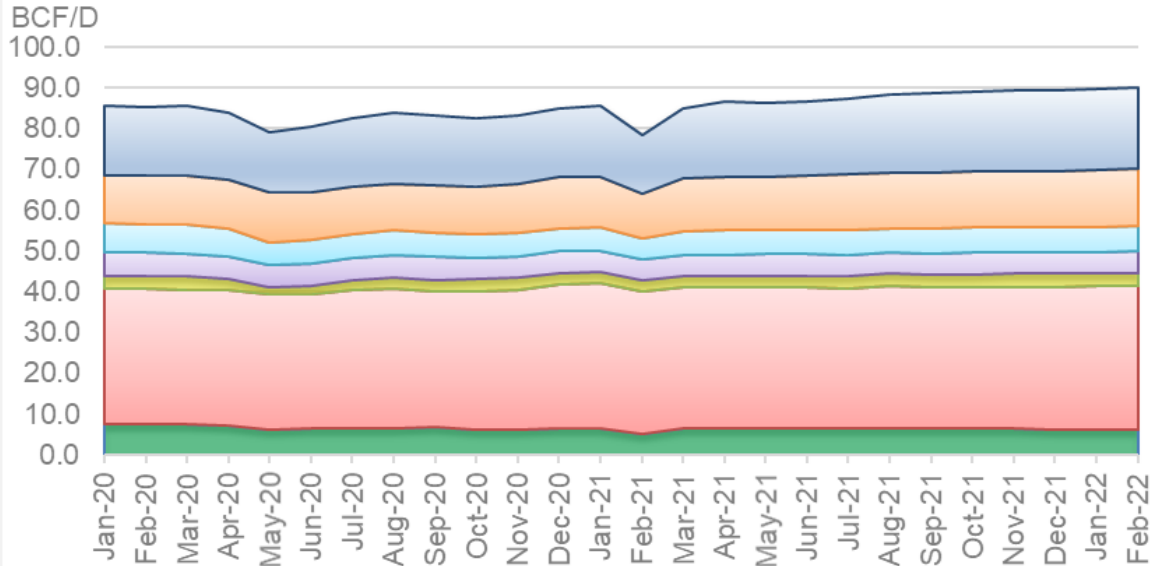


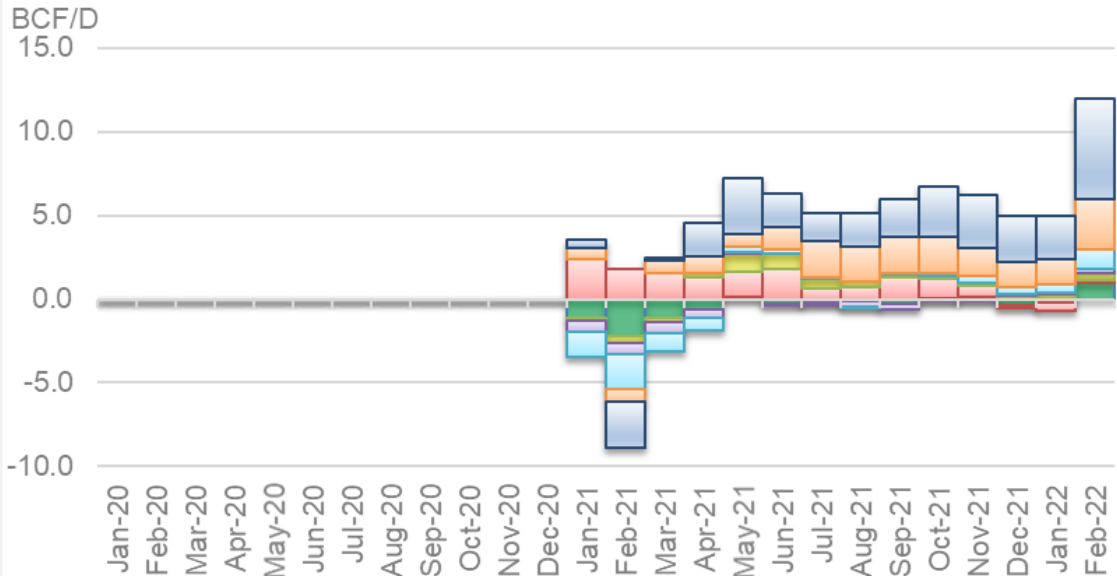
This week we take a look at the output of the EIA's monthly Drilling Productivity Report (DRP)

Most shale plays are expected to have an increase in natural gas production in February. The Marcellus/Utica (Appalachia) is expected to, will see an increase of 81 MMcf/d in production next month. The Haynesville continues to see explosive growth, with an increase of 127 MMcf/d next month. The Permian will see a huge increase in natgas production of 122 MMcf/d due to more rigs being deployed in the region. The Permian's oil production is set to hit a new all-time high in February, forecasted to hit an average of 5.076 million barrels of oil per day.

