total Lower 48 LY Surplus/Deficit



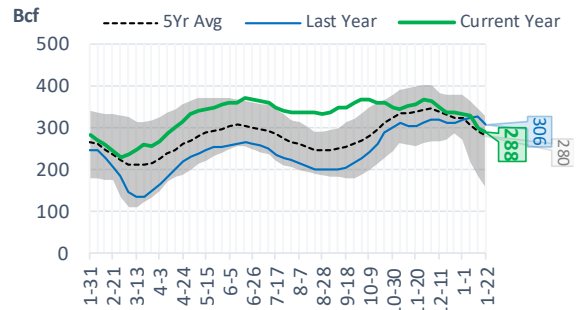
Natural Gas Storage Stats - Last 5 Weeks

Week Ending	Current 22-Jan	Week - 1 15-Jan	Week - 2 8-Jan	Week - 3 1-Jan	Week - 4 25-Dec	Week - 5 18-Dec
Total Lower 48 Storage Level	2881	3009	3196	3330	3460	3574
Weekly Change	-128	-187	-134	-130	-114	-152
vs LY	+78	+36	+126	+169	+251	+278
vs 5Yr Avg	+244	+198	+218	+191	+206	+218
S. Central Salt Storage Level	288	296	327	333	334	337
Weekly Change	-8	-31	-6	-1	-3	-11
vs LY	-18	-30	+6	+13	+22	+25
vs 5Yr Avg	+8	+3	+19	+11	+10	+9
S. Central NonSalt Storage Level	726	755	799	830	849	870
Weekly Change	-29	-44	-31	-19	-21	-38
vs LY	+17	+13	+38	+54	+67	+73
vs 5Yr Avg	+64	+56	+67	+67	+63	+66
Midwest Storage Level	780	828	879	923	973	1015
Weekly Change	-48	-51	-44	-50	-42	-44
vs LY	+4	+3	+18	+32	+63	+78
vs 5Yr Avg	+62	+55	+50	+45	+54	+61
East Storage Level	641	679	726	765	810	844
Weekly Change	-38	-47	-39	-45	-34	-37
vs LY	-14	-23	-1	+5	+32	+36
vs 5Yr Avg	+36	+26	+29	+24	+43	+48
Mountain Storage Level	170	176	188	196	204	212
Weekly Change	-6	-12	-8	-8	-8	-11
vs LY	+25	+22	+26	+28	+30	+32
vs 5Yr Avg	+22	+20	+23	+22	+20	+21
Pacific Storage Level	275	275	278	282	289	296
Weekly Change	0	-3	-4	-7	-7	-10
vs LY	+62	+51	+40	+36	+35	+32
vs 5Yr Avg	+50	+39	+30	+22	+15	+12

