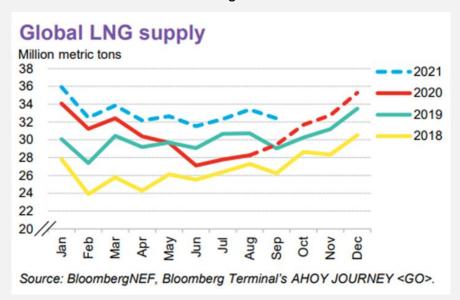


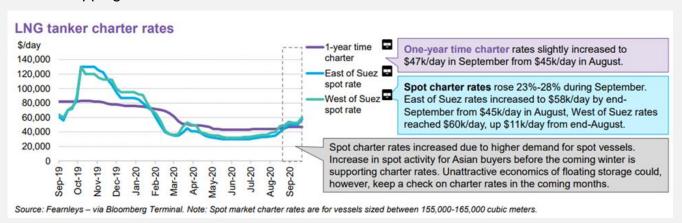
As we enter winter, today we take a look at US LNG netbacks to get a better understanding of how much feedgas demand there might be from US LNG facilities over the next 12 months.

LNG flow and consumption peaks in the winter as 90% of the global population lives in the northern hemisphere. Natural gas demand is growing globally, and more supply is coming on to keep this emerging market balanced.

According to BNEF: "The global gas market will move past the impact of Covid-19 as it enters peak demand season. Summer LNG demand is estimated to be 3.6% lower than last year, but winter 2020-21 is set to see a 4.5% growth over last winter. Global LNG supply rebounds in the fourth quarter to cater to Asia's increased gas needs."

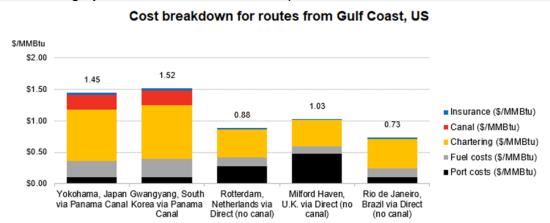


As winter approaches, there is already rising demand for spot cargoes for November deliveries. With no cargo cancellations in site and spot purchases from North Asia increasing, we see shipping charter rates rise as well.





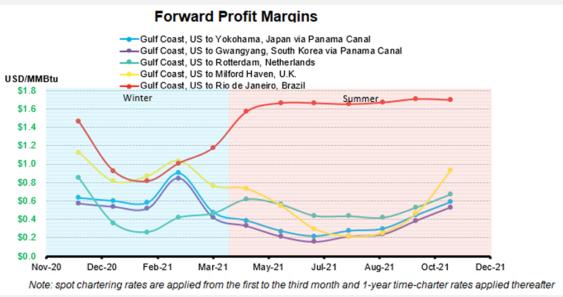
Taking the current charter rates and canal tolls, we ran the BNEF LNG Netback Shipping Calculator to better understand the cost to ship from the US to global destinations. The cost to North Asia is roughly ~\$1.50/MMBtu while Europe is ~\$0.90-1.00/MMBtu.



The ensure netbacks are positive, we have seen both Asian and European prices increase to keep the netbacks positive. The JKM price for Nov 2020 through Jan 2021 is currently trading at \$5.52/MMBtu. This is equivalent to roughly 12% Brent indexed LNG prices – close to the long-term contracted LNG price slope index to Brent or JCC.

