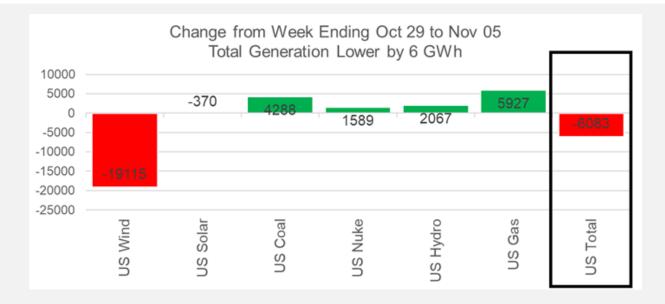
The EIA reported a +63 Bcf injection for week ending Oct 29, which was lower than the market consensus by ~3 Bcf. This is now the 7th week in a row where the injection exceeded both LY and the 5Yr average injection levels. The total storage injections benefited from strong production levels even as season heating demand kicked in. Last year, we had a net draw in storage for the same week but that was with a different S&D make up. The following table compares the last week of October from last year to this year. We can see that cooler temperatures last year resulted in heating demand levels well above this year, while production was also much lower. The net balances were ~14 Bcf/d looser this year.

EIA Otoruge Week Bulances			
	LY	Current	
	30-Oct	29-Oct	YoY
Lower 48 Dry Production	88.3	94.0	5.8
Canadian Imports	4.6	5.6	1.0
L48 Power	29.6	29.0	- 0.6
L48 Residential & Commercial	21.8	17.7	▼ -4.2
L48 Industrial	24.2	18.9	💌 -5.3
L48 Lease and Plant Fuel	4.8	5.1	🔺 0.3
L48 Pipeline Distribution	2.7	2.5	T -0.3
L48 Regional Gas Consumption	83.2	73.2	▼-10.0
Net LNG Exports	9.2	10.8	1.6
Total Mexican Exports	6.0	6.9	a 0.9
Implied Daily Storage Activity	-5.5	8.7	14.3

EIA Storage Week Balances

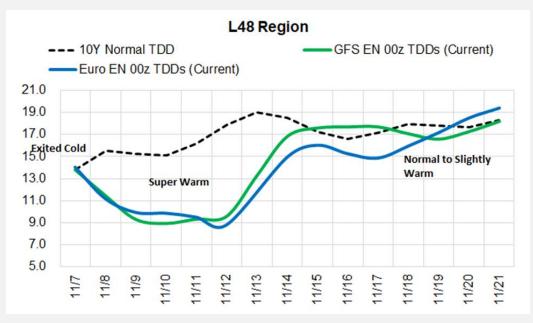
For the week ending Oct 28, our early view is +9 Bcf. Our projected injection would take the L48 storage level to 3620 Bcf (-313 vs LY, -101 vs. 5Yr). There were a lot of moving pieces in the balances this week, with demand being the most notable.

Typically, by this time of the year, power generation is not as important of a factor to track because this is typically the shoulder season. That has now changed with the immense growth and variability in wind. After 3 strong weeks of wind generation, this past week saw an almost 40% dip in wind output leading to other generation types picking up the slack; hence despite fewer CDDs WoW, we see natural gas generation slightly pick up.

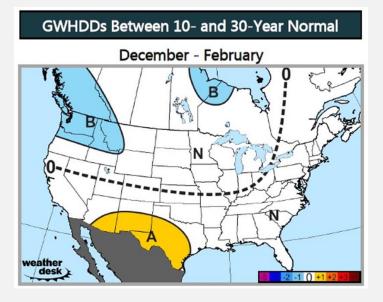


The other more predictable component of demand, rescomm & industrial, grew by a total of 8.5 Bcf/d WoW as HDDs increased by 4.2F WoW. We just exited a cooler than normal period but next week we have incoming warmth. There is risk in the 11-15 for cooler weather with many weather vendors suggesting that we could get much cooler mid-month. So this week we are expecting lower total consumption which could allow for one last storage injection week for the season.

The next 15 days are forecast to yield 231.7 GWHDDs, which is lower than normal but colder when compared to the 2nd ranked warm period observed last year (200.4 GWHDDs in 2020).