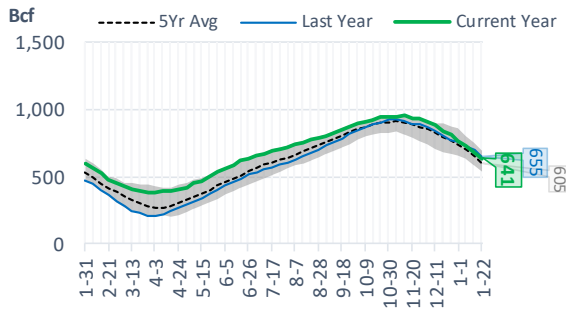
NonSalt Storage Levels



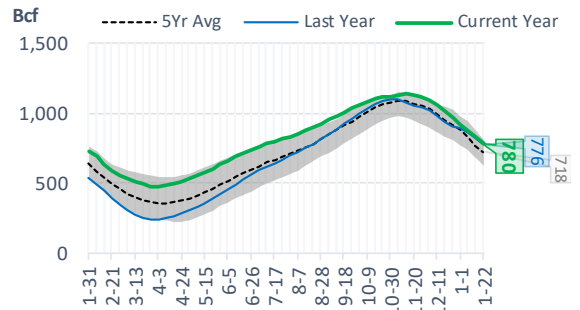
Salt Storage Levels



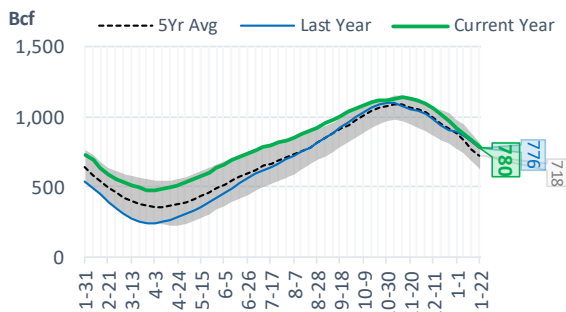
East Storage Levels



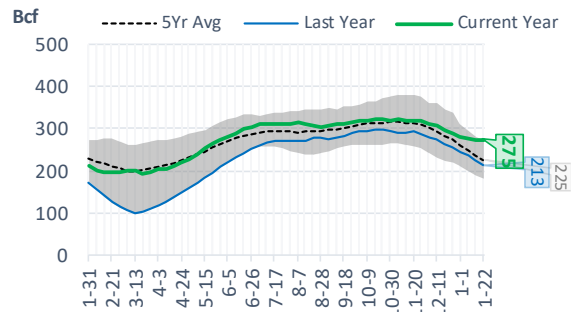
Midwest Storage Levels



Midwest Storage Levels

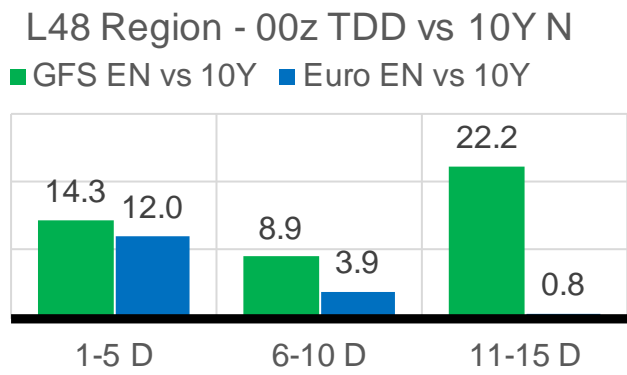
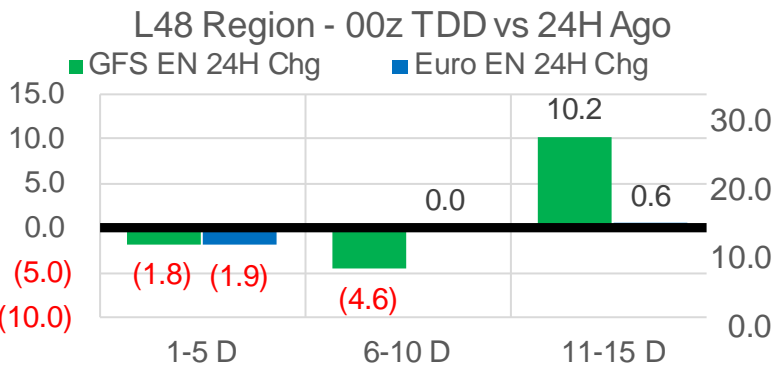
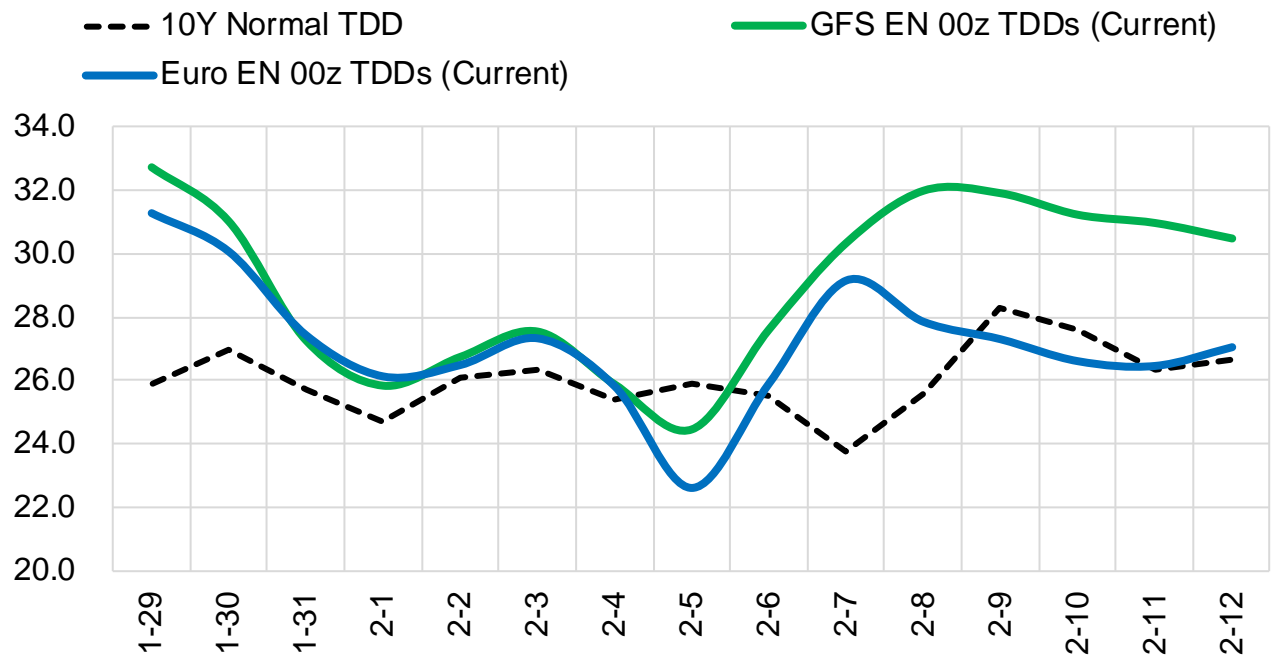


Pacific Storage Levels



Current Short-term Weather Model Outlooks (00z)