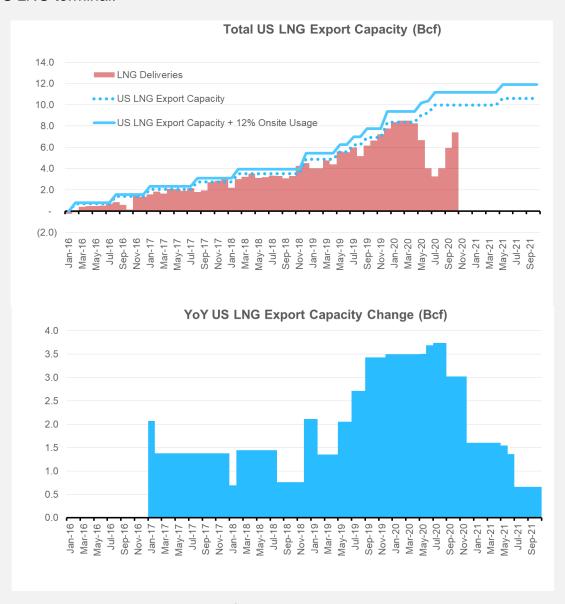
Below is the calculated netback (round-trip journey at an approximately \$50k/day spot chart rate) for all the destination picked above based on the current forward strip.

- JKM prices is used as a proxy to Yokohama, Japan and Gwangyang, South Korea.
- TTF forward price is used for Rotterdam, Netherlands
- NBP forward price is used for Milford Haven, UK
- 12% Brent index price is used for Rio ds Janeiro, Brazil





As can be seen, US LNG is in the money to flow throughout the coming winter and summer. If the full US capacity was utilized, then we could flow as much as 11.1 Bcf/d (9.96 Bcf/d export design capacity + 12% onsite usage) to the US LNG terminal this winter. For the summer, we could flow as much as 11.8 Bcf/d (10.54 Bcf/d export design capacity + 12% onsite usage) to the US LNG terminal.



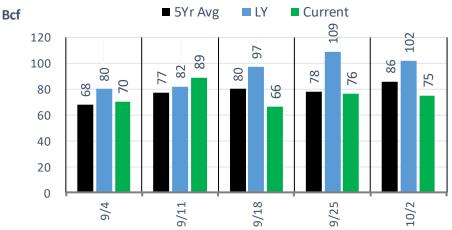
There are some caveats to the above flows

- 1) Winter conditions in Europe and Asian will dictate the real demand
- 2) Europe currently has topped up storage, with additional gas stored in Ukraine
- 3) COVID-19 is likely to keep global demand lower
- 4) US balances for the summer are starting to look tight with the lower production levels; hence it's a possibility the market will reprice to encourage cargo cancellations.