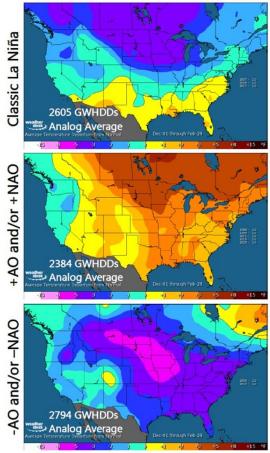
Here is Maxar's longer-term outlook as presented on enelyst on Friday:



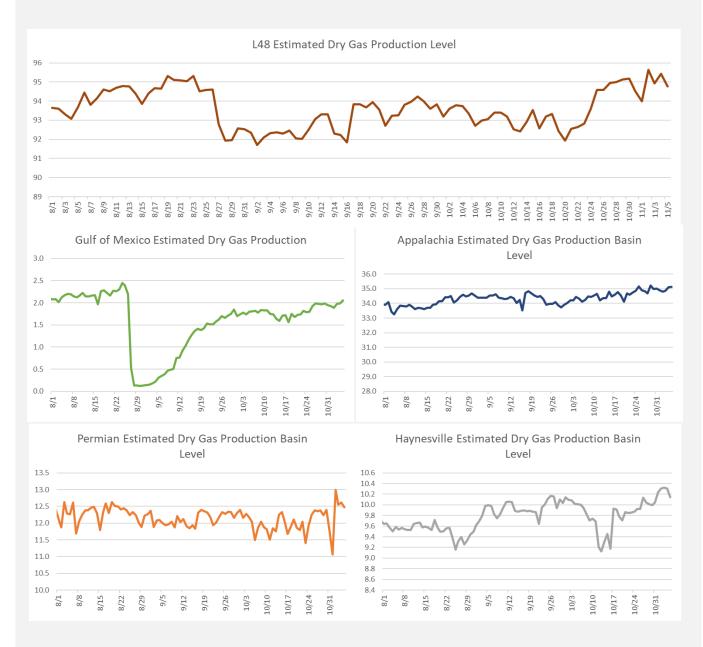
The models and continued cooling of subsurface waters suggest that La Niña will be maintained for the upcoming winter. La Niña correlates with a colder and wetter winter along the Northern Tier, while a warmer and drier season is associated with the forcing in the South. However, there are a wide range of solutions associated with recent La Niña winters, and most cases can be separated into three categories:

"The first is the 'classic La Niña', which are those cases matching historical pattern correlations. The second are those cases with anti-Arctic blocking (i.e. +AO and/or +NAO), and these are the much warmer winters from the Rockies points eastward. The third are those cases with Arctic blocking (i.e. –AO and/or –NAO), and these are typically much colder winters from the Rockies to the East Coast. Simply put, the Arctic state will matter for how winter evolves for this winter."

La Niña In Winter: Various Patterns

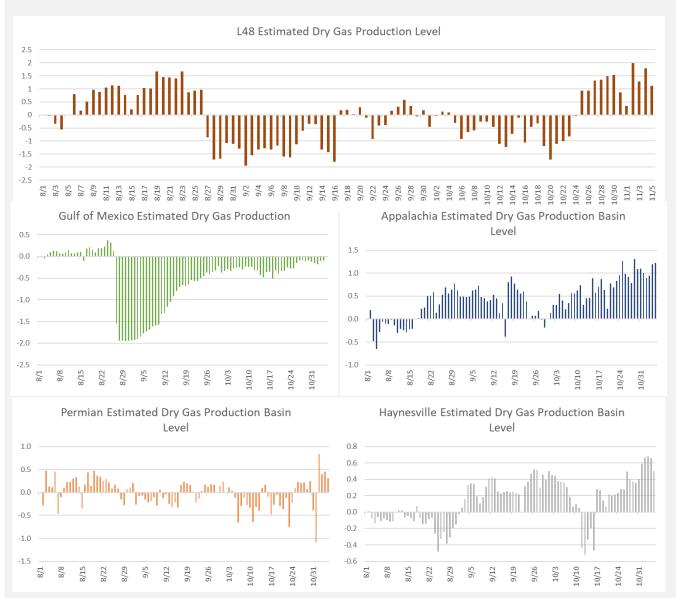


Domestic dry gas production made a significant move higher once again this week. Typically, we see unusual pipeline nominations at the beginning of the month; hence we were unsure if the move higher level was a result of that. As the week went on there was no significant revision, and production levels remained robust. We saw levels that we last saw in late-August before peak hurricane season shut-in GoM prod rigs and onshore processing capacity.