L48 Region



Source: WSI, Bloomberg

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EIA Storage Week Balances

	25-Dec	1-Jan	8-Jan	15-Jan	22-Jan	29-Jan	WoW	vs. 4W
Lower 48 Dry Production	92.1	92.3	92.4	91.1	91.3	91.6	▲ 0.2	▼ -0.2
Canadian Imports	5.8	5.8	6.2	6.2	5.9	6.4	▲ 0.5	▲ 0.4
L48 Power	27.1	27.3	28.4	30.3	27.7	28.5	▲ 0.8	▲ 0.1
L48 Residential & Commercial	39.6	43.2	41.3	45.3	41.1	46.3	▲ 5.1	▲ 3.5
L48 Industrial	24.1	22.3	23.1	23.6	23.4	25.8	▲ 2.4	▲ 2.8
L48 Lease and Plant Fuel	5.1	5.1	5.1	5.0	5.0	5.1	▲ 0.0	▼ 0.0
L48 Pipeline Distribution	3.0	3.2	3.2	3.4	3.1	3.4	▲ 0.3	▲ 0.2
L48 Regional Gas Consumption	98.9	101.1	101.1	107.6	100.5	109.1	▲ 8.6	▲ 6.5
Net LNG Exports	10.8	11.0	10.9	10.6	10.4	10.0	▼ -0.4	▼ -0.7
Total Mexican Exports	5.8	5.4	5.9	6.1	6.1	6.5	▲ 0.4	▲ 0.7
Implied Daily Storage Activity	-17.6	-19.4	-19.3	-27.0	-19.8	-27.6	-7.9	
EIA Reported Daily Storage Activity	-16.3	-18.6	-19.1	-26.7	-18.3			
Daily Model Error	-1.3	-0.8	-0.2	-0.3	-1.5			

Monthly Balances

	2Yr Ago Jan-19	LY Jan-20	Sep-20	Oct-20	Nov-20	Dec-20	MTD Jan-21	MoM	vs. LY
Lower 48 Dry Production	87.3	94.1	88.0	87.3	91.0	91.9	91.6	▼ -0.3	▼ -2.5
Canadian Imports	5.9	4.8	3.8	4.3	4.6	5.8	6.2	▲ 0.3	▲ 1.3
L48 Power	27.2	29.9	34.2	30.8	25.7	28.1	28.7	▲ 0.6	▼ -1.2
L48 Residential & Commercial	48.0	41.1	8.9	14.9	24.2	40.1	43.8	▲ 3.7	▲ 2.6
L48 Industrial	24.3	24.8	19.4	22.1	22.7	24.0	24.1	▲ 0.1	▼ -0.7
L48 Lease and Plant Fuel	4.9	5.2	4.9	4.9	5.0	5.1	5.1	▼ 0.0	▼ -0.1
L48 Pipeline Distribution	3.4	3.2	2.2	2.3	2.5	3.1	3.3	▲ 0.2	▲ 0.1
L48 Regional Gas Consumption	107.8	104.3	69.6	75.0	80.1	100.3	104.9	▲ 4.6	▲ 0.6
Net LNG Exports	4.1	8.4	6.0	8.0	10.1	11.0	10.5	▼ -0.5	▲ 2.1
Total Mexican Exports	5.0	5.2	6.4	6.2	6.2	6.0	6.1	▲ 0.2	▲ 0.9
Implied Daily Storage Activity	-23.7	-19.0	9.9	2.4	-0.8	-19.6	-23.8		
EIA Reported Daily Storage Activity									
Daily Model Error									