### U.S. Shale Monthly Natural Gas Production

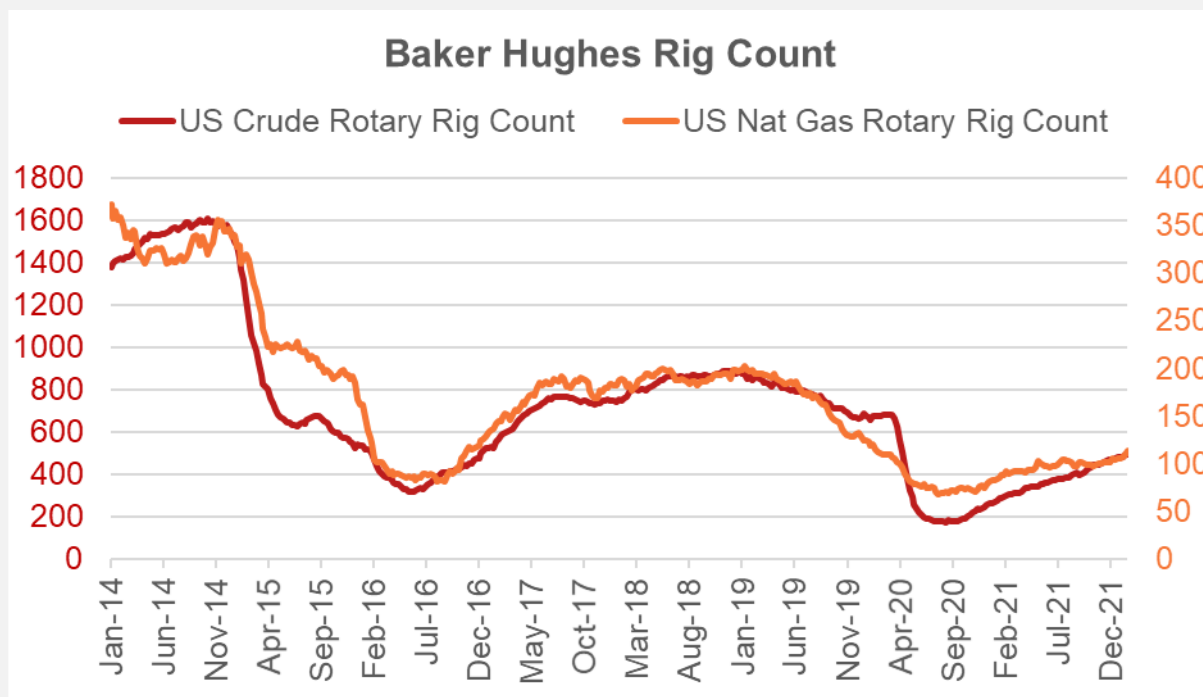


### U.S. Shale Year-On-Year Natural Gas Production



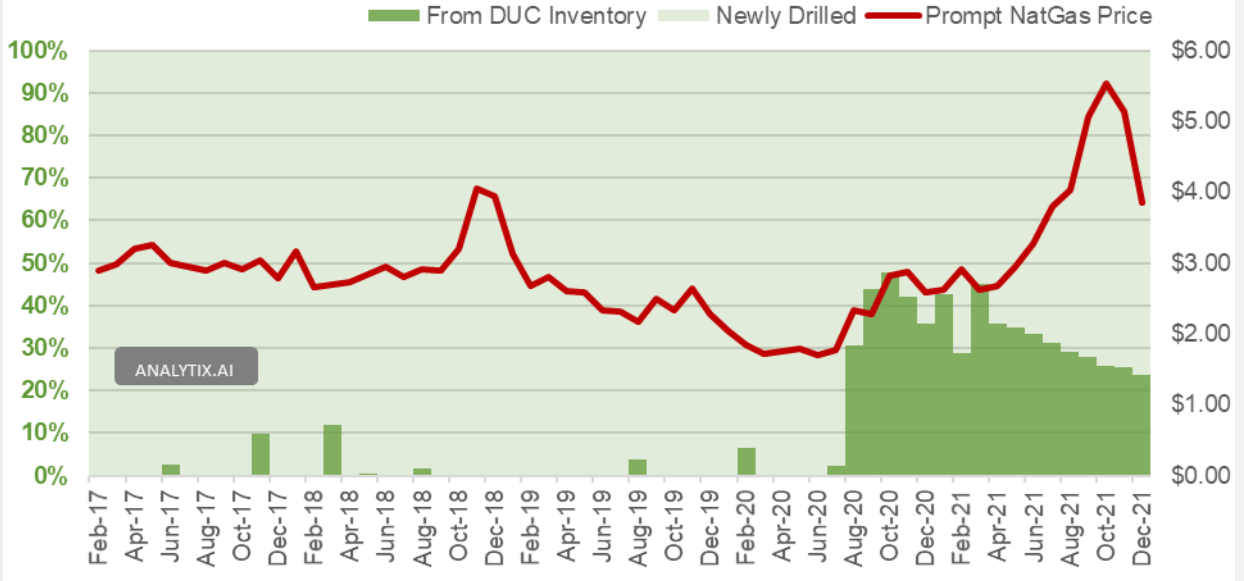
The big year-on-year increase for February is a bit misleading as we had massive freeze-offs last year with Winter Storm Uri knocking out a considerable amount of West Texas and Midcon production. We should clarify that the Feb projection is at the wellhead level (wet-gas) and that there are no adjustments made for freeze-offs.

The DPR continues to show growth in production despite still depressed rig count levels. In the past year, we have seen oil rigs come back, but gas-only rigs have been slow to resume. There are currently 113 gas rigs active, which is a 28% increase over last year. Over the same time frame, oil rigs have grown by 202 or 70%.



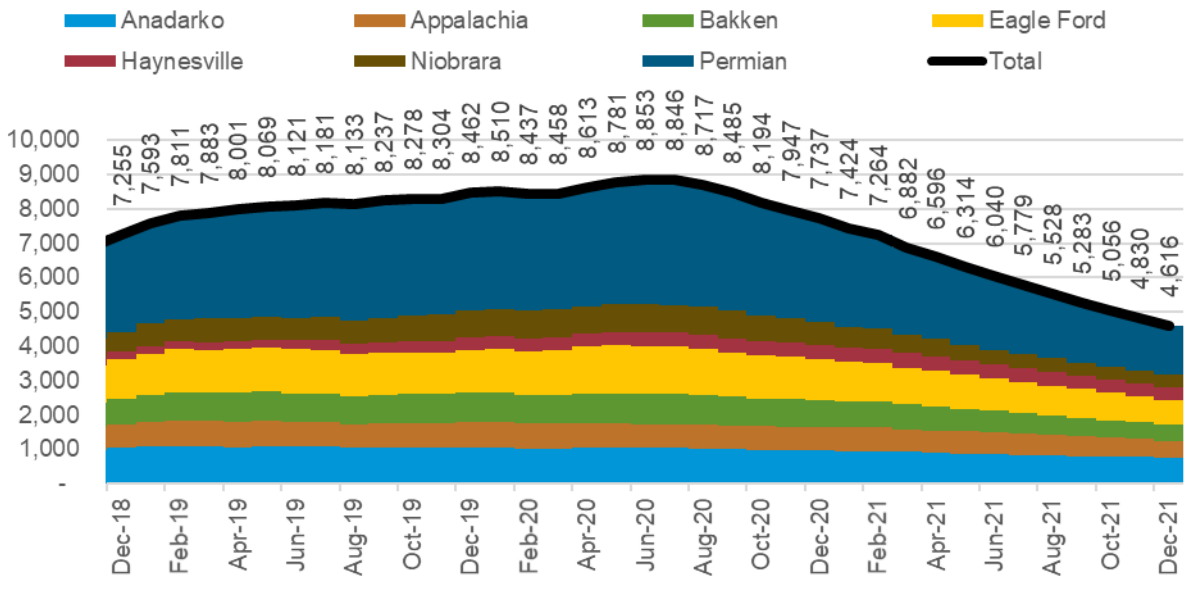
With fewer rigs operational, producers have been relying on the large inventory of DUCs that had been built up before the COVID-19. In 2021, 32% of all wells that were completed came from the existing DUC inventory. In the chart below you can see that starting Aug 2020, oil & gas producers heavily relied on DUCs to keep production from dwindling lower and were able to grow it in 2021.

## What is the source of the completed well?

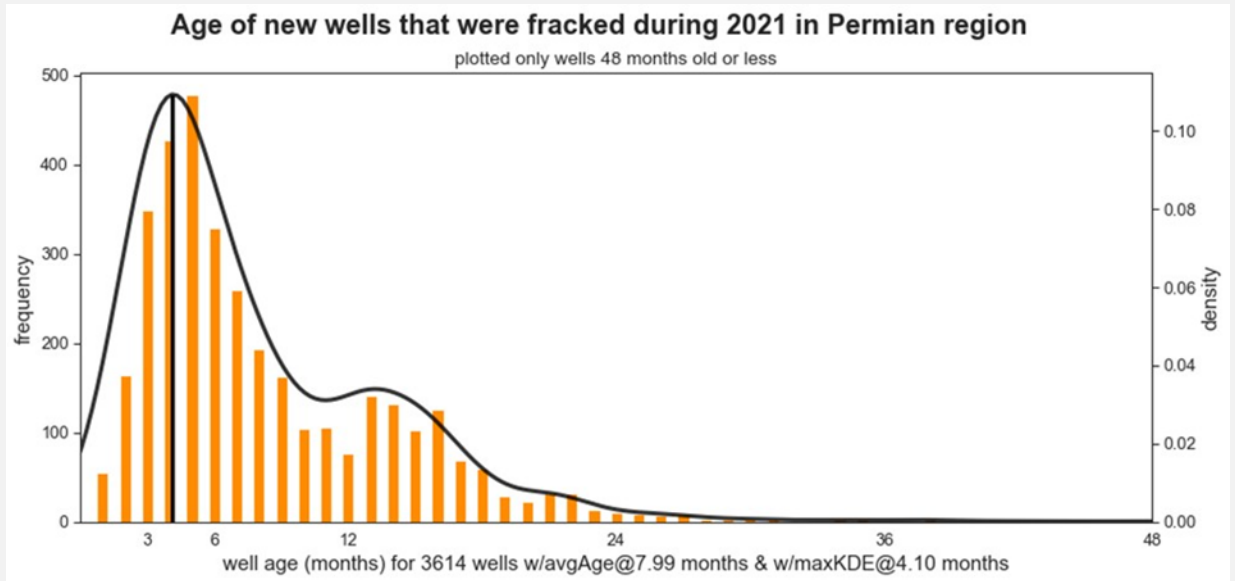


That being said, the DUC inventory is starting to run low. The overall DUCs reported for all DPR regions decreased by 214 wells to 4,616 wells in December 2021. Of the existing wells, the EIA estimates that approximately 2,600 DUC wells are older than two years. These older wells are typically uneconomic or not connected to pipeline/processing networks.