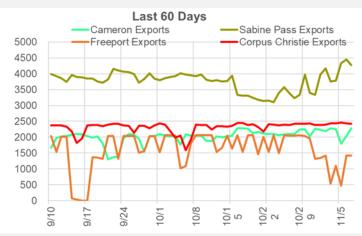
JERG

We took the same date and pinned the daily fluctuation to the level set on Aug 1st. In this series of charts, we can more clearly see that GoM production has returned, while all the growth has come from the Haynesville and the App basin.

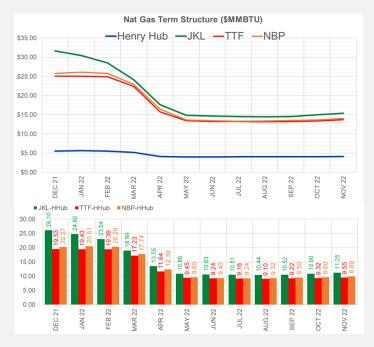


For last week, we observed production grow by 0.9 Bcf/d week-on-week to 95 Bcf/d. All the weekly growth came from the South Central.

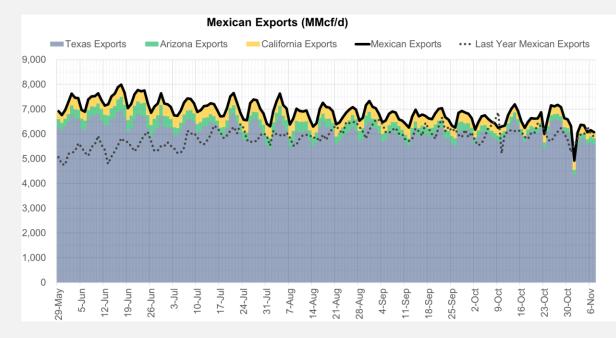
Deliveries to LNG facilities averaged 10.9 Bcf/d, which was slightly higher than last week. Freeport having an unplanned maintenance event. According to Criterion Research, "the facility was forced to take down their pretreatment train after an incident Sunday", and they expect that unit to be offline until today. Sabine has been ramping up the last few days to make up for some of the lost feedgas volumes to Freeport. Yesterday's total volumes hit 4.45 Bcf/d to Sabine which is near its record levels.



We anticipate all LNG facilities to operate at high levels throughout the winter with global spreads remaining very wide.



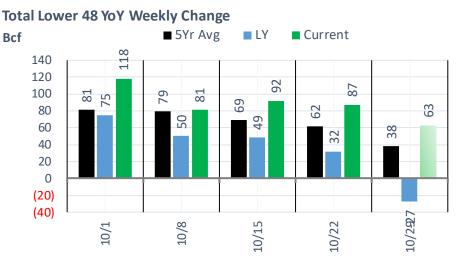
Deliveries to Mexico were also notable this week as we saw the seasonal drop begin. Mexico's natural gas demand is all related to industrial and power generation, with no requirements for heating. Total pipeline deliveries averaged 6.2 Bcf, or 0.7 Bcf/d lower than the previous week. Mexico currently has very limited underground storage and hence daily flows can be volatile to match daily demand. One more thing to note about Mexican exports is that we could see stronger pipeline flows this winter with Mexico opting to use the existing pipeline capacity over the more expensive imports into the Altamira facility.



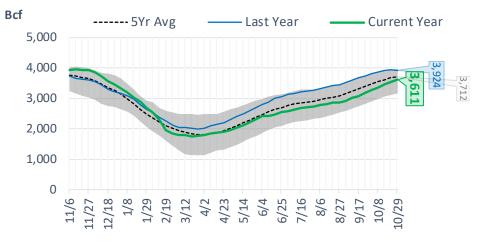
One more item to note this week:

The California Public Utilities Commission voted unanimously to increase the storage capacity of the underground Aliso Canyon field to 41 billion cubic feet (1.1 billion cubic meters) of natural gas from the current capacity of 34 billion cubic feet (962 million cubic meters).

