

This week we review the latest Short Term Energy Outlook (STEO) issued by the EIA. There is lots of good data in the STEO report and most importantly it gives us an indication of what others in the market are seeing.

This table show the output of the December STEO report, i.e. Winter 20/21 vs. Winter 19/20 & Summer 21 vs. Summer 20.

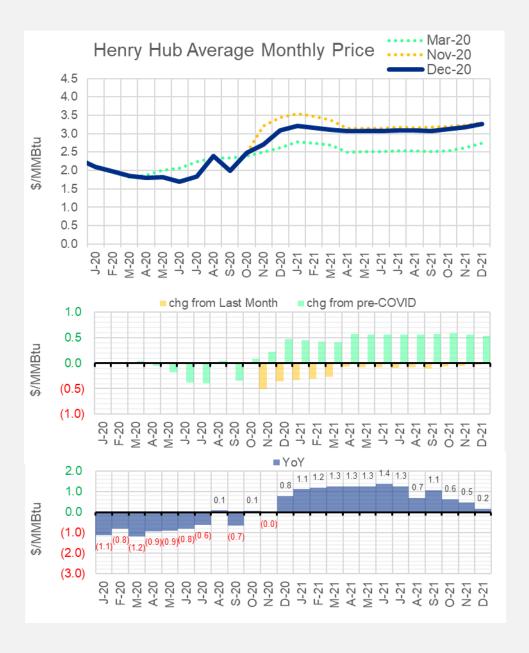
EIA STEO YoY Changes	_	
	Winter 20/21 YoY	Summer 21 YoY
Supply (billion cubic feet per day)	<del>_</del>	
Total Dry Gas Production	<b>V</b> -7.28	<b>▼</b> -1.83
LNG Gross Imports	. 📤0.06	<b>0.06</b>
LNG Gross Exports	. 📤2.08	<b>2</b> .57
Pipeline Gross Imports	. 🔻-0.18	<b>0.39</b>
Pipeline Gross Exports	. 📤 0.24	<b>0.70</b>
Supplemental Gaseous Fuels	. 🔻-0.02	<b>0.00</b>
Net Inventory Withdraw als	. 📤4.37	<b>▼</b> -0.30
Total Supply	. 🔻-5.36	<b>V</b> -4.94
Balancing Item (b)	. 📤 1.41	▼0.00
Total Primary Supply	. 🔻-3.95	<b>▼</b> -4.95
Residential Commercial Industrial Electric Pow er (c) Lease and Plant Fuel Pipeline and Distribution Use Vehicle Use Total Consumption	. • 0.01 . • -0.40 . • -4.93 . • -0.35 . • 0.34 . • 0.02	▼-0.61 ▲0.48 ▲0.19 ▼-5.17 ▼-0.08 ▲0.22 ▲0.01 ▼-4.95
END OF SEASON CHANGE		
Working Gas Inventory		<b>V</b> -388
East Region (d)		<b>▼</b> -178
Midw est Region (d)		<b>▼</b> -119
South Central Region (d)		<b>V</b> -74
Mountain Region (d)		<b>▼</b> -24
Pacific Region (d)	. <b>▼-</b> 19	<b>_9</b>

In the next few pages, we will drill into the month over month changes in the report, and the change from their pre-COVID forecast – March 2020.



To start we look at the changes in their price forecast. The EIA decreased their outlook for prices for the balance of winter (Dec through Mar). The bal winter strip is expected to average \$3.15, with the current NYMEX bal winter strip trading at \$2.59/MMBtu. The winter strip is \$0.31 lower than last month's forecast.

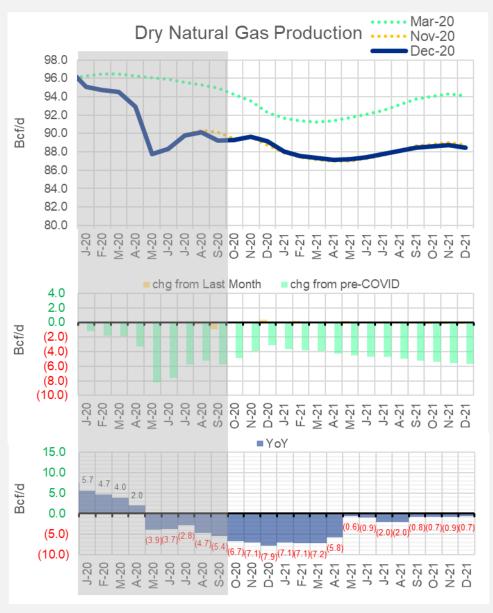
The summer strip has also been stated slightly lower to average \$3.08/MMBtu. This would put the summer price strip \$1.08 or 54% above last year's levels.