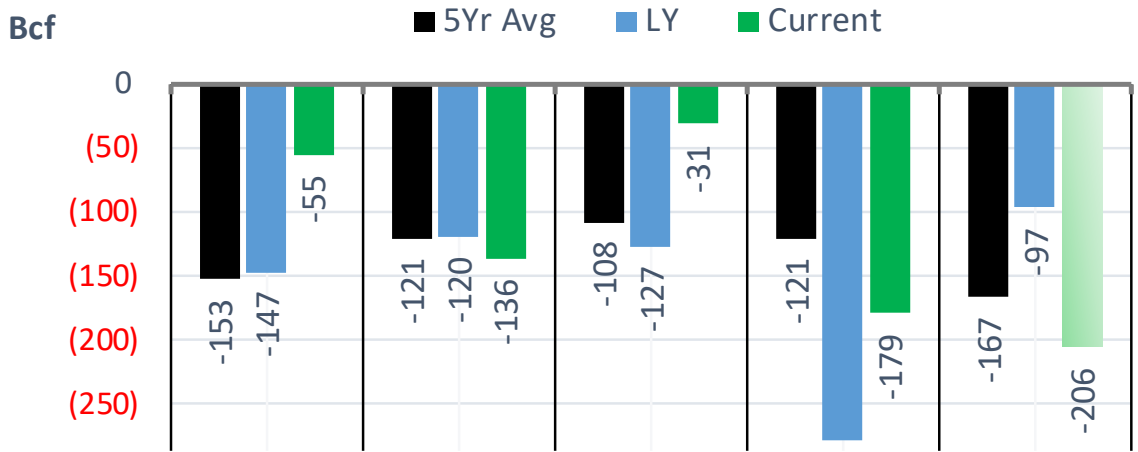
## Oil & Gas DUC Inventory



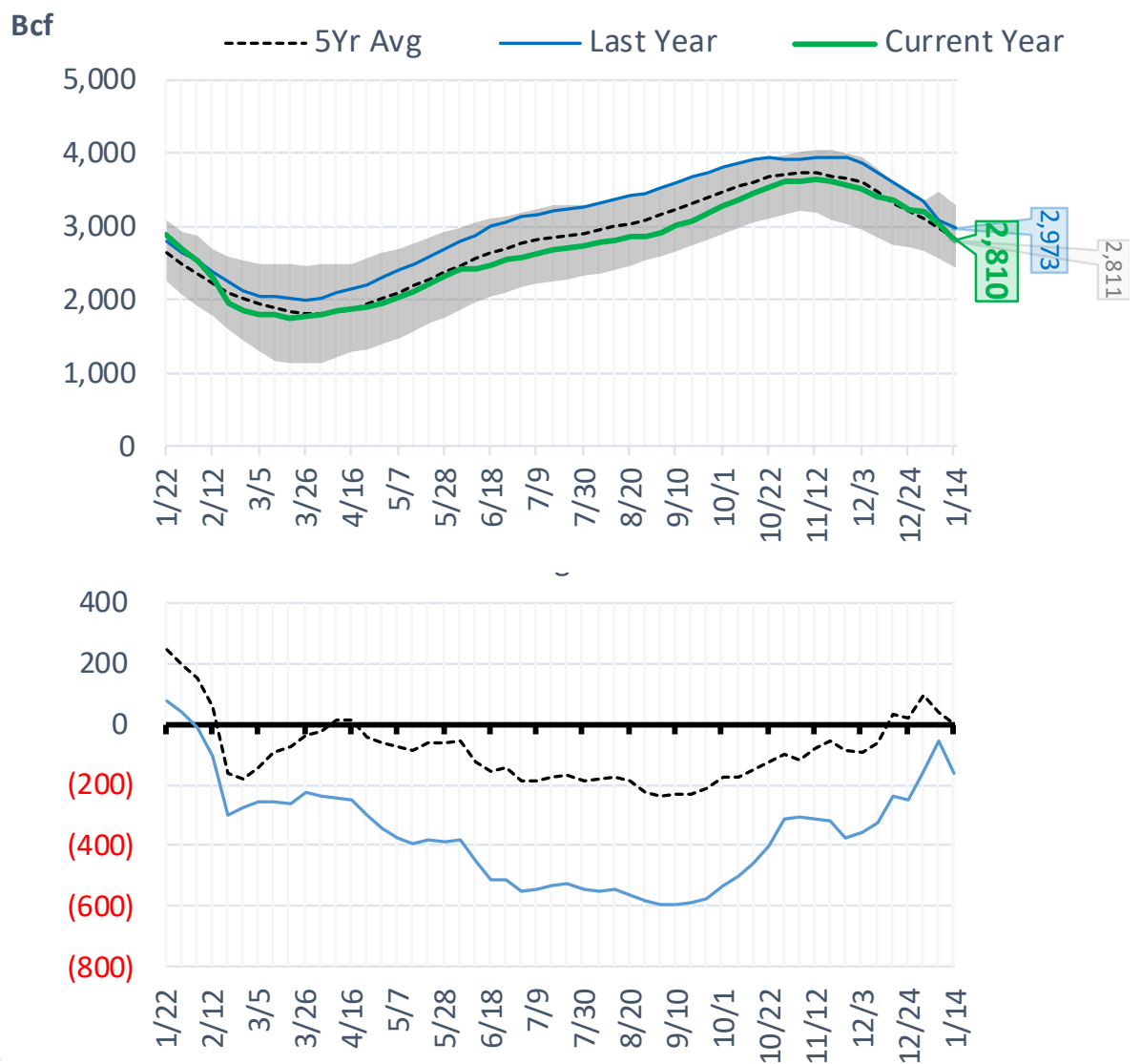
Here is a chart provided by the EIA showing the age of wells fracked during 2021. As seen, very few are over the age of 24 months.



## Total Lower 48 YoY Weekly Change



## Total Lower 48 Storage Levels

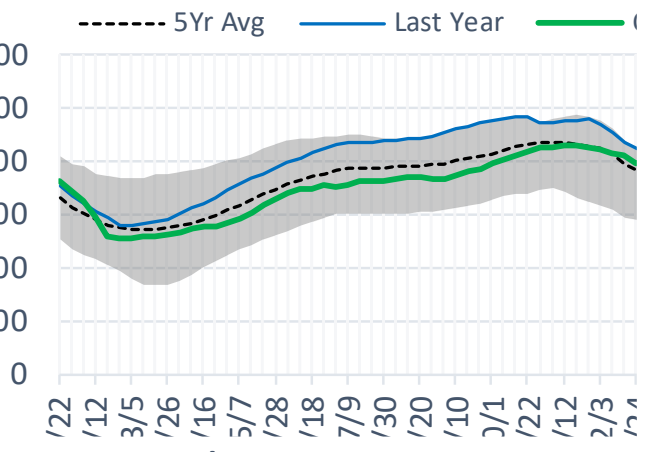


The risk person

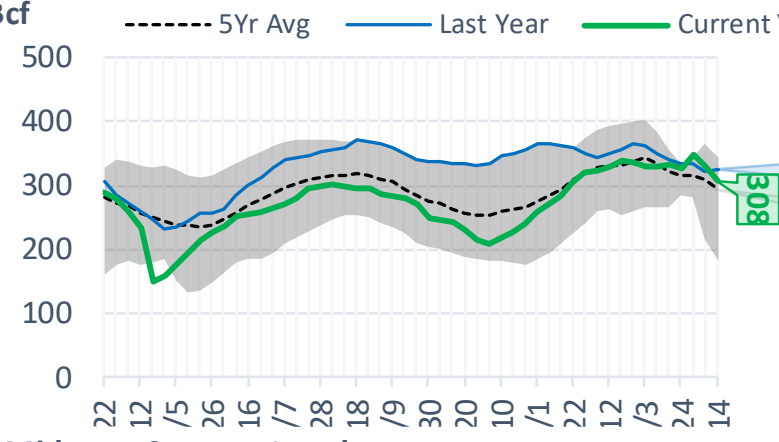
## Natural Gas Storage Stats - Last 5 Weeks

Week Ending	Current 14-Jan	Week - 1 7-Jan	Week - 2 31-Dec	Week - 3 24-Dec	Week - 4 17-Dec	Week - 5 10-Dec
<b>Total Lower 48 Storage Level</b>	<b>2810</b>	3016	3195	3226	3362	3417
<b>Weekly Change</b>	<b>-206</b>	-179	-31	-136	-55	-88
<b>vs LY</b>	<b>-163</b>	-54	-154	-250	-234	-326
<b>vs 5Yr Avg</b>	<b>-1</b>	+38	+96	+19	+34	-64
<b>S. Central Salt Storage Level</b>	<b>308</b>	330	347	326	334	328
<b>Weekly Change</b>	<b>-22</b>	-17	+21	-8	+6	0
<b>vs LY</b>	<b>-18</b>	+9	+14	-8	-5	-22
<b>vs 5Yr Avg</b>	<b>+15</b>	+22	+32	+11	+13	-7
<b>S. Central NonSalt Storage Level</b>	<b>711</b>	759	796	790	820	829
<b>Weekly Change</b>	<b>-48</b>	-37	+6	-30	-9	-13
<b>vs LY</b>	<b>-31</b>	-2	-37	-62	-55	-83
<b>vs 5Yr Avg</b>	<b>+12</b>	+27	+47	+21	+27	+3
<b>Midwest Storage Level</b>	<b>770</b>	835	893	918	963	982
<b>Weekly Change</b>	<b>-65</b>	-58	-25	-45	-19	-37
<b>vs LY</b>	<b>-55</b>	-26	-37	-61	-58	-82
<b>vs 5Yr Avg</b>	<b>-3</b>	+6	+20	+5	+10	-18
<b>East Storage Level</b>	<b>669</b>	730	767	777	809	818
<b>Weekly Change</b>	<b>-61</b>	-37	-10	-32	-9	-25
<b>vs LY</b>	<b>-33</b>	+3	-4	-38	-40	-68
<b>vs 5Yr Avg</b>	<b>+16</b>	+33	+39	+19	+18	-12
<b>Mountain Storage Level</b>	<b>151</b>	159	172	180	188	199
<b>Weekly Change</b>	<b>-8</b>	-13	-8	-8	-11	-7
<b>vs LY</b>	<b>-3</b>	-3	-25	-25	-26	-25
<b>vs 5Yr Avg</b>	<b>-5</b>	-6	-6	-7	-7	-6
<b>Pacific Storage Level</b>	<b>201</b>	204	219	235	247	261
<b>Weekly Change</b>	<b>-3</b>	-15	-16	-12	-14	-5
<b>vs LY</b>	<b>-23</b>	-34	-64	-55	-50	-46
<b>vs 5Yr Avg</b>	<b>-35</b>	-44	-37	-30	-29	-24