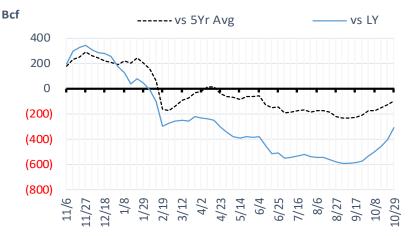
EIA Storage Report







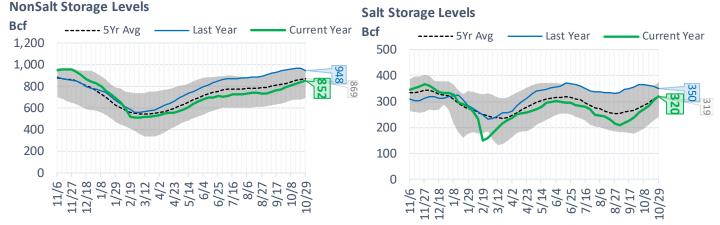




Natural Gas Storage Stats - Last 5 Weeks

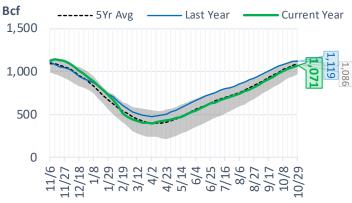
	Current	Week - 1	Week - 2	Week - 3	Week - 4	Week - 5
Week Ending	29-Oct	22-Oct	15-Oct	8-Oct	1-Oct	24-Sep
Total Lower 48 Storage Level	3611	3548	3461	3369	3288	3170
Weekly Change	+63	+87	+92	+81	+118	+88
vs LY	-313	-403	-458	-501	-532	-575
vs 5Yr Avg	-101	-126	-151	-174	-176	-213
S. Central Salt Storage Level	320	304	283	269	259	239
Weekly Change	+16	+21	+14	+10	+20	+11
vs LY	-30	-56	-78	-97	-106	-118
vs 5Yr Avg	+1	-4	-10	-14	-15	-27
S. Central NonSalt Storage Level	852	840	825	810	795	774
Weekly Change	+12	+15	+15	+15	+21	+12
vs LY	-96	-128	-143	-149	-159	-169
vs 5Yr Avg	-17	-25	-30	-33	-35	-45
Midwest Storage Level	1071	1052	1027	997	971	934
Weekly Change	+19	+25	+30	+26	+37	+30
vs LY	-48	-64	-75	-81	-87	-96
vs 5Yr Avg	-15	-18	-20	-23	-19	-24
East Storage Level	899	885	862	834	810	779
Weekly Change	+14	+23	+28	+24	+31	+28
vs LY	-47	-53	-59	-72	-80	-90
vs 5Yr Avg	-14	-21	-30	-42	-45	-52
Mountain Storage Level	213	212	211	210	206	201
Weekly Change	+1	+1	+1	+4	+5	+5
vs LY	-28	-33	-33	-30	-29	-29
vs 5Yr Avg	-8	-9	-8	-7	-9	-10
Pacific Storage Level	256	255	253	251	248	243
Weekly Change	+1	+2	+2	+3	+5	+3
vs LY	-64	-68	-70	-69	-70	-72
vs 5Yr Avg	-48	-50	-52	-52	-53	-55