Source: Bloomberg, analytix.ai

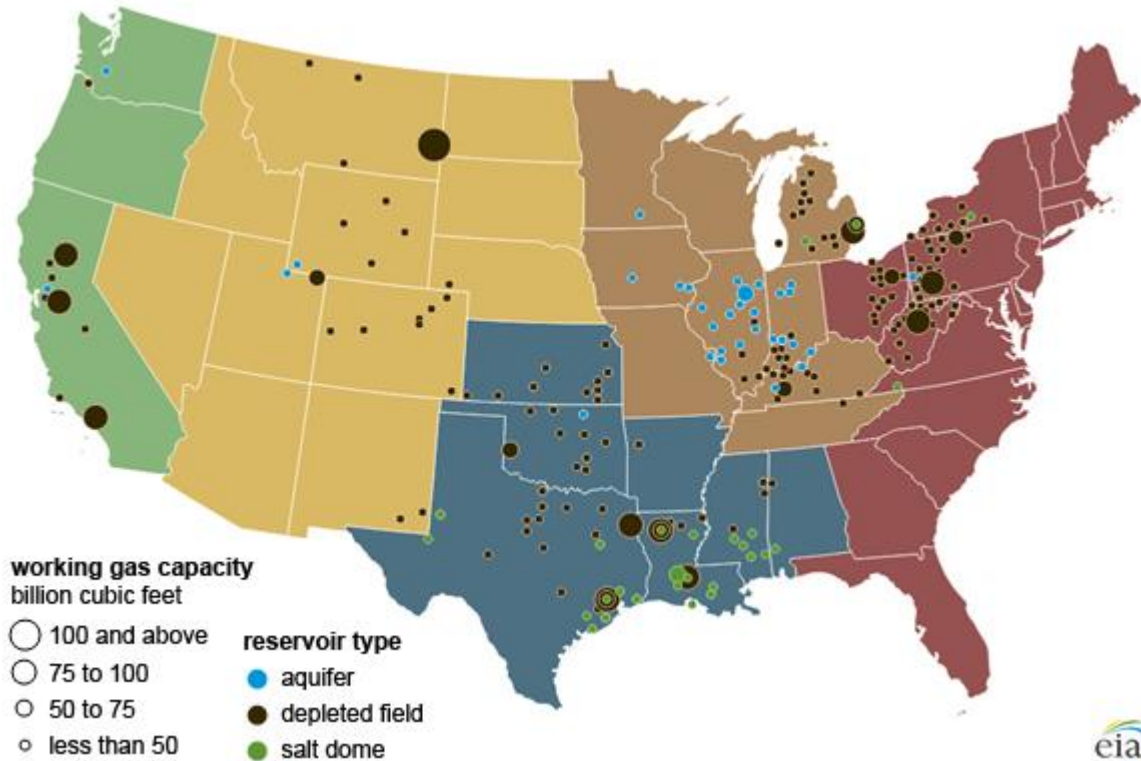
Regional S/D Models Storage Projection

Week Ending 29-Jan

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	-27.9	1.1	-26.8	-188
East	-10.3	2.0	-8.2	-58
Midwest	-9.1	0.1	-9.0	-63
Mountain	1.5	-3.2	-1.7	-12
South Central	-8.2	2.4	-5.9	-41
Pacific	-1.8	-0.2	-2.0	-14

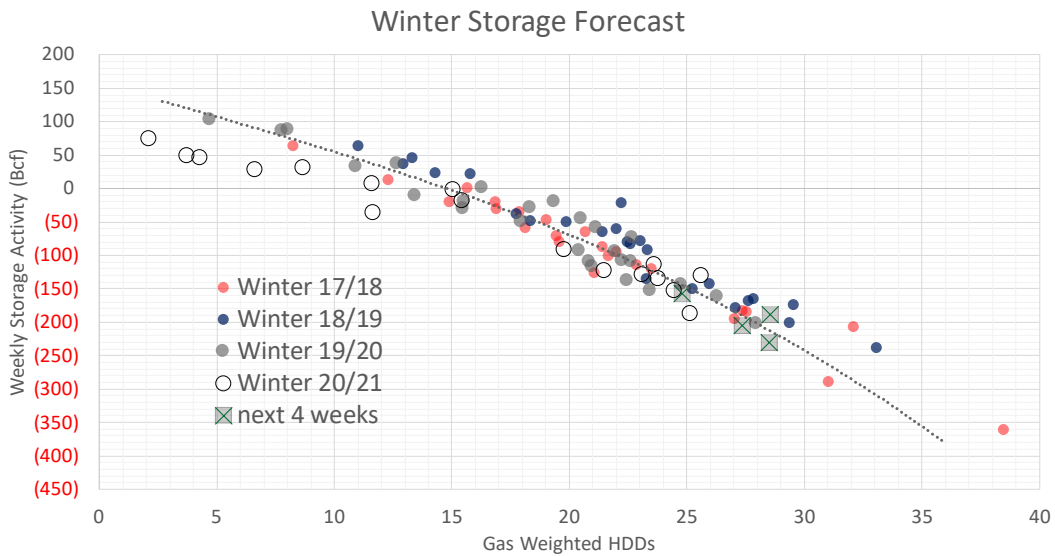
*Adjustment Factor is calculated based on historical regional deltas