The EIA significantly jumped their production estimate for the rest of 2020, and 2021. This seems to be a combination of a higher price forecast this winter, and better well recoveries from newly drilled wells and available DUCs.

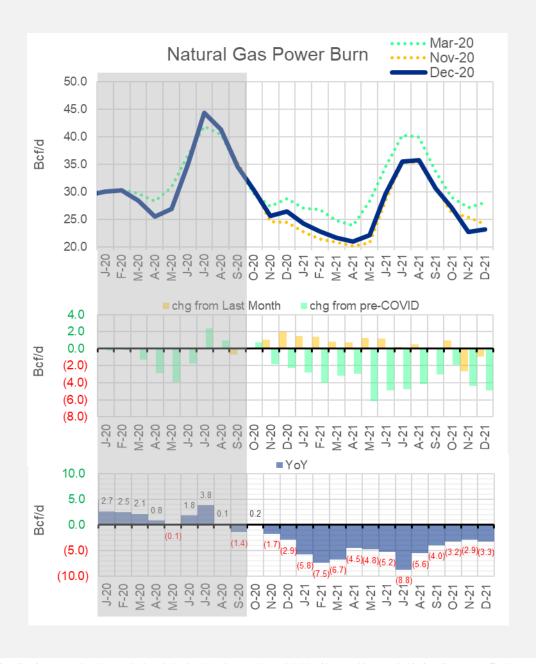
From bal winter (Dec through Mar), the EIA estimates production will continue to slowly decline through winter and average 88.0 Bcf/d. Production bottoms out in Apr 2021, after which it levels out and then increases in the back half of 2021. The average 2021 production level is 87.9 Bcf, or 3.0 Bcf/d lower than the current estimated 2020 production level. This estimated 2021 production level was flat month-on-month and continues to stay 4.7 Bcf/d lower than the pre-COVID scenario.





The month-on-month change in the price forecast has altered the EIA's view on upcoming power burns. The lower bal winter strip (Dec through Mar) has moved their burn forecast higher by 1.4 Bcf/d relative to their November report

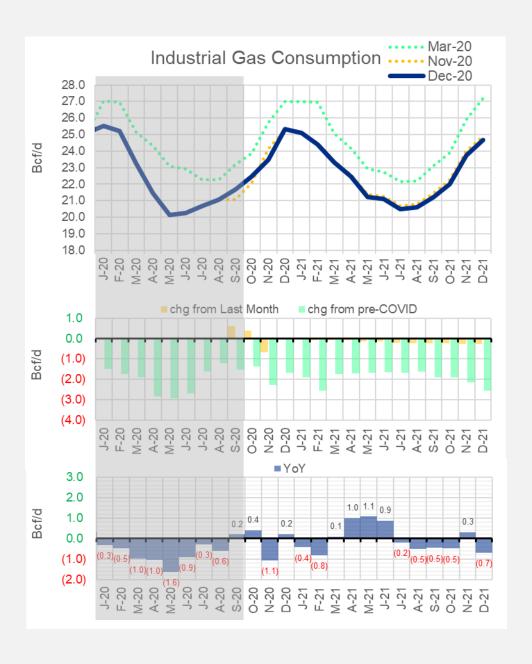
Summer 21 power burn has not changed much month-on-month with their price forecast for that time frame remaining almost intact. The EIA is still expecting burns to average 28.8 Bcf/d or -5.2 Bcf/d summer-on-summer. This builds a more normal weather temperature profile, and prices Henry Hub prices settling \$1.08 higher for the summer strip.





Industrial natural gas usage took a big hit in 2020 with COVID-related lockdowns. The EIA data show the Summer 2020 industrial load to be 1.2 Bcf/d lower than Summer 2019.

The industrial usage is not expected to report to normal levels (the pre-COVID March 2020 case) in their entire forecast period. As seen below, the industrial usage is only slightly higher by +0.2 Bcf/d for the upcoming summer.