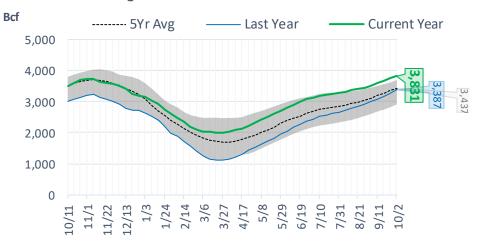


EIA Storage Report

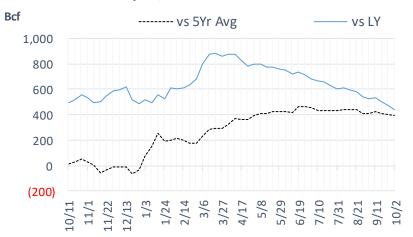
Total Lower 48 YoY Weekly Change



Total Lower 48 Storage Levels



Total Lower 48 LY Surplus/Deficit



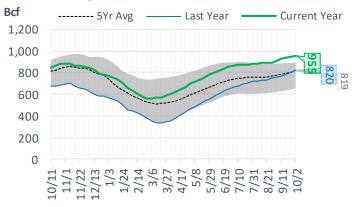


Natural Gas Storage Stats - Last 5 Weeks

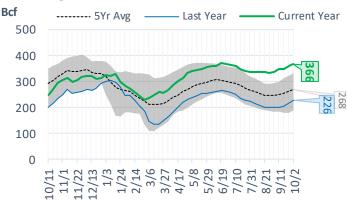
	Current	Week - 1	Week - 2	Week - 3	Week - 4	Week - 5
Week Ending	2-Oct	25-Sep	18-Sep	11-Sep	4-Sep	28-Aug
Total Lower 48 Storage Level	3831	3756	3680	3614	3525	3455
Weekly Change	+75	+76	+66	+89	+70	+35
vs LY	+444	+471	+504	+535	+528	+538
vs 5Yr Avg	+394	+405	+407	+421	+409	+407
S. Central Salt Storage Level	366	358	349	349	335	331
Weekly Change	+8	+9	0	+14	+4	-3
vs LY	+140	+142	+144	+149	+137	+133
vs 5Yr Avg	+98	+99	+94	+98	+89	+87
S. Central NonSalt Storage Level	955	945	934	927	908	895
Weekly Change	+10	+11	+7	+19	+13	+6
vs LY	+135	+141	+149	+157	+152	+150
vs 5Yr Avg	+136	+139	+138	+142	+134	+127
Midwest Storage Level	1062	1033	1009	983	953	924
Weekly Change	+29	+24	+26	+30	+29	+20
vs LY	+63	+71	+85	+95	+100	+108
vs 5Yr Avg	+83	+87	+95	+101	+104	+107
East Storage Level	893	872	851	825	805	789
Weekly Change	+21	+21	+26	+20	+16	+14
vs LY	+47	+55	+66	+69	+73	+84
vs 5Yr Avg	+41	+45	+48	+46	+49	+55
Mountain Storage Level	236	231	225	221	216	212
Weekly Change	+5	+6	+4	+5	+4	0
vs LY	+34	+33	+33	+34	+35	+36
vs 5Yr Avg	+27	+26	+24	+24	+22	+22
Pacific Storage Level	318	316	312	310	308	304
Weekly Change	+2	+4	+2	+2	+4	-2
vs LY	+23	+26	+28	+32	+33	+27



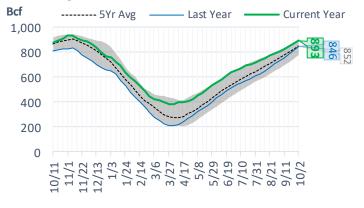
NonSalt Storage Levels



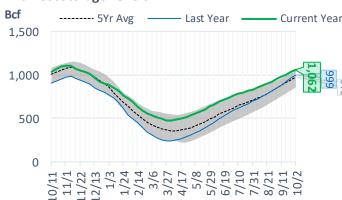
Salt Storage Levels



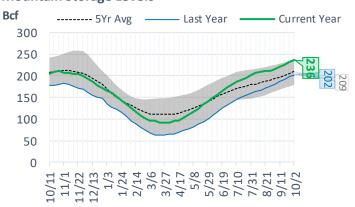
East Storage Levels



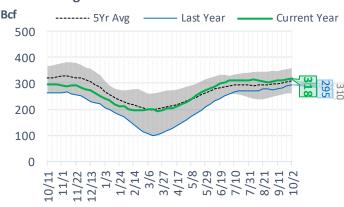
Midwest Storage Levels



Mountain Storage Levels

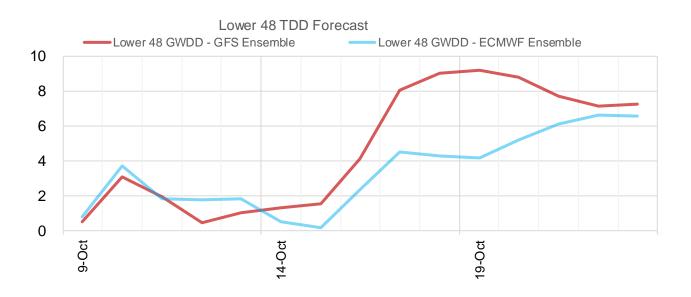


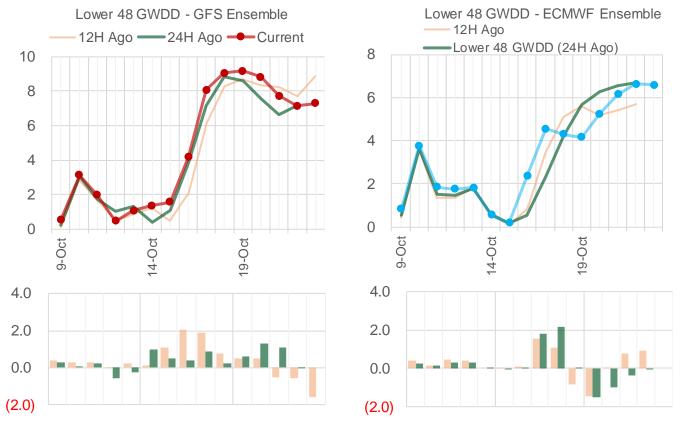
Pacific Storage Levels





Current Short-term Weather Model Outlooks (00z)