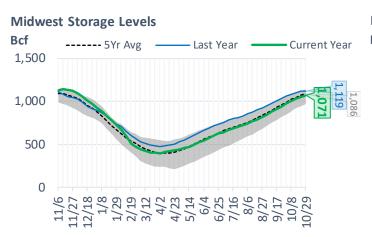




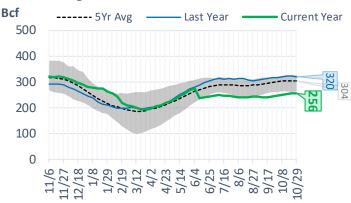


Midwest Storage Levels





Pacific Storage Levels



EIA Storage Week Balances

	1-Oct	8-Oct	15-Oct	22-Oct	29-Oct	5-Nov	WoW	vs. 4W
Lower 48 Dry Production	93.8	93.3	93.0	92.8	94.0	95.0	0.9	1.7
Canadian Imports	5.7	5.3	5.0	5.6	5.6	5.5	T -0.1	0.1
L48 Power	30.3	32.9	31.7	29.0	29.0	29.3	a 0.3	T -1.3
L48 Residential & Commercial	8.4	8.2	9.5	13.9	17.7	24.0	6 .3	11.7
L48 Industrial	20.5	22.3	19.9	18.8	18.9	21.1	2 .2	1.2
L48 Lease and Plant Fuel	5.1	5.1	5.1	5.1	5.1	5.2	0.0	a 0.1
L48 Pipeline Distribution	2.1	2.2	2.2	2.3	2.5	2.8	0 .4	0.5
L48 Regional Gas Consumption	66.5	70.6	68.4	69.0	73.2	82.4	9.2	12.1
Net LNG Exports	10.3	9.9	10.7	10.8	10.8	10.9	0.1	0.3
Total Mexican Exports	6.7	6.6	6.6	6.6	6.9	6.2	▼ -0.7	▼ -0.5
Implied Daily Storage Activity	16.0	11.6	12.2	12.0	8.7	1.0	-7.8	
EIA Reported Daily Storage Activity Daily Model Error	16.9 -0.8	11.6 0.0	13.1 -0.9	12.4 -0.5	9.0 -0.3			

Monthly Balances

	2Yr Ago	LY					MTD		
	Nov-19	Nov-20	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	МоМ	vs. LY
Lower 48 Dry Production	96.2	91.1	93.6	94.1	93.0	93.4	94.9	A 1.5	3.9
Canadian Imports	4.5	4.6	5.2	5.1	5.1	5.4	5.4	▼ 0.0	0.8
L48 Power	27.5	25.7	39.4	40.1	33.1	30.3	30.8	a 0.5	5 .1
L48 Residential & Commercial	32.8	24.4	8.1	7.8	7.7	12.9	28.2	15.3	3.8
L48 Industrial	24.9	22.5	21.2	21.7	20.8	20.0	21.6	1 .6	V -0.8
L48 Lease and Plant Fuel	5.2	5.0	5.1	5.1	5.1	5.1	5.2	A 0.1	a 0.2
L48 Pipeline Distribution	3.0	2.7	2.5	2.6	2.2	2.3	3.1	a 0.8	a 0.5
L48 Regional Gas Consumption	93.5	80.2	76.3	77.3	68.9	70.6	89.0	18.4	8.8
Net LNG Exports	7.2	10.1	10.8	10.5	10.3	10.6	10.7	0.1	0.6
Total Mexican Exports	5.2	6.1	7.1	6.9	6.7	6.6	6.0	-0.7	T-0.1
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	-5.1	-0.7	4.6	4.5	12.1	11.0	-5.3		

Source: Bloomberg, analytix.ai

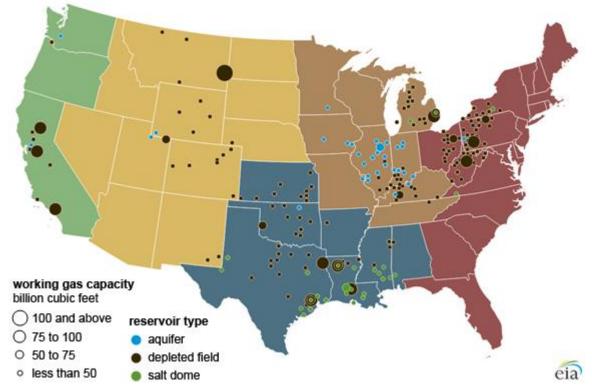


Regional S/D Models Storage Projection

Week Ending	5-Nov			
			Daily	
			Average	Weekly
		Daily	Storage	Adjusted
	Daily Raw	Adjustment	Activity	Storage
	Storage	Factor	(Adjusted) *	Activity
L48	0.7	0.7	1.3	9
East	-0.3	-0.1	-0.4	-3
Midwest	-0.8	0.6	-0.2	-1
Mountain	3.1	-3.2	-0.1	-1
South Central	-1.8	3.7	1.9	13
Pacific	0.5	-0.3	0.1	1

*Adjustment Factor is calcuated based on historical regional deltas

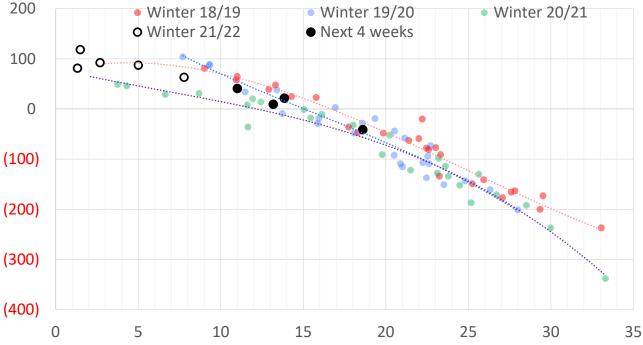
U.S. underground natural gas storage facilities by type (July 2015)