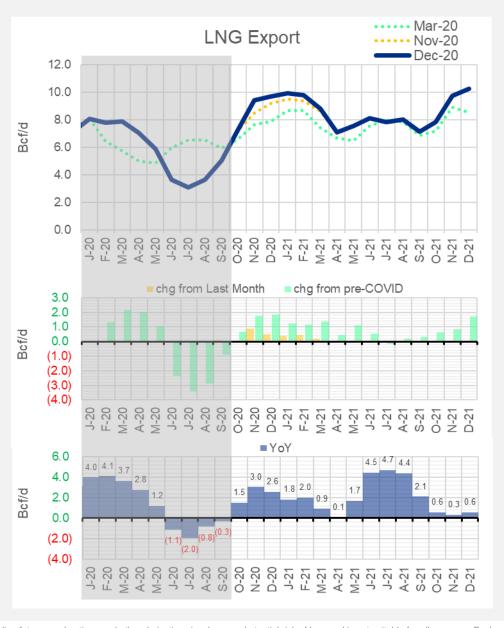




EIA shows show LNG exports moderately higher for the bal of winter than their November forecast. The new forecast has bal winter exporting 9.6 Bcf/d, which is +0.4 higher than where their forecast was last month. We assume the difference is accounting for the increase recently seen from Corpus Christie train 3 coming online.

The EIA's summer view show exports averaging 7.6 Bcf/d, which is conservative compared to other market estimates. The view has not changed from the previous month's forecast.

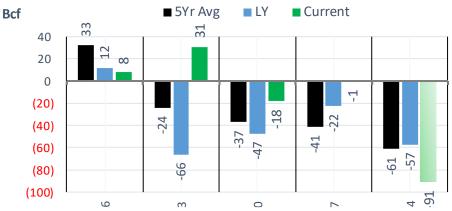
We should note this forecast is only for the exported volume and does not include any feedgas used onsite. We generally add 12% to account for the onsite gas usage at LNG facil



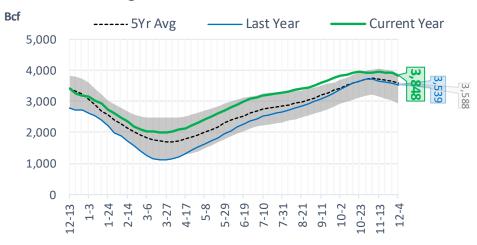


### **EIA Storage Report**

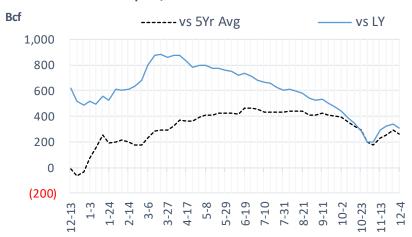
### **Total Lower 48 YoY Weekly Change**



### **Total Lower 48 Storage Levels**



### **Total Lower 48 LY Surplus/Deficit**



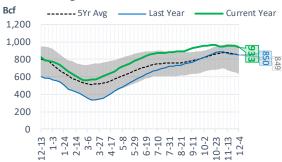


### **Natural Gas Storage Stats - Last 5 Weeks**

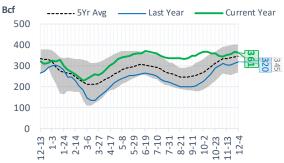
	Current	Week - 1	Week - 2	Week - 3	Week - 4	Week - 5
Week Ending	4-Dec	27-Nov	20-Nov	13-Nov	6-Nov	30-Oct
Total Lower 48 Storage Level	3848	3939	3940	3958	3927	3919
Weekly Change	-91	-1	-18	+31	+8	-36
vs LY	+309	+343	+322	+293	+196	+200
vs 5Yr Avg	+260	+290	+250	+231	+176	+201
S. Central Salt Storage Level	361	368	356	350	345	348
Weekly Change	-7	+12	+6	+5	-3	-12
vs LY	+41	+56	+54	+47	+35	+48
vs 5Yr Avg	+16	+26	+20	+15	+10	+24
S. Central NonSalt Storage Level	933	958	956	956	948	945
Weekly Change	-25	+2	0	+8	+3	-23
vs LY	+83	+99	+93	+86	+63	+59
vs 5Yr Avg	+84	+97	+89	+83	+71	+74
Midwest Storage Level	1095	1122	1133	1139	1127	1119
Weekly Change	-27	-11	-6	+12	+8	+1
vs LY	+74	+79	+76	+59	+20	+14
vs 5Yr Avg	+65	+69	+61	+53	+33	+36
East Storage Level	915	934	934	953	942	947
Weekly Change	-19	0	-19	+11	-5	+6
vs LY	+41	+42	+36	+37	+10	+20
vs 5Yr Avg	+60	+63	+47	+51	+30	+39
Mountain Storage Level	232	240	242	241	243	240
Weekly Change	-8	-2	+1	-2	+3	-5
vs LY	+37	+39	+38	+35	+36	+32
vs 5Yr Avg	+26	+28	+28	+26	+27	+24
Pacific Storage Level	312	318	320	319	322	320
Weekly Change	-6	-2	+1	-3	+2	-3
vs LY	+33	+30	+27	+28	+31	+26
vs 5Yr Avg	+9	+7	+6	+4	+6	+4