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



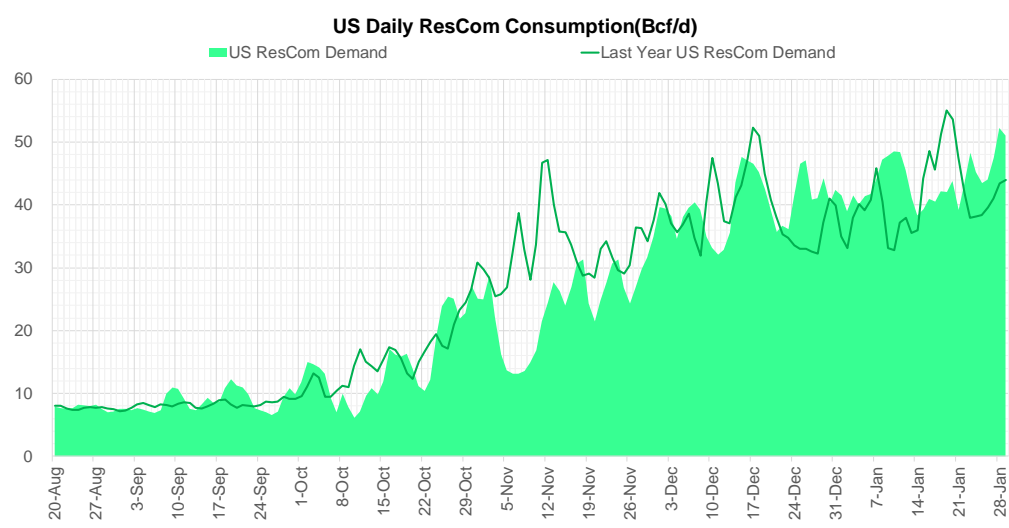
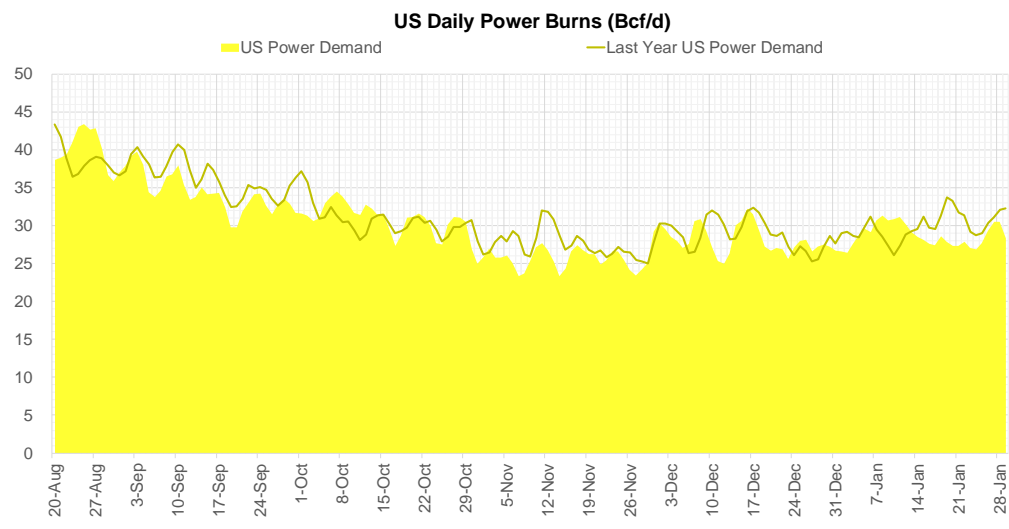
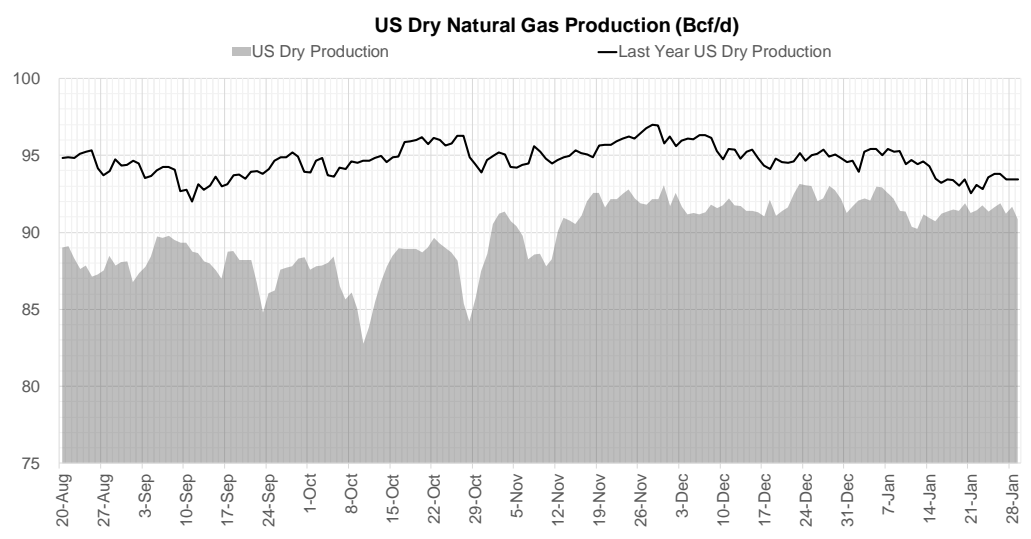
Weather Model Storage Projection

Next report and beyond		
Week Ending	Temp	Week Storage Projection
05-Feb	27.4	-205
12-Feb	28.5	-230
19-Feb	24.8	-157