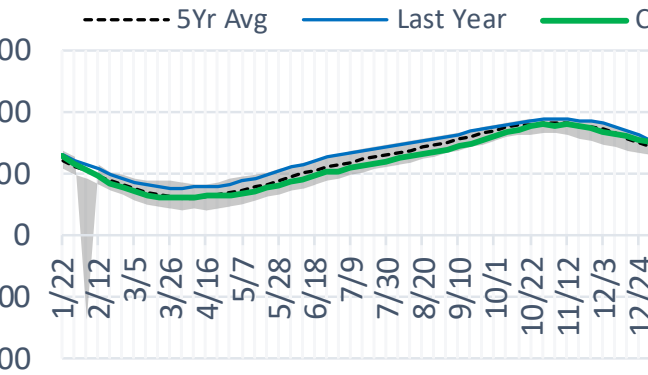
## Salt Storage Levels



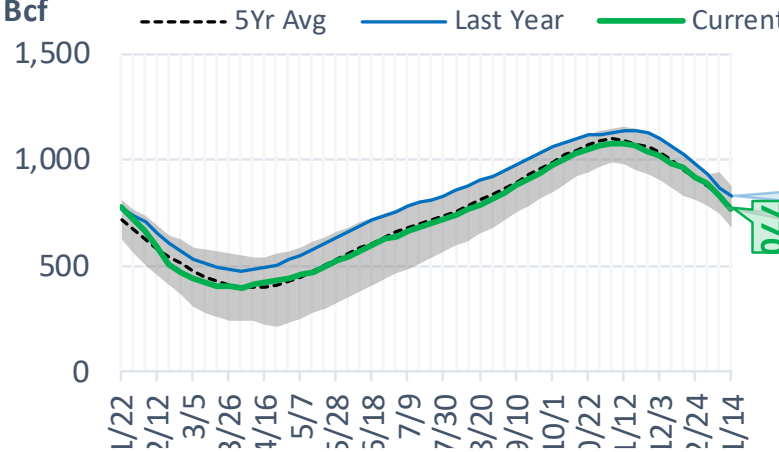
## Salt Storage Levels



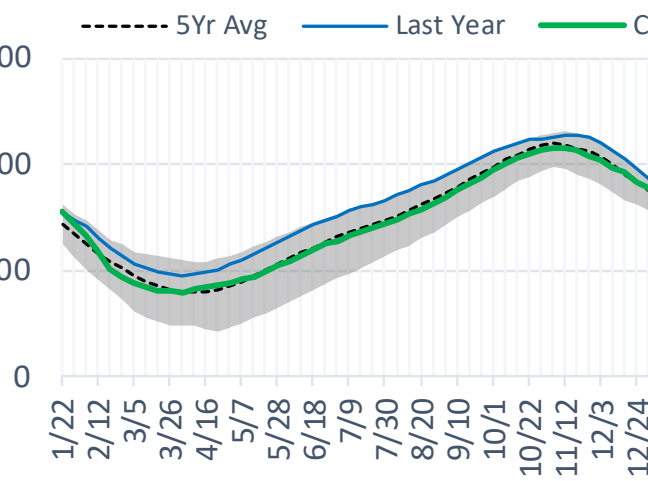
## Midwest Storage Levels



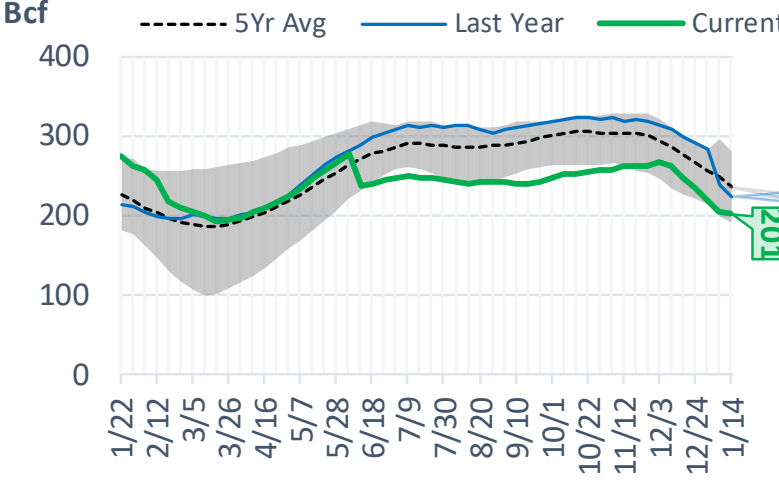
## Midwest Storage Levels



## West Storage Levels



## Pacific Storage Levels



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## EIA Storage Week Balances

	17-Dec	24-Dec	31-Dec	7-Jan	14-Jan	21-Jan	WoW	vs. 4W
<b>Lower 48 Dry Production</b>	96.4	96.7	98.6	95.3	95.4	95.0	▼ -0.4	-1.5
<b>Canadian Imports</b>	4.6	5.0	4.2	5.7	6.5	7.0	▲ 0.5	▲ 1.7
L48 Power	28.4	29.9	26.4	29.9	30.4	30.2	▼ -0.3	▲ 1.0
L48 Residential & Commercial	31.4	40.3	33.4	44.3	47.5	48.2	▲ 0.7	▲ 6.8
L48 Industrial	23.7	24.0	22.2	26.0	25.7	26.7	▲ 1.0	▲ 2.2
L48 Lease and Plant Fuel	5.2	5.2	5.4	5.2	5.2	5.2	▼ 0.0	▼ -0.1
L48 Pipeline Distribution	3.0	3.5	3.0	3.6	3.8	3.8	▲ 0.0	▲ 0.3
<b>L48 Regional Gas Consumption</b>	91.7	103.0	90.3	109.1	112.7	114.1	▲ 1.4	▲ 10.3
<b>Net LNG Exports</b>	11.9	12.7	12.3	11.9	12.3	12.9	▲ 0.6	▲ 0.6
<b>Total Mexican Exports</b>	6.2	6.1	5.8	5.9	6.3	6.4	▲ 0.0	▲ 0.3
<b>Implied Daily Storage Activity</b>	-8.8	-20.0	-5.6	-25.9	-29.5	-31.4	-1.9	
<b>EIA Reported Daily Storage Activity</b>	-7.9	-19.4	-4.4	-25.6	-29.4			
<b>Daily Model Error</b>	-1.0	-0.6	-1.1	-0.3	0.0			