#### **NonSalt Storage Levels**



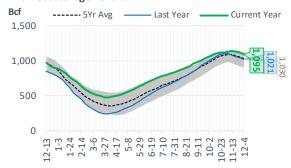
#### **Salt Storage Levels**



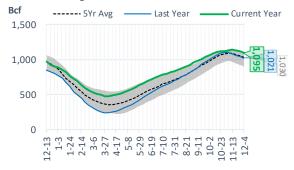
#### **East Storage Levels**



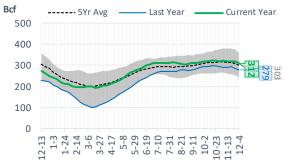
### Midwest Storage Levels



#### Midwest Storage Levels



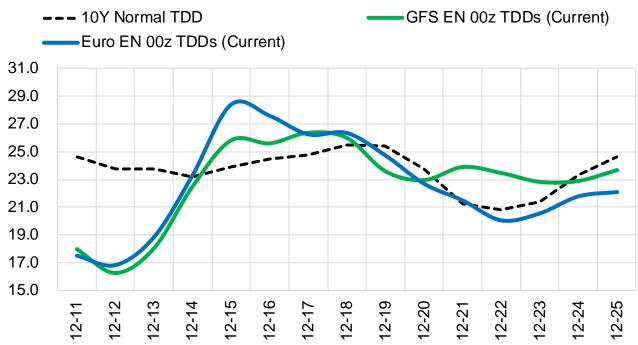
### Pacific Storage Levels

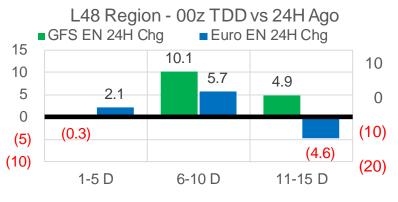


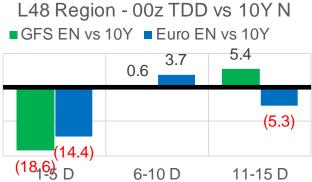


### Current Short-term Weather Model Outlooks (00z)









Source: WSI , Bloomberg



EIA Storage Week Balances								
	6-Nov	13-Nov	20-Nov	27-Nov	4-Dec	11-Dec	WoW	vs. 4W
Lower 48 Dry Production	89.6	88.2	90.9	91.6	91.6	90.9	▼-0.7	▲ 0.3
Canadian Imports	4.9	3.9	5.1	4.5	5.3	5.9	<b>0.6</b>	<b>1.2</b>
L48 Power	24.6	24.4	24.8	24.8	26.5	28.1	<b>1.6</b>	<b>3.0</b>
L48 Residential & Commercial	23.1	16.8	27.2	26.7	34.4	37.3	<b>2.9</b>	<b>11.0</b>
L48 Industrial	23.0	24.0	23.3	22.1	24.4	23.4	<b>▼</b> -1.0	▼ 0.0
L48 Lease and Plant Fuel	4.9	4.9	5.0	5.1	5.1	5.0	▼ 0.0	<b>0.0</b>