Source: WSI, Bloomberg



EIA Storage Week Balances								
	4-Sep	11-Sep	18-Sep	25-Sep	2-Oct	9-Oct	WoW	vs. 4W
Lower 48 Dry Production	85.3	87.3	86.0	85.1	85.5	85.5	▽ 0.0	▼ -0.5
Canadian Imports	4.5	3.7	3.9	3.6	3.9	4.4	0.6	0.6
L48 Power	37.6	35.3	33.5	30.8	30.6	30.7	0.0	▼ -1.9
L48 Residential & Commercial	7.4	8.4	8.0	9.9	9.5	13.5	4.0	4.6
L48 Industrial	18.7	18.0	19.6	19.4	20.4	19.2	▼ -1.3	▼ -0.2
L48 Lease and Plant Fuel	4.7	4.8	4.8	4.7	4.7	4.7	0.0	▼ 0.0
L48 Pipeline Distribution	2.2	2.2	2.1	2.0	2.0	2.2	0.2	△ 0.1
L48 Regional Gas Consumption	70.5	68.7	68.0	66.8	67.3	70.3	3.0	2.6
Net LNG Exports	3.0	5.2	7.3	5.8	6.8	7.5	0.7	1.2
Total Mexican Exports	6.5	6.4	6.2	6.4	6.3	6.2	▽ -0.1	▽ -0.1
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	9.7 10.0 -0.3	10.7 12.7 -2.0	8.4 9.4 -1.0	9.6 10.9 -1.2	9.0 10.7 -1.7	6.0	-3.1	

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	86.9	94.7	85.3	86.2	86.1	85.9	85.2	▽ -0.7	▼ -9.5
Canadian Imports	4.7	4.6	4.0	4.4	4.9	3.8	4.4	△ 0.6	▼ -0.2
L48 Power	28.8	30.7	35.0	43.8	40.6	33.3	30.8	▼ -2.4	△ 0.1
L48 Residential & Commercial	16.1	15.2	8.8	8.0	7.7	8.7	13.1	4.4	▼ -2.1
L48 Industrial	22.3	23.3	17.6	17.4	18.9	19.3	19.1	▼ -0.2	▼ -4.2
L48 Lease and Plant Fuel	4.9	5.2	4.8	4.9	4.7	4.8	4.7	▼ 0.0	▼ -0.5
L48 Pipeline Distribution	2.1	2.3	2.2	2.4	2.3	2.1	2.2	△ 0.1	▼ -0.1
L48 Regional Gas Consumption	74.3	76.7	68.5	76.6	74.3	68.0	69.9	1.9	▼ -6.8
Net LNG Exports	3.3	6.7	4.0	3.3	4.0	5.9	7.3	1.3	△ 0.6
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 EIA Reported Daily Storage Activity Daily Model Error	9.0	10.5	11.1	4.6	6.3	9.4	6.2		

Source: Bloomberg, analytix.ai

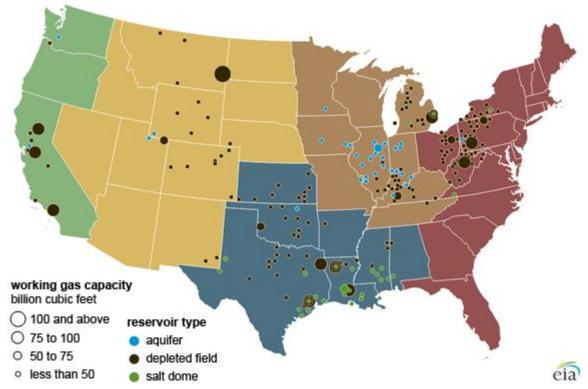
Regional S/D Models Storage Projection

Week Ending 9-Oct

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	5.7	1.8	7.4	52
East	0.6	1.3	1.9	13
Midwest	1.7	0.3	1.9	14
Mountain	4.5	-2.8	1.7	12
South Central	-1.6	3.4	1.8	12
Pacific	0.6	-0.4	0.2	1