## Monthly Balances

	2Yr Ago Jan-20	LY Jan-21	Sep-21	Oct-21	Nov-21	Dec-21	MTD Jan-22	MoM	vs. LY
<b>Lower 48 Dry Production</b>	94.6	91.4	93.4	94.3	95.9	97.0	95.0	▼ -2.0	▲ 3.6
<b>Canadian Imports</b>	4.8	6.3	5.1	5.4	5.3	4.8	6.6	▲ 1.8	▲ 0.3
L48 Power	29.9	28.3	33.1	30.5	28.8	28.4	30.5	▲ 2.1	▲ 2.2
L48 Residential & Commercial	41.7	44.0	8.8	12.5	29.4	34.5	48.0	▲ 13.5	▲ 4.0
L48 Industrial	24.5	23.8	20.2	21.0	22.4	23.3	26.3	▲ 3.0	▲ 2.5
L48 Lease and Plant Fuel	5.1	5.0	5.1	5.2	5.2	5.3	5.2	▼ -0.1	▲ 0.2
L48 Pipeline Distribution	3.6	3.5	2.3	2.4	3.1	3.1	3.8	▲ 0.7	▲ 0.3
<b>L48 Regional Gas Consumption</b>	104.8	104.6	69.4	71.5	88.9	94.5	113.8	▲ 19.3	▲ 9.2
<b>Net LNG Exports</b>	8.4	10.5	10.3	10.6	11.4	12.1	12.4	▲ 0.3	▲ 1.9
<b>Total Mexican Exports</b>	5.1	6.2	6.7	6.6	6.1	6.1	6.3	▲ 0.1	▲ 0.1
<b>Implied Daily Storage Activity</b>	-18.9	-23.5	12.1	11.0	-5.2	-11.0	-30.9		
<b>EIA Reported Daily Storage Activity</b>									
<b>Daily Model Error</b>									

Source: Bloomberg, analytix.ai



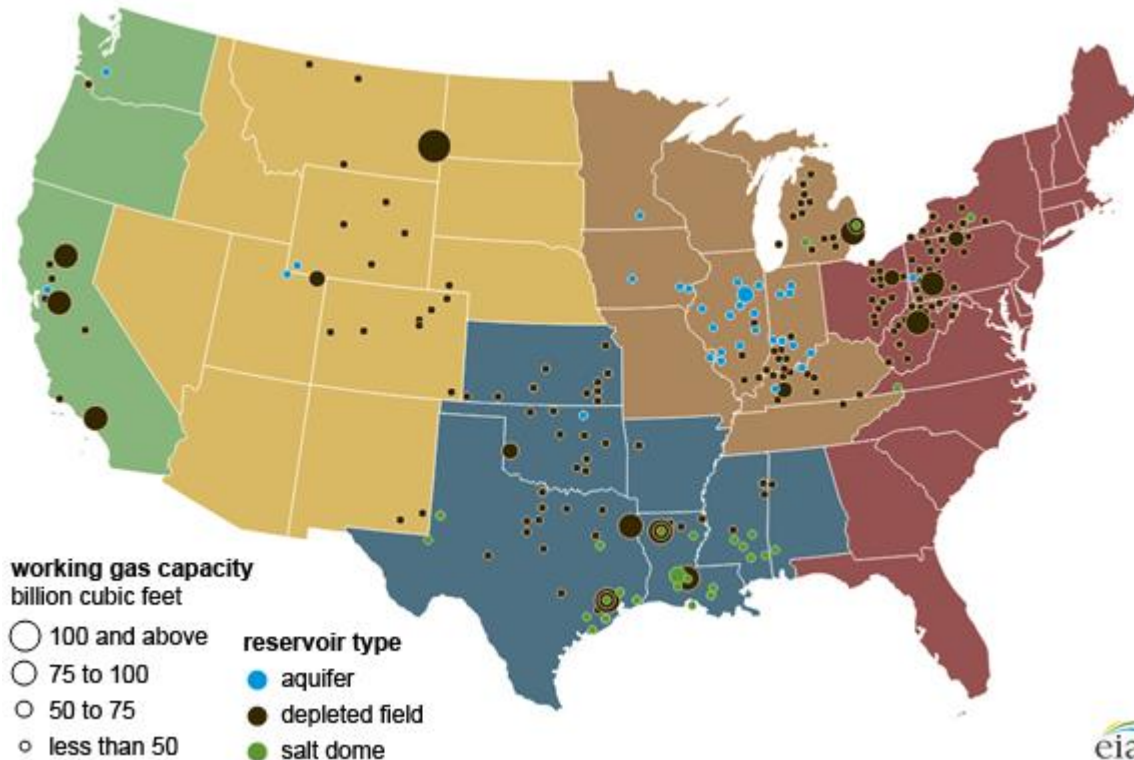
## Regional S/D Models Storage Projection

Week Ending 21-Jan

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	-31.6	0.6	-31.0	-217
East	-10.6	2.8	-7.8	-55
Midwest	-9.7	-0.4	-10.1	-70
Mountain	2.0	-3.0	-1.0	-7
South Central	-13.7	1.8	-11.9	-83
Pacific	0.3	-0.5	-0.3	-2

\*Adjustment Factor is calculated based on historical regional deltas

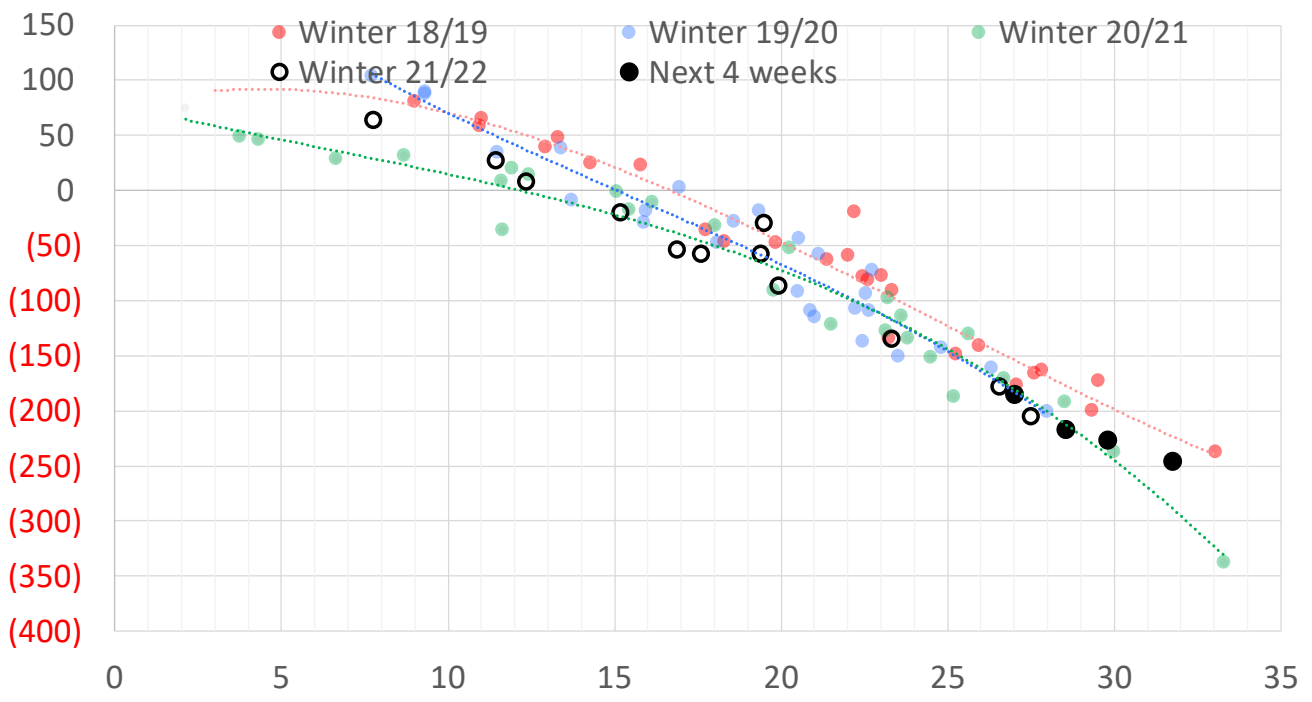
U.S. underground natural gas storage facilities by type (July 2015)



## Weather Model Storage Projection

Next report and beyond		
Week Ending	GWDDs	Week Storage Projection
21-Jan	29	-217
28-Jan	32	-246
04-Feb	30	-227
11-Feb	27	-185