L48 Lease and Plant Fuel	4.9	4.9	5.0	5.1	5.1	5.0	▼ 0.0	<b>0.0</b>
L48 Pipeline Distribution	2.3	1.9	2.4	2.4	2.8	3.0	<b>0.2</b>	<b>0.6</b>
L48 Regional Gas Consumption	77.9	72.0	82.7	81.1	93.1	96.8	<b>3.7</b>	<b>▲14.6</b>
Net LNG Exports	10.2	10.4	10.2	9.7	10.4	11.3	<b>0.9</b>	<b>1.1</b>
Total Mexican Exports	6.0	6.3	6.1	6.3	6.4	6.3	▼-0.1	▲ 0.0
Implied Daily Storage Activity	0.3	3.4	-2.9	-1.0	-13.1	-17.6	-4.5	
EIA Reported Daily Storage Activity	1.1	4.4	-2.6	-0.1	-13.0			
Daily Model Error	-0.8	-1.0	-0.4	-0.9	-0.1			
•								

Monthly Balances									
	2Yr Ago	LY					MTD		
	Dec-18	Dec-19	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	MoM	vs. LY
Lower 48 Dry Production	87.5	95.1	88.6	87.8	87.5	90.4	91.0	<b>0.6</b>	▼ -4.1
Canadian Imports	4.8	4.5	4.9	3.8	4.3	4.6	5.8	<b>1.3</b>	<b>1.3</b>
L48 Power	24.4	28.9	41.0	34.1	29.4	24.7	28.1	<b>3.4</b>	▼-0.8
L48 Residential & Commercial	39.3	39.1	7.7	8.8	16.2	24.2	37.2	<b>13.0</b>	<b>▼</b> -1.8
L48 Industrial	22.4	24.4	20.3	19.2	22.3	23.2	24.2	<b>1.0</b>	<b>-</b> 0.3
L48 Lease and Plant Fuel	4.9	5.3	4.9	4.9	4.8	5.0	5.0	<b>0.1</b>	<b>▼</b> -0.2
L48 Pipeline Distribution	2.8	3.1	2.4	2.2	2.2	2.3	3.0	<b>0.7</b>	<b>▼</b> -0.1
L48 Regional Gas Consumption	93.9	100.7	76.3	69.1	74.9	79.3	97.5	<b>▲18.2</b>	▼-3.2
Net LNG Exports	4.5	7.8	4.0	5.9	8.0	10.1	11.1	<b>1.0</b>	<b>3.3</b>
Total Mexican Exports	4.5	5.0	6.3	6.4	6.2	6.2	6.3	<b>▲ 0.1</b>	<b>1.4</b>
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	-10.7	-13.9	6.8	10.2	2.7	-0.7	-18.1		

Source: Bloomberg, analytix.ai

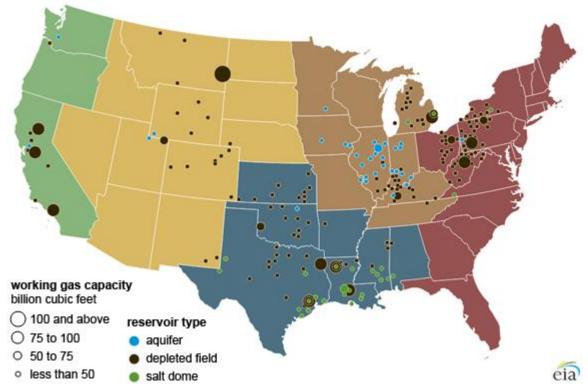
### Regional S/D Models Storage Projection

Week Ending 11-Dec

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	-18.3	0.6	-17.0	-119
East	-6.5	1.8	-4.7	-33
Midwest	-6.1	0.4	-5.4	-38
Mountain	2.7	-3.7	-0.9	-6
South Central	-7.8	2.4	-5.1	-36
Pacific	-0.6	-0.3	-0.9	-6

<sup>\*</sup>Adjustment Factor is calcuated based on historical regional deltas

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

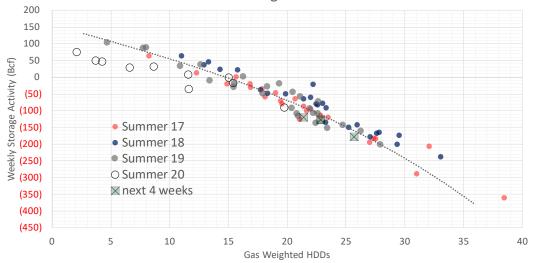




### Weather Model Storage Projection

Next report and beyond								
		Week Storage						
Week Ending	Temp	Projection						
18-Dec	22.8	-127						
25-Dec	22.9	-127						
01-Jan	25.7	-178						