^{*}Adjustment Factor is calcuated based on historical regional deltas

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





50

55

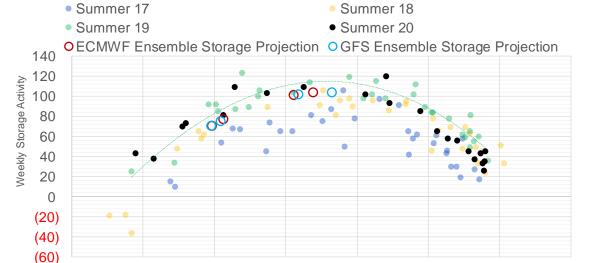
60

Market Report

Weather Model Storage Projection

Next report	t and beyond
	Week Storage
Week Ending	Projection
16-Oct	104
23-Oct	76
30-Oct	71

Weather Storage Model - Next 4 Week Forecast



65

Weather Based End of Winter Projection (Bcf) 10Y normals past 15 day forecast window

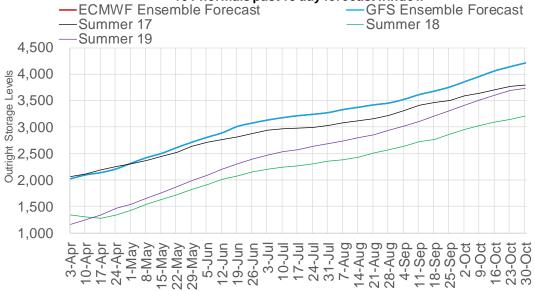
L48 Gas Weighted Temperature

70

75

80

85





Weather Model Storage Projection to End of Season

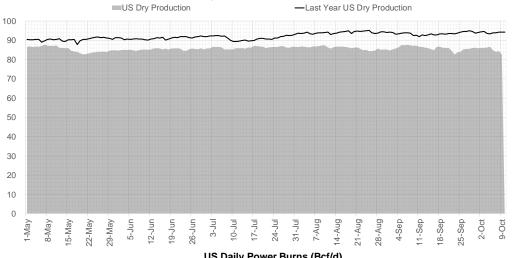
L48 Storage Trajector	y from Weather	Model				Forecast S	Storage Lev	els	
	Report		vs 5Yr	Reported	Estimate			5Yr Avg	
	Storage Level	vs. LY	Avg	Chg	Chg *	LY Chg	vs. LY	Chg	vs. 5Yr
3-Apr-20	2024	876	324	38		25	13	6	32
10-Apr-20	2097	876	370	73		73	0	27	46
17-Apr-20	2140	827	364	43		92	(49)	49	(6)
24-Apr-20	2210	783	360	70		114	(44)	74	(4)
1-May-20	2319	796	395	109		96	13	74	35
8-May-20	2422	799	413	103		100	3	85	18
15-May-20	2503	779	407	81		101	(20)	87	(6)
22-May-20	2612	778	423	109		110	(1)	93	16
29-May-20	2714	762	422	102		118	(16)	103	(1)
5-Jun-20	2807	748	421	93		107	(14)	94	(1)
12-Jun-20	2892	722	419	85		111	(26)	87	(2)
19-Jun-20	3012	739	466	120		103	17	73	47
26-Jun-20	3077	712	466	65		92	(27)	65	0
3-Jul-20	3133	685	454	56		83	(27)	68	(12)
10-Jul-20	3178	663	436	45		67	(22)	63	(18)
17-Jul-20	3215	656	436	37		44	(7)	37	0
24-Jul-20	3241	626	429	26		56	(30)	33	(7)
31-Jul-20	3274	601	429	33		58	(25)	33	0
7-Aug-20	3332	608	443	58		51	7	44	14
14-Aug-20	3375	595	442	43		56	(13)	44	(1)
21-Aug-20	3420	580	438	45		60	(15)	49	(4)
28-Aug-20	3455	538	407	35		77	(42)	66	(31)
4-Sep-20	3525	528	409	70		80	(10)	68	2
11-Sep-20	3614	535	421	89		82	7	77	12
18-Sep-20	3680	504	407	66		97	(31)	80	(14)
25-Sep-20	3756	471	405	76		109	(33)	78	(2)
2-Oct-20	3831	444	394		103	102	1	86	17
9-Oct-20					102	102	(0)	87	15
16-Oct-20					104	92	12	75	29
23-Oct-20					76	89	(13)	67	9
30-Oct-20					71	49	22	52	19
			2225	2596	(371)	2024	201		