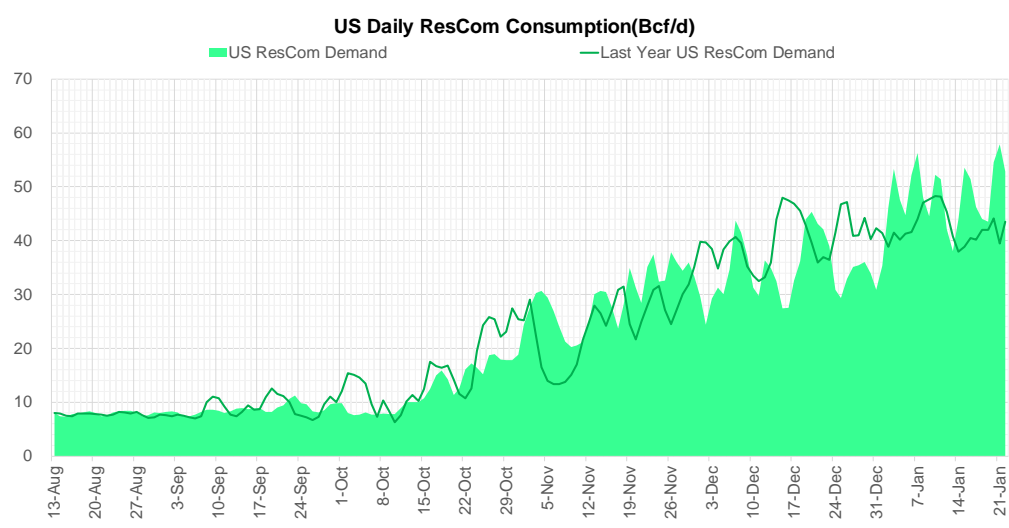
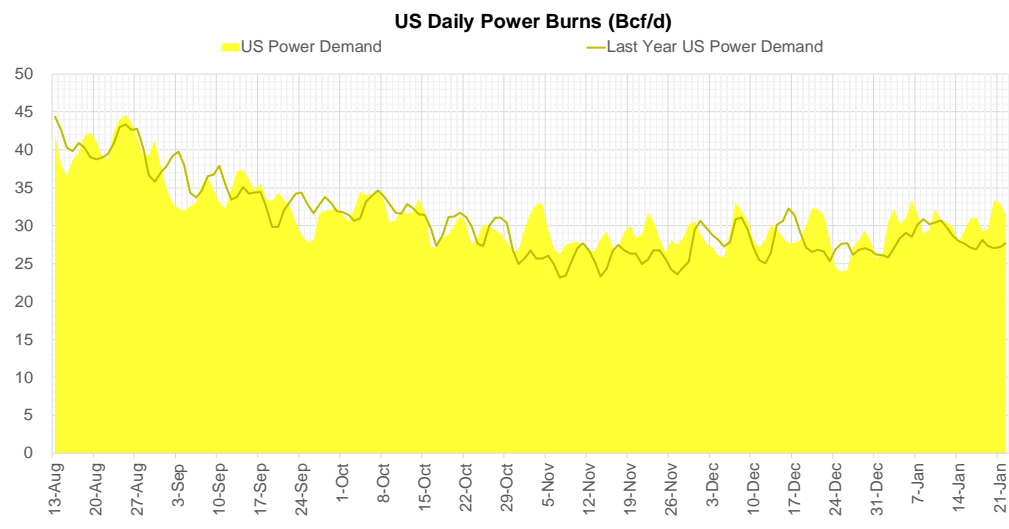
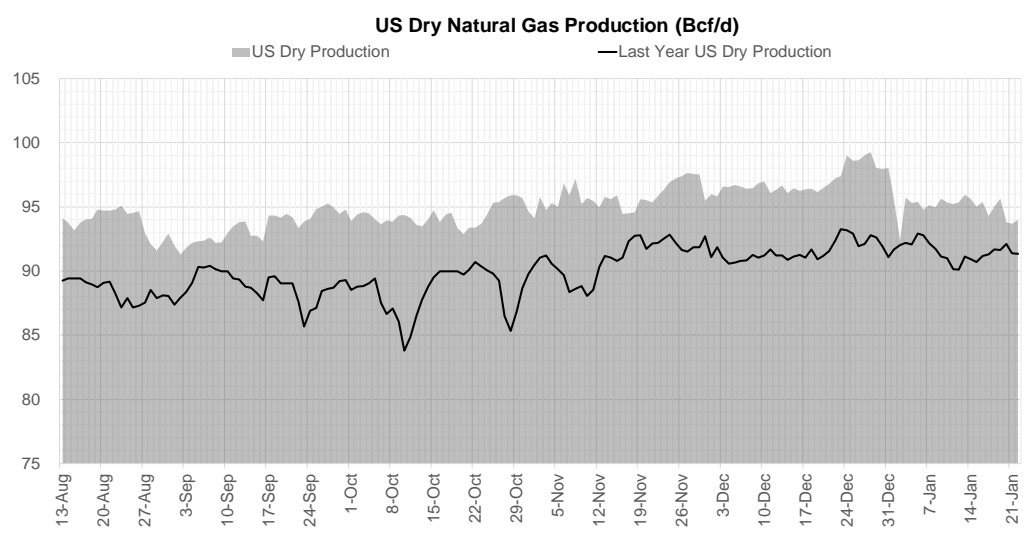
## Weather Storage Model - Next 4 Week Forecast



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

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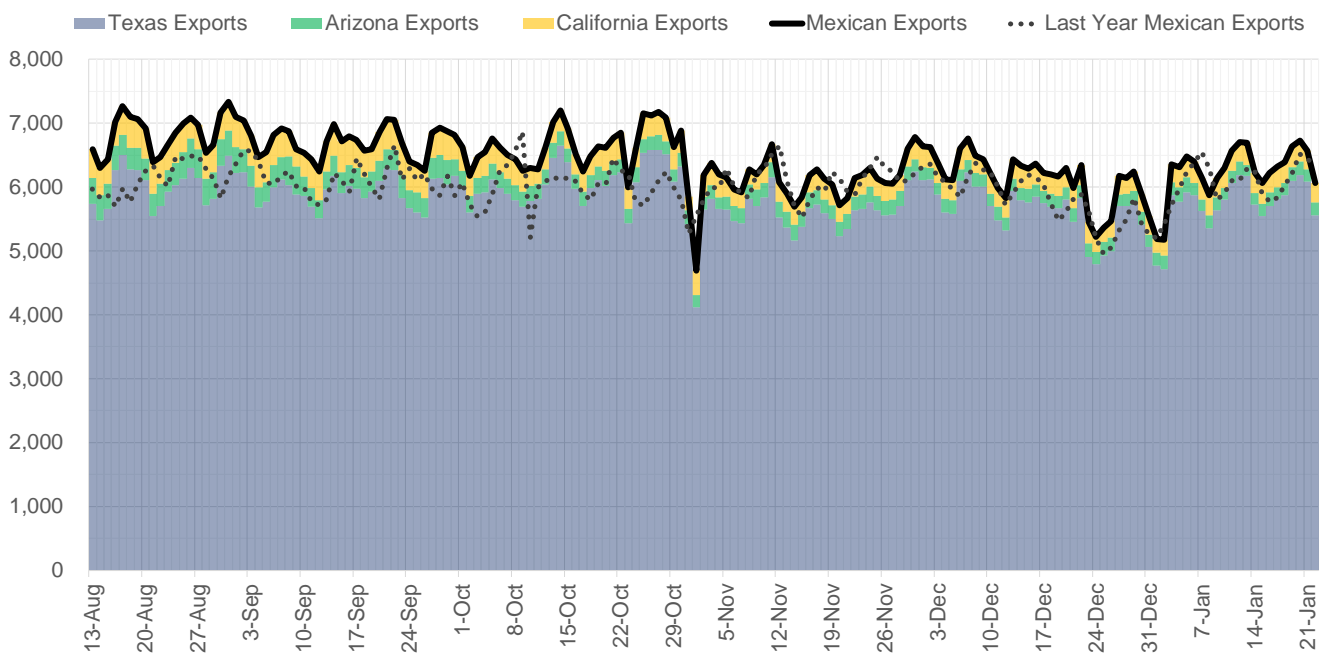
## Supply – Demand Trends