Weather Model Storage Projection

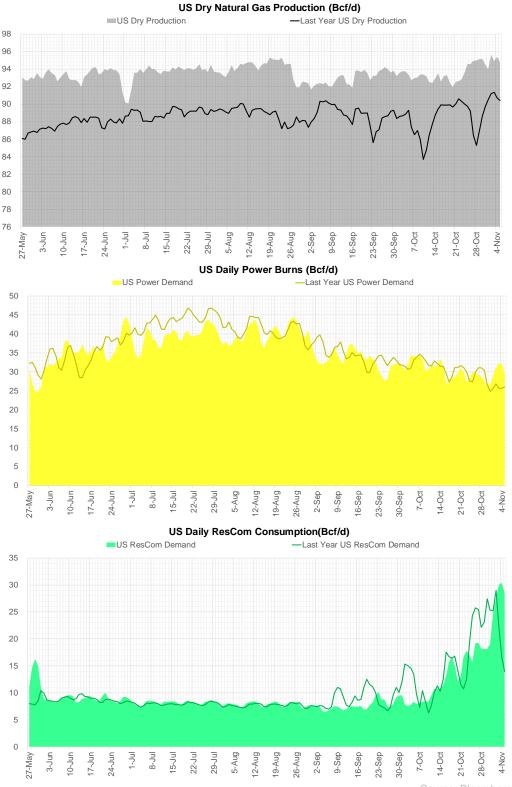
Next report and beyond		
Week Ending	GWDDs	Week Storage Projection
05-Nov	13.2	9
12-Nov	11	41
19-Nov	14	21
26-Nov	19	-41

Weather Storage Model - Next 4 Week Forecast



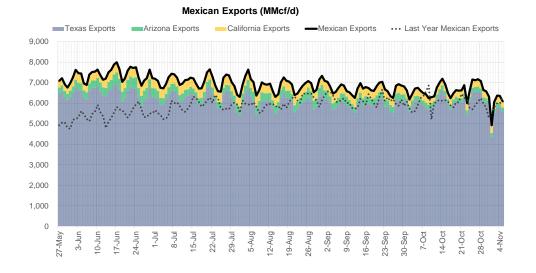
Note: this is not our official end of season forecast. This chart signifies where storage levels end with 10-year normal weather and current market tightness relative to last year