^{*} first 15D change is an average of the GFS Ensemble and ECMWF Ensemble

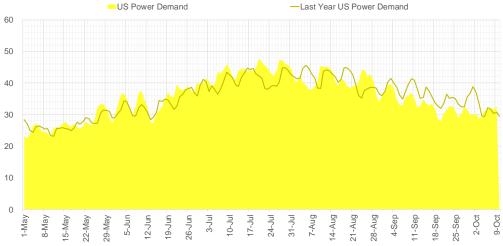


Supply - Demand Trends

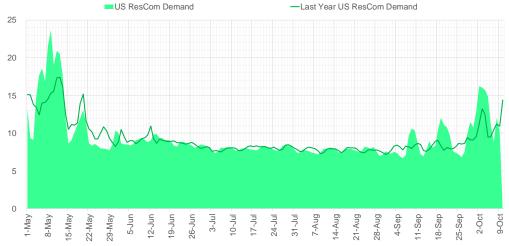




US Daily Power Burns (Bcf/d)



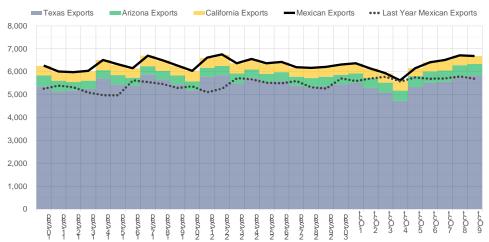
US Daily ResCom Consumption(Bcf/d)

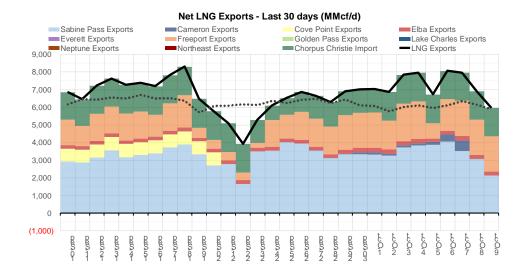


Source: Bloomberg



Mexican Exports - Last 30 days (MMcf/d)