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

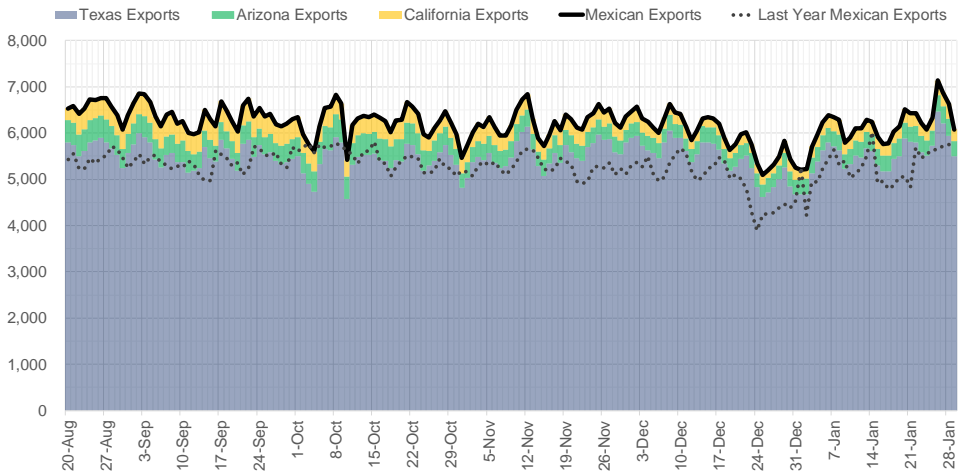
Supply – Demand Trends



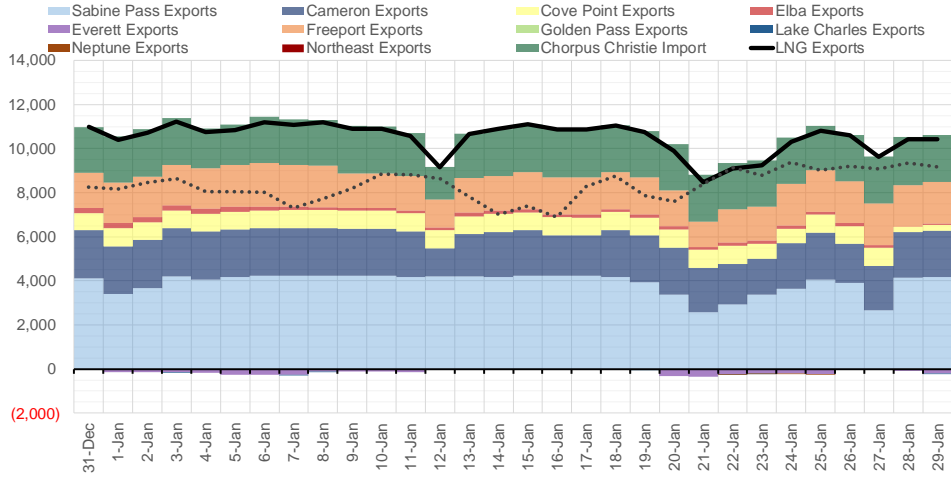
Source: Bloomberg

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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

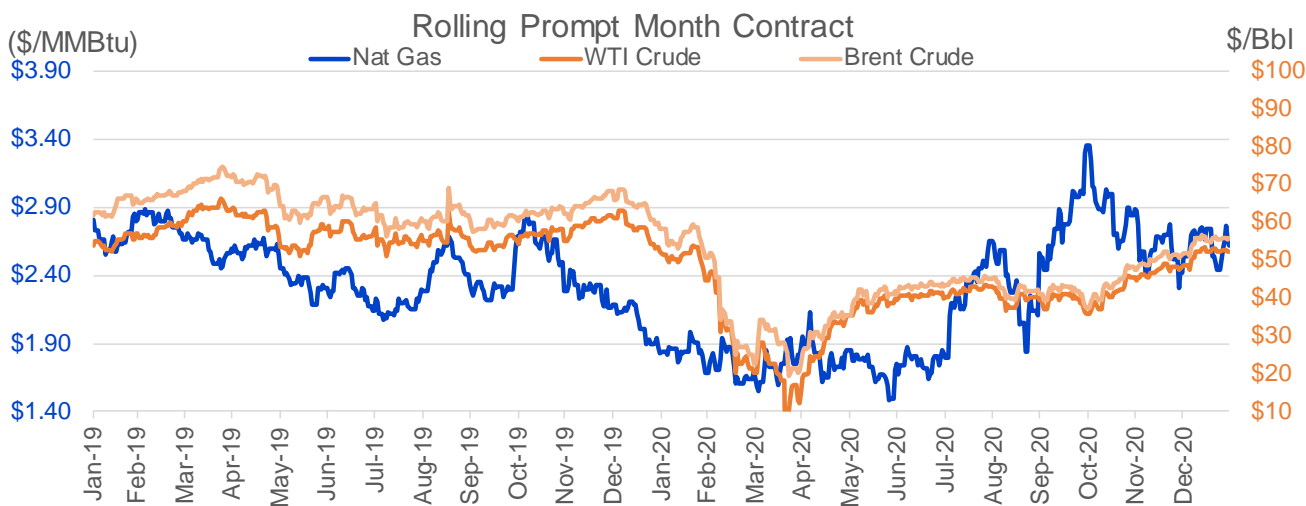
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
3	2021	C	3.00	9952	3	2021	C	3.50	64008
3	2021	C	3.50	8839	4	2021	C	3.00	48534
3	2021	P	2.50	5755	3	2021	P	2.00	44068
3	2021	C	3.25	5093	3	2021	C	3.00	43429
3	2021	P	2.25	4739	3	2021	C	3.25	43087
3	2021	P	2.00	4605	3	2021	C	4.00	40292
5	2021	P	2.50	3882	4	2021	C	4.00	36816
3	2021	C	2.85	3801	3	2021	C	5.00	32187
4	2021	C	3.75	3223	10	2021	C	4.00	30891
4	2021	C	4.00	3205	4	2021	P	2.00	28237
5	2021	C	3.75	3200	3	2021	C	4.50	27091
5	2021	C	4.00	3200	3	2021	P	2.50	26957
6	2021	C	3.75	3200	10	2021	C	3.25	26123
6	2021	C	4.00	3200	3	2021	C	6.00	24838
7	2021	C	3.75	3200	3	2021	P	2.25	24668
7	2021	C	4.00	3200	4	2021	C	2.75	22148
7	2021	C	3.50	2790	3	2021	C	7.00	21565
6	2021	P	2.50	2600	6	2021	C	4.00	21063
4	2021	C	3.50	2501	8	2021	C	4.00	20473
3	2021	P	2.40	2396	8	2021	P	2.25	20202