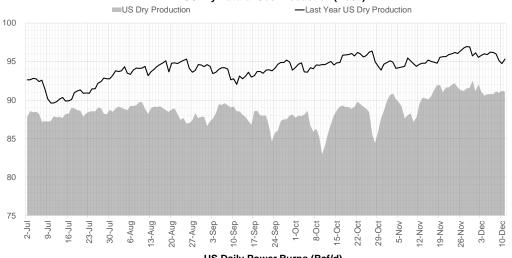


Note: this is not our official end of season forecast. This chart signifies where storage levels end with 10-year normal weather and current market tightness relative to last year

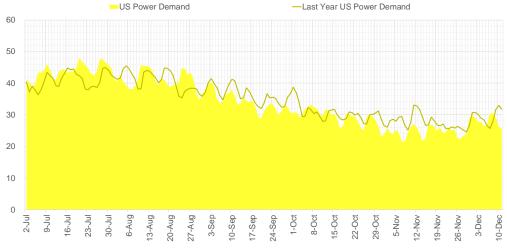


### Supply - Demand Trends

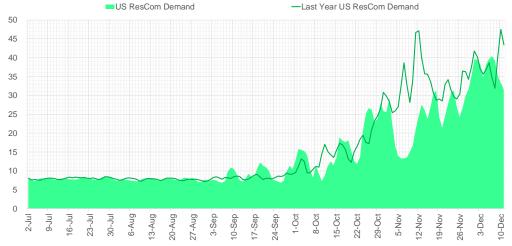
### US Dry Natural Gas Production (Bcf/d)



### US Daily Power Burns (Bcf/d)



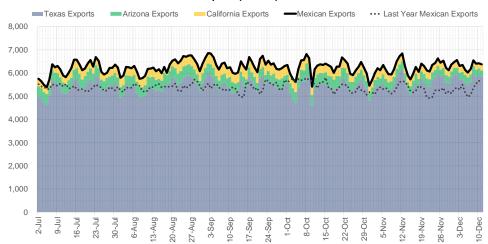
#### US Daily ResCom Consumption(Bcf/d)



Source: Bloomberg



#### Mexican Exports (MMcf/d)



#### Net LNG Exports - Last 30 days (MMcf/d) Sabine Pass Exports Cameron Exports Cove Point Exports Elba Exports Everett Exports Freeport Exports Golden Pass Exports Lake Charles Exports ■Neptune Exports Northeast Exports Chorpus Christie Import LNG Exports 14,000 12.000 10.000 8.000 6,000 4,000 2,000 (2,000)