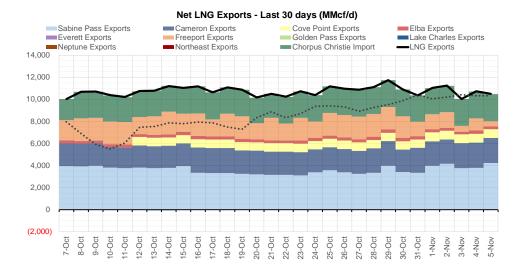




Source: Bloomberg







Source: Bloomberg



Nat Gas Options Volume and Open Interest

CME, ICE and	Nasdaq (Combined
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CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
1	2022	С	7.00	4262	12	2021	Р	2.75	54603
3	2022	С	8.00	4236	12	2021	Р	4.00	49643
12	2021	Р	5.50	4099	12	2021	Р	3.00	40231
2	2022	С	8.00	3660	12	2021	Р	2.50	39420
3	2022	С	10.00	3211	12	2021	Р	3.50	34541
1	2022	Р	4.00	3203	3	2022	С	10.00	31825
12	2021	С	6.00	3162	3	2022	С	8.00	25847
1	2022	С	8.00	3006	12	2021	Р	4.25	23733
1	2022	Р	3.50	2721	12	2021	Р	5.00	23501
12	2021	С	7.00	2714	1	2022	Р	3.00	23136
3	2022	С	7.00	2687	3	2022	С	5.00	23040
12	2021	С	6.50	2603	1	2022	Р	2.75	22914
2	2022	С	10.00	2526	12	2021	С	4.00	22526
1	2022	С	6.00	2286	12	2021	С	6.00	22052
12	2021	Р	5.40	2272	1	2022	С	6.00	21771
12	2021	Р	4.50	2260	3	2022	Р	3.00	20951
3	2022	Р	3.50	1839	4	2022	С	3.00	19710
12	2021	Р	4.00	1767	12	2021	С	8.00	18985
12	2021	P	5.00	1729	1	2022	Р	3.50	18982
12	2021	P	4.75	1633	12	2021	С	7.00	18741
3	2022	C	6.00	1543	3	2022	Р	3.50	18664
1	2022	P	3.40	1504	3	2022	Р	2.50	18561
2	2022	C	6.00	1501	1	2022	С	5.00	18056
3	2022	C	5.00	1293	3	2022	Р	4.00	17662
3	2022	c	9.00	1293	1	2022	Р	4.00	17431
2	2022	P	3.75	1260	2	2022	С	5.00	16863
12	2021	C.	6.25	1196	12	2021	Р	2.00	16834
12	2021	P	3.75	1109	1	2022	С	7.00	15704
12	2021	C	5.75	1079	3	2022	С	4.00	15631
12	2021	c	7.50	949	2	2022	Р	3.50	15625
12	2021	c	8.00	933	4	2022	Р	2.50	15514
3	2021	c	20.00	820	4	2022	С	5.00	15195
2	2022	P	4.75	801	12	2022	С	5.00	15132
12	2022	P	4.75	770	12	2021	Р	4.50	14929
1	2021	P	4.25 4.50	762	2	2022	Р	4.00	14483
12	2022	F C	4.50 6.75	649	1	2022	С	4.00	14408
2	2021	P	3.50	624	5	2022	С	3.00	13733
2	2022	P P	3.50 5.00		3	2022	С	7.00	13495
1	2022	P C	5.00 6.50	618 614	6	2022	С	3.00	13438
		P			1	2022	С	10.00	13400
2	2022		4.00	613	12	2022	С	4.50	13367
1 1	2022	P	4.75	606	1	2022	Р	3.25	13279
	2022	С	7.50	590	3	2022	Р	5.00	13263
1	2022	С	10.00	577	12	2022	С	5.25	13263
12	2021	P	5.25	555	7	2022	С	3.00	13230
12	2021	С	10.00	553	8	2022	С	3.00	13226
5	2022	P	2.75	550	9	2022	С	3.00	13225
12	2021	С	12.00	532	12	2021	С	15.00	13219
12	2021	С	5.50	525	3	2022	С	3.00	13177
1	2022	С	5.75	507	2	2022	С	6	13173.75