3	2021	C	2.75	2314	10	2021	C	5.00	19726
3	2021	P	1.75	2313	5	2021	C	3.00	19264
5	2021	P	2.25	2184	4	2021	C	5.00	18864
4	2021	C	3.00	2106	4	2021	C	3.50	18758
5	2021	C	3.50	2086	4	2021	P	2.50	18366
10	2021	C	3.00	1950	4	2021	P	2.25	18284
3	2021	C	3.75	1843	7	2021	C	4.00	18080
6	2021	C	3.50	1790	5	2021	P	2.00	17548
6	2021	P	2.25	1655	4	2021	C	3.25	17193
4	2021	C	3.25	1629	10	2021	P	2.00	17072
4	2021	P	2.50	1621	5	2021	C	3.25	16961
5	2021	C	3.00	1614	5	2021	C	4.00	16872
3	2021	P	2.60	1555	5	2021	C	3.50	16352
6	2021	C	3.00	1503	5	2021	P	2.50	15951
5	2021	P	2.00	1501	4	2021	C	2.50	15740
4	2021	P	2.25	1442	10	2021	C	3.00	15706
10	2021	C	3.25	1328	6	2021	P	2.50	15559
5	2021	C	3.25	1231	10	2021	P	2.50	15422
4	2021	P	2.10	1208	12	2021	C	4.00	15408
3	2021	C	2.70	1179	8	2021	C	3.50	15195
5	2021	P	2.10	1151	10	2021	C	3.50	15043
6	2021	P	2.10	1150	4	2022	C	3.00	14888
7	2021	P	2.10	1140	11	2021	C	4.00	14690
8	2021	P	2.10	1140	8	2021	P	2.00	14535
9	2021	P	2.10	1140	3	2021	C	2.75	14506
10	2021	P	2.10	1140	3	2021	P	2.10	14006
6	2021	C	3.25	1100	9	2021	C	3.50	13013
4	2021	C	2.75	1015	6	2021	P	2.00	12950
7	2021	P	2.50	950	3	2021	C	3.75	12833
					6	2021	C	3.25	12828