Source: Bloomberg



# Nat Gas Options Volume and Open Interest CME, ICE and Nasdaq Combined

CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL		CONTRACT MONTH			
4	2021	С	3.50	6117		3	3 2021	3 2021 P	3 2021 P 2.00
4	2021	č	3.25	5965		1			
1	2021	Ċ	3.25	5457		3			
4	2021	Č	4.25	5150		3			
1	2021	C	2.75	4952		3			
· ·						1			
1	2021	P	2.25	4883		1			
1	2021	C	3.00	4754		3			
2	2021	Р	2.00	3566					
4	2021	Р	2.25	2680	3		2021		
4	2021	Р	2.00	2650	1		2021		
1	2021	С	2.90	2204	10		2021		
1	2021	Р	2.00	2130	4		2021		
3	2021	С	3.50	2077	1		2021		
1	2021	P	2.50	1897	3		2021		
4	2021	C	4.00	1805	1		2021		
1	2021	Č	2.85	1728	2		2021		
2	2021	Č	2.50	1675	10		2021		
2	2021	C	4.00	1608	3	2	021	.021 C	021 C 3.50
2	2021	C			1	202	21	21 C	21 C 3.75
			3.25	1546	3	2021		P	
3	2021	P	2.00	1518	1	2021		P	
3	2021	Р	2.50	1469	4	2021		C	
4	2021	С	3.75	1400	3	2021		Č	
2	2021	С	3.00	1369	1	2021		C	
2	2021	Р	2.10	1316	4	2021		C	
5	2021	С	4.00	1300					
6	2021	C	4.00	1300	2	2021		С	
2	2021	P	2.25	1216	10	2021		С	
1	2021	Р	2.40	1191	4	2021		C	
5	2021	P	2.40	1150	2	2021		Р	
5 7	2021	P P	2.00	1150	2	2021		С	
					8	2021		С	
7	2021	С	4.00	1100	4	2021		С	
8	2021	C	4.00	1100	4	2021		С	
9	2021	С	4.00	1100	1	2021		P	
10	2021	С	4.00	1100	8	2021		P	
1	2021	С	2.80	1081	1	2021		C	
3	2021	С	3.00	1041	5	2021		Č	
6	2021	Р	2.50	1030	2	2021		C	
1	2021	P	2.20	991		2021		C	
1	2021	Ċ	2.70	916	1			P	
2	2021	P	2.70	879	2	2021			
					2	2021		C	
1	2021	С	2.50	835	4	2021		Р	
2	2021	С	3.50	831	1	2021		Р	
3	2021	С	2.50	800	6	2021		С	
3	2021	С	10.00	750	5	2021		С	
3	2022	С	3.50	750	10	2021		С	C 3.00
2	2021	Р	2.50	738	1	2021		Р	P 3.00
3	2021	Р	2.20	691	2	2021		С	
1	2021	Р	2.30	661	1	2021		Č	
1	2021	C	3.50	613	5	2021		Č	