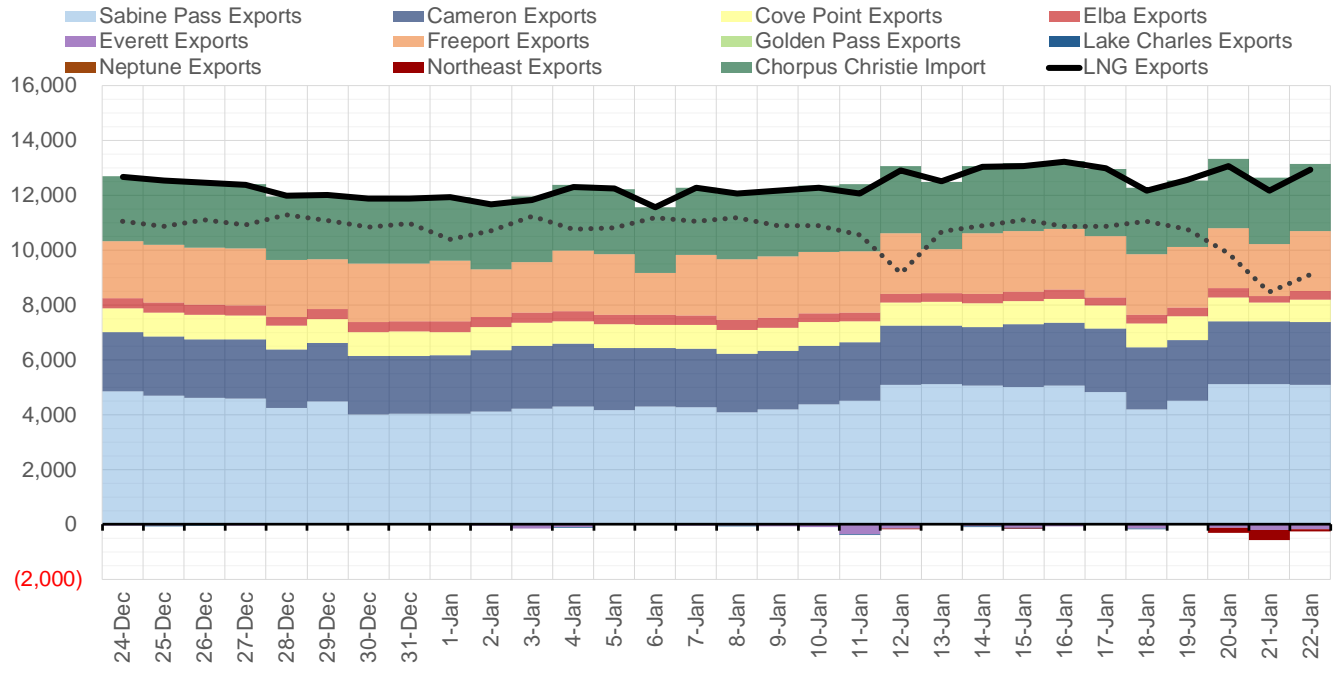
Source: Bloomberg

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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

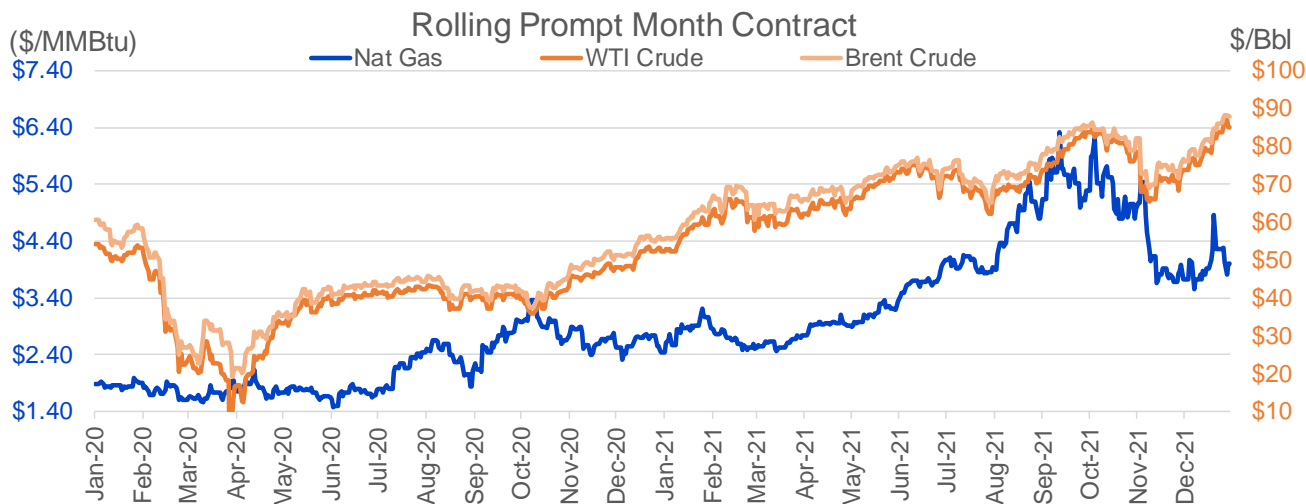
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
3	2022	C	4.00	6999	3	2022	C	5.00	36407
10	2022	C	5.00	4872	3	2022	C	10.00	34866
4	2022	C	5.00	4682	3	2022	C	8.00	32419
7	2022	C	5.00	4522	2	2022	C	4.00	26351
2	2022	P	3.50	4052	2	2022	C	5.00	25548
4	2022	P	3.50	4046	3	2022	C	4.00	24358
9	2022	C	5.00	3920	3	2022	P	3.00	22162
5	2022	C	5.00	3878	2	2022	P	3.50	22091
6	2022	C	5.00	3874	3	2022	P	2.50	21527
8	2022	C	5.00	3873	3	2022	P	4.00	21515
3	2022	P	3.50	3791	3	2022	C	6.00	21092
2	2022	C	4.00	3710	10	2022	C	6.00	20430
2	2022	C	5.00	3110	3	2022	P	3.50	19864
2	2022	P	3.80	2788	12	2022	C	5.00	19847
2	2022	P	4.00	2557	4	2022	C	3.00	19710
3	2022	P	3.75	2542	2	2022	P	4.00	19689
3	2022	C	5.00	2457	2	2022	C	6.00	18944
2	2022	P	3.75	2390	2	2022	C	4.50	17646
2	2022	C	4.25	2311	5	2022	P	3.00	17562
2	2022	C	4.50	2284	4	2022	P	3.00	17376
3	2022	P	3.25	2122	4	2022	P	2.50	17358
3	2022	C	6.00	2118	6	2022	C	5.00	16670
3	2022	C	4.25	2095	4	2022	C	5.00	16547
5	2022	P	3.75	1875	3	2022	C	7.00	16209
2	2022	P	3.90	1830	3	2022	C	4.50	16157
2	2022	C	6.00	1697	3	2022	P	3.75	16122
10	2022	C	6.00	1661	3	2022	P	3.25	15424
3	2022	C	4.50	1640	3	2022	P	2.00	14981
3	2022	P	3.00	1526	2	2022	P	3.00	14852
3	2022	P	2.75	1390	2	2022	C	8.00	14670
3	2022	C	8.00	1300	2	2022	C	7.00	14657
5	2023	C	3.25	1250	2	2022	C	10.00	14444
3	2022	P	4.00	1235	4	2022	P	3.50	14318
2	2022	C	4.15	1106	4	2022	C	6.00	13964
3	2022	C	4.75	1077	10	2022	P	2.00	13921
10	2022	P	3.25	1050	3	2022	P	2.25	13916
2	2022	P	3.70	1046	5	2022	C	3.00	13733
2	2022	C	4.10	1008	3	2022	P	5.00	13592
5	2022	P	3.90	1002	5	2022	P	2.50	13448
4	2022	P	3.00	987	6	2022	C	3.00	13438
3	2022	P	3.65	969	2	2022	P	3.75	13416
2	2022	P	3.00	933	4	2022	C	4.00	13343
2	2022	C	4.40	930	5	2022	P	3.50	13319
2	2022	C	3.90	913	3	2022	C	3.50	13316
6	2022	P	3.00	893	12	2022	C	4.50	13287
7	2022	C	6.00	892	10	2022	P	3.00	13284
1	2023	P	4.00	825	3	2022	C	3.00	13267
3	2023	P	4.00	825	2	2022	C	5.50	13266
2	2022	C	3.85	821	6	2022	C	6.00	13251
					7	2022	C	3	13230