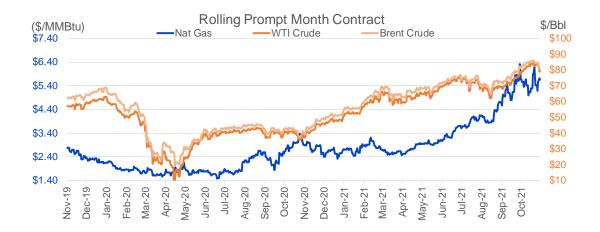
Source: CME, Nasdaq, ICE

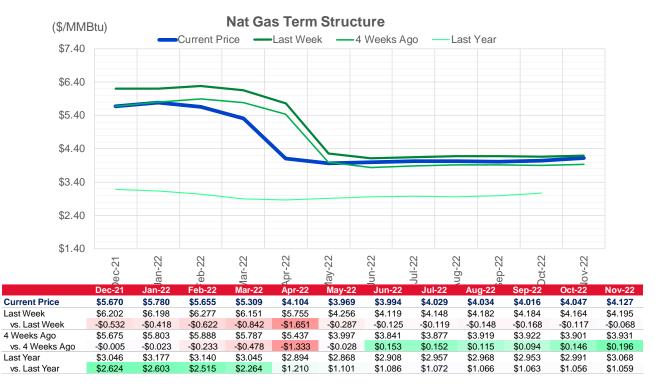


Nat Gas Futures Open Interest CME, ICE and Nasdaq Combined

CME Henry H	Hub Futures (1	0,000 MMBt	L)	ICE Henry I	Hub Futures Con	tract Equiva	alent (10,000 MN
	Current	Prior	Daily Change		Current	Prior	Daily Change
DEC 21	140104	142203	-2099	DEC 21	90764	91300	-536
JAN 22	214960	213106	1854	JAN 22	85366	85343	23
FEB 22	75864	75934	-70	FEB 22	69631	69253	378
MAR 22	163798	162827	971	MAR 22	78797	79214	-418
APR 22	116121	114684	1437	APR 22	78123	78567	-444
MAY 22	126447	125261	1186	MAY 22	71766	71719	47
JUN 22	44996	43255	1741	JUN 22	55806	55742	64
JUL 22	38625	37551	1074	JUL 22	58183	57771	412
AUG 22	31122	31426	-304	AUG 22	56838	56855	-17
SEP 22	35441	34547	894	SEP 22	57383	57438	-55
OCT 22	86704	86978	-274	OCT 22	62889	62903	-14
NOV 22	34778	34712	66	NOV 22	49455	49267	188
DEC 22	28130	27868	262	DEC 22	52238	52305	-67
JAN 23	31138	31452	-314	JAN 23	40250	40232	18
FEB 23	11290	11158	132	FEB 23	33372	33419	-47
MAR 23	19006	18978	28	MAR 23	36111	35905	206
APR 23	15921	15816	105	APR 23	36488	36501	-13
MAY 23	9619	9478	141	MAY 23	35605	35490	116
JUN 23	7676	7605	71	JUN 23	31744	31565	180
JUL 23	5415	5393	22	JUL 23	31830	31744	87
AUG 23	4230	4196	34	AUG 23	32801	32714	87
SEP 23	5599	5590	9	SEP 23	30887	30702	185
OCT 23	10328	10212	116	OCT 23	34618	34706	-88
NOV 23	4361	4301	60	NOV 23	33172	33167	5
DEC 23	7706	7647	59	DEC 23	30745	30765	-20
JAN 24	4760	4761	-1	JAN 24	19291	18733	559
FEB 24	1442	1442	0	FEB 24	14777	14520	256
MAR 24	8916	8909	7	MAR 24	19650	19219	432
APR 24	5607	5602	5	APR 24	13894	13512	382
MAY 24	1831	1831	0	MAY 24	14541	14165	377

Source: CME, ICE





				vs. 4 Weeks	
	Units	Current Price	vs. Last Week	Ago	vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224	a 0.000	a 0.000	a 2.182
NatGas Oct21/Nov21	\$/MMBtu	0.361	0.000	a 0.525	a 0.278
NatGas Oct21/Jan22	\$/MMBtu	-0.015	-0.045	-0.084	- 0.352
NatGas Apr22/Oct22	\$/MMBtu	-0.042	-0.017	a 0.019	-0.069
WTICrude	\$/Bbl	78.81	-4.000	a 0.510	4 0.020
Brent Crude	\$/Bbl	80.54	-3.780	- 1.410	a 39.610
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	0.000	a 0.000	0.000
Heating Oil	cents/Gallon	240.66	- 10.990	-5.300	123.700
Propane, Mt. Bel	cents/Gallon	1.37	-0.079	- 0.104	a 0.805
Ethane, Mt. Bel	cents/Gallon	0.43	-0.002	-0.004	a 0.206
Coal, PRB	\$/MTon	12.30	a 0.000	a 0.000	a 0.000
Coal, PRB	\$/MMBtu	0.70			

Source: CME, Bloomberg



Baker Hughes Rig Counts

	Baker	Hughes ≽			
U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago
Oil	450	6	444	224	226
Gas	100	0	100	29	71
Miscellaneous	0	0	0	-3	3
Directional	33	1	32	14	19
Horizontal	492	9	483	233	259
Vertical	25	-4	29	3	22
Canada Breakout	This Week	+/-	Last Week	+/-	Year Ago
Oil	95	-3	98	58	27
Gas	95 65	-3 -3	98 68	58 16	37 49
Major Basin Variances	This Week	+/-	Last Week	+/-	_
Major Basin variances	THIS WEEK	+/-		+/-	Year Ago
Ardmore Woodford	2	0	2	2	0
Arkoma Woodford	- 3	1	2	- 3	0
Cana Woodford	22	0	22	12	10
DJ-Niobrara	12	0	12	9	3
Eagle Ford	40	0	40	21	19
Granite Wash	3	0	3	3	0
Haynesville	46	0	46	9	37
Marcellus	28	1	27	3	25
Mississippian	0	-1	1	0	0
Permian	271	3	268	124	147
Utica	10	0	10	5	5
Williston	24	0	24	12	12