Source: CME, Nasdaq, ICE

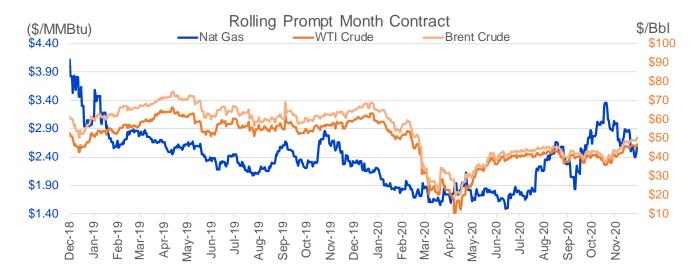


### Nat Gas Futures Open Interest

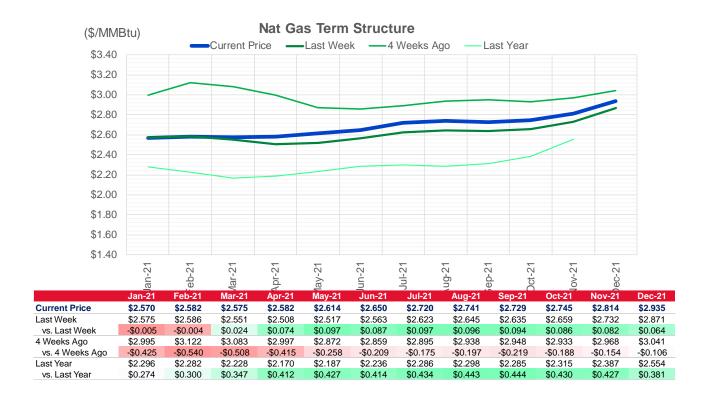
CME, ICE and Nasdaq Combined

CME Henry H	lub Futures (1	0,000 MMBtu	ı)	ICE Henry Hub	Futures Co	ontract Equiva	lent (10,000 MM
	Current	Prior	Daily Change	FOR JUNE 26	Current	Prior	Daily Change
JAN 21	157667	196256	-38589	JAN 21	91031	93051	-2019.75
FEB 21	148246	130714	17532	FEB 21	72160	72110	50.75
MAR 21	223927	203837	20090	MAR 21	98192	97664	528
APR 21	95666	94931	735	APR 21	82723	80990	1733
MAY 21	60866	61518	-652	MAY 21	75451	73855	1595.25
JUN 21	37255	38065	-810	JUN 21	62525	61878	646.25
JUL 21	30522	30388	134	JUL 21	63681	62962	719.25
AUG 21	27819	26706	1113	AUG 21	66426	65387	1038.5
SEP 21	44878	43288	1590	SEP 21	61269	60329	940.25
OCT 21	88703	90505	-1802	OCT 21	75390	74682	708
NOV 21	44659	43735	924	NOV 21	51117	51074	43.25
DEC 21	42202	40555	1647	DEC 21	50905	50322	583.5
JAN 22	39188	39700	-512	JAN 22	49134	48824	310
FEB 22	24609	25667	-1058	FEB 22	38576	38596	-19.5
MAR 22	27387	27530	-143	MAR 22	40136	39910	225.5
APR 22	24914	24582	332	APR 22	39187	39163	24.75
MAY 22	13124	12734	390	MAY 22	33024	32726	298
JUN 22	6469	6445	24	JUN 22	31243	31127	115.5
JUL 22	5800	5836	-36	JUL 22	32794	32788	5.5
AUG 22	5043	5089	-46	AUG 22	31805	31807	-2.25
SEP 22	4751	4789	-38	SEP 22	31419	31329	90.5
OCT 22	8355	8268	87	OCT 22	37068	37003	65.25
NOV 22	6293	6245	48	NOV 22	31479	31492	-13.25
DEC 22	6807	6762	45	DEC 22	33975	33983	-8
JAN 23	4495	4517	-22	JAN 23	15939	15855	84.25
FEB 23	1460	1407	53	FEB 23	14541	14496	45.5
MAR 23	2585	2583	2	MAR 23	14093	14084	9
APR 23	2221	2254	-33	APR 23	13475	13466	9.25
MAY 23	665	644	21	MAY 23	12538	12536	1.75
JUN 23	672	672	0	JUN 23	12542	12491	51.5

Source: CME, ICE







				vs. 4 Weeks	
	Units	<b>Current Price</b>	vs. Last Week	Ago	vs. Last Year
NatGas Jan21/Apr21	\$/MMBtu	0.012	<b>0.079</b>	<b>0.262</b>	<b>0.393</b>
NatGas Mar21/Apr21	\$/MMBtu	0.007	<b>0.050</b>	<b>-</b> 0.118	<b>▼</b> -0.235
NatGas Oct21/Nov21	\$/MMBtu	0.069	<b>-</b> 0.004	<b>-</b> 0.004	<b>0.000</b>
NatGas Apr21/Oct21	\$/MMBtu	0.163	<b>0.247</b>	<b>0.009</b>	<b>▼</b> -0.125
WTI Crude	\$/Bbl	46.68	<b>0.420</b>	<b>6.550</b>	<b>▼</b> -13.390
Brent Crude	\$/Bbl	50.10	<b>a</b> 0.850	<b>7.320</b>	<b>▼</b> -15.120
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
Heating Oil	cents/Gallon	143.37	<b>3.070</b>	<b>22.950</b>	<b>▼</b> -55.270
Propane, Mt. Bel	cents/Gallon	0.59	<b>a</b> 0.001	<b>0.037</b>	<b>0.073</b>
Ethane, Mt. Bel	cents/Gallon	0.20	<b>0.009</b>	<b>-</b> 0.026	<b>a</b> 0.030
Coal, PRB	\$/MTon	12.30	<b>0.000</b>	<b>0.000</b>	<b>a</b> 0.050
Coal, PRB	\$/MMBtu	0.70			

Source: CME, Bloomberg



### **Baker Hughes Rig Counts**

	Baker	Hughes S			
U.S. Breakout Information	This Week	+/-	Year Ago		
Oil	258	12	246	-409	667
Gas	79	4	75	-50	129
Miscellaneous	1	-1	2	-2	3
				.=	
Directional	17	-1 	18	-35	52
Horizontal	306	17	289	-387	693
Vertical	15	-1	16	-39	54
Canada Breakout	This Week	+/-	Last Week	+/-	Year Ago
Oil Oil	<b>5</b> 0	40	40	44	06
Oil	52 59	12 -3	40 62	-44 2	96 57
Gas					
Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago
Arkoma Woodford	0	0	0	-3	3
Barnett	0	0	0	-1	1
Cana Woodford	8	-1	9	-17	25
DJ-Niobrara	7	1	6	-13	20
Eagle Ford	26	3	23	-34	60
Granite Wash	1	1	0	0	1
Haynesville	40	0	40	-10	50
Marcellus	27	2	25	-14	41
Mississippian	0	0	0	-2	2
Permian	168	4	164	-232	400
			_	_	
Utica	6	1	5	-5	11