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
FEB 22	33821	43734	-9913	FEB 22	73461	74604	-1143
MAR 22	281804	285398	-3594	MAR 22	94101	90054	4048
APR 22	85079	82472	2607	APR 22	73488	73657	-169
MAY 22	115203	113083	2120	MAY 22	69278	69421	-143
JUN 22	62243	63206	-963	JUN 22	57343	57349	-6
JUL 22	63738	62842	896	JUL 22	60244	60127	118
AUG 22	40776	39069	1707	AUG 22	57304	57411	-107
SEP 22	50527	49512	1015	SEP 22	58277	58329	-52
OCT 22	81966	83594	-1628	OCT 22	62993	62766	227
NOV 22	36117	36514	-397	NOV 22	52508	52443	65
DEC 22	38421	38788	-367	DEC 22	61663	61618	45
JAN 23	55539	54788	751	JAN 23	49138	49556	-418
FEB 23	17764	17154	610	FEB 23	39810	39636	175
MAR 23	30499	30990	-491	MAR 23	44974	44889	85
APR 23	31858	31877	-19	APR 23	45872	45767	105
MAY 23	17250	17292	-42	MAY 23	38774	38661	113
JUN 23	11072	11075	-3	JUN 23	36563	36451	112
JUL 23	9716	9885	-169	JUL 23	36083	35936	146
AUG 23	7023	6870	153	AUG 23	35418	35376	42
SEP 23	9684	9588	96	SEP 23	35399	35287	112
OCT 23	13238	13289	-51	OCT 23	39362	39237	125
NOV 23	8769	8828	-59	NOV 23	38153	38132	20
DEC 23	11366	11273	93	DEC 23	34116	34095	21
JAN 24	8446	7973	473	JAN 24	24110	24056	54
FEB 24	1610	1606	4	FEB 24	17574	17528	46
MAR 24	11309	10206	1103	MAR 24	23501	23453	49
APR 24	5584	5587	-3	APR 24	16378	16445	-68
MAY 24	2077	2076	1	MAY 24	16764	16827	-62
JUN 24	922	921	1	JUN 24	16962	16945	17
JUL 24	565	564	1	JUL 24	17573	17555	18

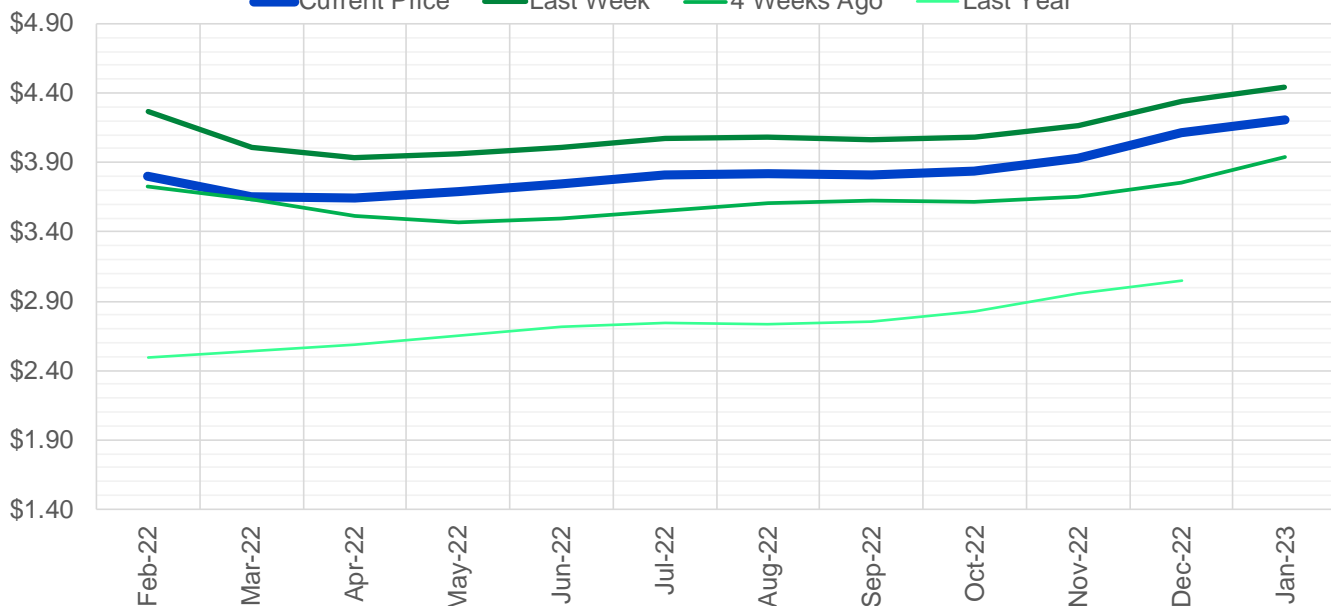
Source: CME, ICE



(\$/MMBtu)

## Nat Gas Term Structure

— Current Price — Last Week — 4 Weeks Ago — Last Year




	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23
<b>Current Price</b>	<b>\$3.802</b>	<b>\$3.649</b>	<b>\$3.648</b>	<b>\$3.693</b>	<b>\$3.748</b>	<b>\$3.808</b>	<b>\$3.823</b>	<b>\$3.807</b>	<b>\$3.834</b>	<b>\$3.932</b>	<b>\$4.112</b>	<b>\$4.210</b>
Last Week	\$4.270	\$4.005	\$3.938	\$3.958	\$4.011	\$4.070	\$4.082	\$4.063	\$4.086	\$4.169	\$4.340	\$4.438
vs. Last Week	-\$0.468	-\$0.356	-\$0.290	-\$0.265	-\$0.263	-\$0.262	-\$0.259	-\$0.256	-\$0.252	-\$0.237	-\$0.228	-\$0.228
4 Weeks Ago	\$3.731	\$3.630	\$3.514	\$3.469	\$3.500	\$3.552	\$3.609	\$3.627	\$3.617	\$3.651	\$3.754	\$3.935
vs. 4 Weeks Ago	\$0.071	\$0.019	\$0.134	\$0.224	\$0.248	\$0.256	\$0.214	\$0.180	\$0.217	\$0.281	\$0.358	\$0.275
Last Year	\$2.491	\$2.497	\$2.536	\$2.584	\$2.647	\$2.716	\$2.740	\$2.730	\$2.756	\$2.822	\$2.955	\$3.048
vs. Last Year	\$1.311	\$1.152	\$1.112	\$1.109	\$1.101	\$1.092	\$1.083	\$1.077	\$1.078	\$1.110	\$1.157	\$1.162

	Units	Current Price	vs. Last Week	vs. 4 Weeks Ago	vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224	▲ 0.000	▲ 0.000	▲ 2.183
NatGas Oct21/Nov21	\$/MMBtu	0.361	▲ 0.000	▲ 0.000	▲ 0.295
NatGas Oct21/Jan22	\$/MMBtu	-1.817	▲ 0.000	▲ 0.293	▼ -2.112
NatGas Apr22/Oct22	\$/MMBtu	0.168	▲ 0.022	▼ -0.014	▲ 0.121
WTI Crude	\$/Bbl	85.14	▲ 1.320	▲ 11.350	▲ 32.870
Brent Crude	\$/Bbl	87.89	▲ 1.830	▲ 11.750	▲ 32.480
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	▲ 0.000	▲ 0.000	▲ 0.000
Heating Oil	cents/Gallon	269.12	▲ 5.690	▲ 35.980	▲ 111.520
Propane, Mt. Bel	cents/Gallon	1.15	▲ 0.007	▲ 0.123	▲ 0.285
Ethane, Mt. Bel	cents/Gallon	0.37	▼ 0.000	▲ 0.034	▲ 0.137
Coal, PRB	\$/MTon	12.30	▲ 0.000	▲ 0.000	▲ 0.000
Coal, PRB	\$/MMBtu	0.70			

Source: CME, Bloomberg

The risk of trading futures and options and other derivatives involves a substantial risk of loss and is not suitable for all persons. Each person must consider whether a particular trade, combination of trades, or strategy is suitable for that person's financial means and objectives. Past results are not necessarily indicative of future results. This communication may contain links to third party websites that are not under the control of and are not maintained by ION Energy Group, and ION Energy Group is not responsible for their content.

## Baker Hughes Rig Counts

Rotary Rig Count						Baker Hughes 
1/21/2022						
U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago	
Oil	491	-1	492	202	289	
Gas	113	4	109	25	88	
Miscellaneous	0	0	0	-1	1	
Directional	37	2	35	15	22	
Horizontal	544	3	541	206	338	
Vertical	23	-2	25	5	18	
Canada Breakout	This Week	+/-	Last Week	+/-	Year Ago	
Oil	134	13	121	38	96	
Gas	78	8	70	2	76	
Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago	
Ardmore Woodford	1	0	1	1	0	
Arkoma Woodford	2	0	2	2	0	
Barnett	0	0	0	-1	1	
Cana Woodford	26	0	26	16	10	
DJ-Niobrara	12	0	12	5	7	
Eagle Ford	50	0	50	22	28	
Granite Wash	4	0	4	4	0	
Haynesville	53	1	52	8	45	
Marcellus	33	2	31	3	30	
Mississippian	1	1	0	1	0	
Permian	292	-1	293	104	188	
Utica	11	0	11	6	5	
Williston	27	0	27	16	11	