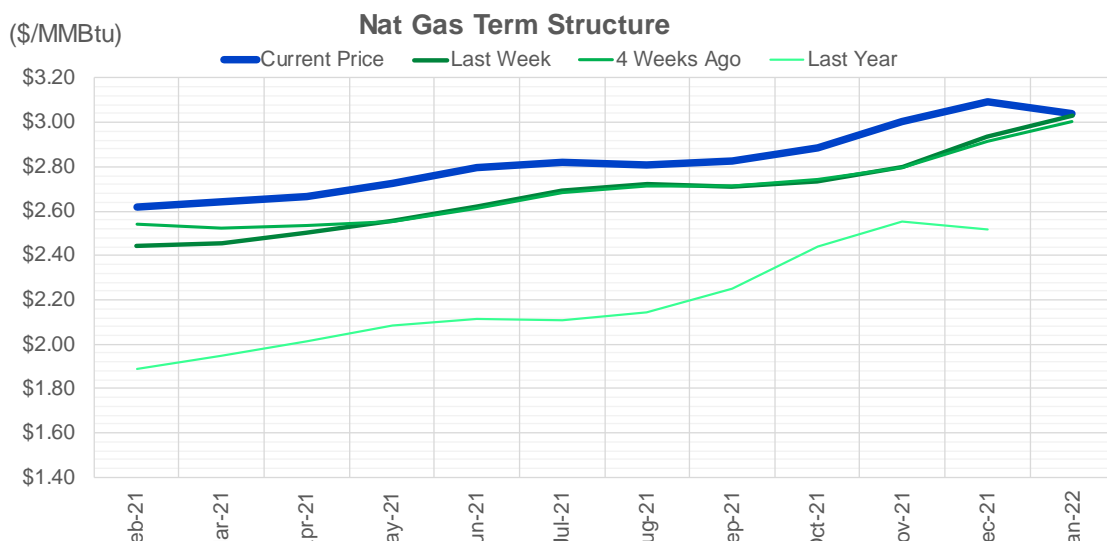
Source: CME, Nasdaq, ICE

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
MAR 21	307676	126	307550	MAR 21	95514	72947	22567
APR 21	115654	318811	-203157	APR 21	88136	95210	-7074
MAY 21	88347	116358	-28011	MAY 21	79753	88083	-8330
JUN 21	46127	89193	-43066	JUN 21	66485	79598	-13114
JUL 21	48431	45971	2460	JUL 21	68598	66246	2352
AUG 21	31464	47909	-16445	AUG 21	68733	68244	489
SEP 21	54713	31565	23148	SEP 21	64066	68518	-4452
OCT 21	115701	54049	61652	OCT 21	84887	64108	20779
NOV 21	40516	115469	-74953	NOV 21	52824	84665	-31841
DEC 21	42198	40572	1626	DEC 21	54297	52760	1537
JAN 22	46201	42201	4000	JAN 22	51627	54294	-2668
FEB 22	23302	47165	-23863	FEB 22	38077	51258	-13181
MAR 22	30127	23931	6196	MAR 22	41216	37991	3225
APR 22	31325	29659	1666	APR 22	39484	41008	-1523
MAY 22	13966	30580	-16614	MAY 22	34173	39351	-5179
JUN 22	8901	13834	-4933	JUN 22	33030	34086	-1055
JUL 22	6956	8684	-1728	JUL 22	33668	32969	700
AUG 22	5817	6721	-904	AUG 22	32072	33498	-1426
SEP 22	5870	5590	280	SEP 22	33012	32016	997
OCT 22	13074	5735	7339	OCT 22	37686	32942	4745
NOV 22	6128	13081	-6953	NOV 22	30451	37576	-7125
DEC 22	7486	5966	1520	DEC 22	33723	30377	3347
JAN 23	5266	7511	-2245	JAN 23	17450	33614	-16164
FEB 23	1525	5231	-3706	FEB 23	16248	17411	-1163
MAR 23	2644	1510	1134	MAR 23	16707	16205	503
APR 23	3751	2649	1102	APR 23	14377	16384	-2007
MAY 23	2287	3757	-1470	MAY 23	14101	14372	-271
JUN 23	744	2287	-1543	JUN 23	13489	14088	-599
JUL 23	818	744	74	JUL 23	13190	13496	-306
AUG 23	573	818	-245	AUG 23	13295	13190	105

Source: CME, ICE






	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22
Current Price	\$2.617	\$2.639	\$2.668	\$2.726	\$2.796	\$2.817	\$2.806	\$2.828	\$2.885	\$3.006	\$3.093	\$3.038
Last Week	\$2.446	\$2.456	\$2.503	\$2.557	\$2.623	\$2.694	\$2.721	\$2.712	\$2.735	\$2.801	\$2.935	\$3.030
vs. Last Week	\$0.171	\$0.183	\$0.165	\$0.169	\$0.173	\$0.123	\$0.085	\$0.116	\$0.150	\$0.205	\$0.158	\$0.008
4 Weeks Ago	\$2.539	\$2.526	\$2.538	\$2.555	\$2.611	\$2.685	\$2.715	\$2.712	\$2.741	\$2.796	\$2.913	\$3.006
vs. 4 Weeks Ago	\$0.078	\$0.113	\$0.130	\$0.171	\$0.185	\$0.132	\$0.091	\$0.116	\$0.144	\$0.210	\$0.180	\$0.032
Last Year	\$1.841	\$1.886	\$1.946	\$2.015	\$2.086	\$2.115	\$2.111	\$2.142	\$2.252	\$2.442	\$2.552	\$2.520
vs. Last Year	\$0.776	\$0.753	\$0.722	\$0.711	\$0.710	\$0.702	\$0.695	\$0.686	\$0.633	\$0.564	\$0.541	\$0.518

	Units	Current Price	vs. Last Week	vs. 4 Weeks Ago	vs. Last Year
NatGas Jan21/Apr21	\$/MMBtu	0.172	▲ 0.136	▲ 0.101	▲ 0.511
NatGas Mar21/Apr21	\$/MMBtu	0.022	▼ -0.025	▲ 0.034	▼ -0.191
NatGas Oct21/Nov21	\$/MMBtu	0.057	▼ -0.009	▲ 0.002	▼ -0.009
NatGas Apr21/Oct21	\$/MMBtu	0.189	▲ 0.457	▲ 0.463	▼ -0.077
WTI Crude	\$/Bbl	52.25	▼ -0.020	▲ 3.730	▲ 0.690
Brent Crude	\$/Bbl	55.93	▲ 0.520	▲ 4.130	▼ -2.230
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	▲ 0.000	▲ 0.000	▲ 0.000
Heating Oil	cents/Gallon	160.03	▲ 2.430	▲ 12.400	▼ -2.420
Propane, Mt. Bel	cents/Gallon	0.87	▲ 0.008	▲ 0.229	▲ 0.446
Ethane, Mt. Bel	cents/Gallon	0.24	▲ 0.005	▲ 0.036	▲ 0.086
Coal, PRB	\$/MTon	12.30	▲ 0.000	▲ 0.000	▲ 0.050
Coal, PRB	\$/MMBtu	0.70			

Source: CME, Bloomberg

Baker Hughes Rig Counts

Rotary Rig Count						Baker Hughes 
1/29/2021						
U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago	
Oil	295	6	289	-380	675	
Gas	88	0	88	-24	112	
Miscellaneous	1	0	1	-2	3	
Directional	18	-4	22	-27	45	
Horizontal	344	6	338	-367	711	
Vertical	22	4	18	-12	34	
Canada Breakout	This Week	+/-	Last Week	+/-	Year Ago	
Oil	98	2	96	-59	157	
Gas	76	0	76	-14	90	
Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago	
Ardmore Woodford	0	0	0	-4	4	
Arkoma Woodford	0	0	0	-2	2	
Barnett	1	0	1	0	1	
Cana Woodford	10	0	10	-9	19	
DJ-Niobrara	7	0	7	-13	20	
Eagle Ford	28	0	28	-42	70	
Granite Wash	0	0	0	-1	1	
Haynesville	45	0	45	4	41	
Marcellus	30	0	30	-10	40	
Mississippian	0	0	0	-2	2	
Permian	192	4	188	-214	406	
Utica	5	0	5	-6	11	
Williston	12	1	11	-41	53	