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			
11	2020	Р	2.00	25741		11	11 2020	11 2020 P	11 2020 P 2.00
11	2020	C	3.50	14606		3			
11	2020	Č	3.25	13976		12			
	2020	C	4.00	13071		11			
11						3			
11	2020	С	3.75	12418		1			
11	2020	С	3.00	12112		11			
11	2020	Р	1.85	10074					
11	2020	Р	1.75	9651		3			
11	2020	Р	2.25	8932	3		2021		
3	2021	С	6.00	7625	1		2021		
3	2021	С	5.00	7525	4		2021		
11	2020	С	2.80	5480	12		2020		
12	2020	С	4.00	5349	11		2020		
11	2020	P	2.30	4571	11		2020		
11	2020	P	2.40	3973	11		2020		
11	2020	C	2.75	3567	3		2021	2021 C	2021 C 7.00
11	2020	P	2.75	2484	3		2021		
11	2020	P P	2.50	2225	11		2020		
					2		2021		
12	2020	С	3.25	2046	3		2021		
2	2022	С	5.50	2000	4		2021		
11	2020	С	2.70	1811	12		020		
12	2020	Р	2.50	1659	1	202			
1	2021	Р	2.25	1600	12	2021		C	
12	2020	Р	2.00	1574	12	2020		P	
1	2021	Р	2.50	1472				C	
12	2020	С	5.00	1402	11	2020			
11	2020	Č	2.90	1377	11	2020		P	
11	2020	Č	3.40	1265	11	2020		P	
12	2020	Č	3.50	1157	1	2021		C	
1	2021	P	2.00	1101	1	2021		С	
11	2021	C	2.60	1056	1	2021		С	
					12	2020		С	
2	2022	С	3.50	1050	2	2021		С	
11	2020	P	2.60	1013	1	2021		Р	P 2.00
1	2021	С	4.00	996	11	2020		С	C 3.75
11	2020	С	2.85	989	11	2020		Р	
11	2020	Р	1.90	980	11	2020		Р	
11	2020	С	3.10	967	12	2020		Р	
3	2021	С	3.50	950	4	2021		C	
11	2020	С	2.65	915	12	2020		Ċ	
11	2020	C	3.05	828	3	2021		Č	
11	2020	Ċ	2.79	802	1	2021		P	
11	2020	P	1.60	801	4	2021		P	
12	2020	Ċ	4.75	801	3	2021		P	
3	2021	P	2.45	800	2			P P	
3		P P				2021			
	2021		2.90	800	5	2021		С	
11	2020	P	1.70	788	12	2020		С	
1	2021	С	3.50	772	6	2021		C	
12	2020	С	4.50	759	11	2020		Р	
11	2020	Р	2.35	703	_ 1	2021		С	C 3.25

Source: CME, Nasdaq, ICE



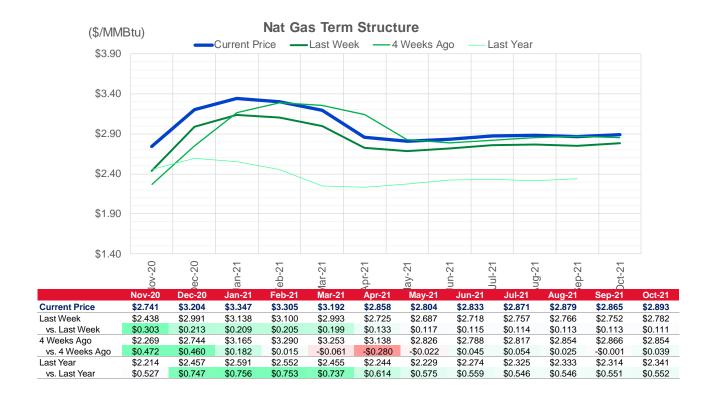
Nat Gas Futures Open Interest CME, ICE and Nasdaq Combined

CME Henry H	ub Futures	(10,000 MMBtu)		ICE Henry Hub	Futures Co	ontract Equival	lent (10,000 MM
	Current	Prior	Daily Change	FOR JUNE 26	Current	Prior	Daily Change
NOV 20	219697	249429	-29732	NOV 20	79972	83090	-3118.75
DEC 20	158763	152188	6575	DEC 20	80089	80964	-875.5
JAN 21	147675	140833	6842	JAN 21	86934	86479	454.75
FEB 21	73853	71535	2318	FEB 21	62712	62450	262
MAR 21	132101	129535	2566	MAR 21	82700	81768	931.75
APR 21	84917	82488	2429	APR 21	66820	66360	459.75
MAY 21	46543	46649	-106	MAY 21	62265	61755	510.75
JUN 21	32227	32718	-491	JUN 21	54324	54009	315
JUL 21	22051	21786	265	JUL 21	56771	56353	418.25
AUG 21	25149	25345	-196	AUG 21	59851	59499	352.25
SEP 21	34172	34107	65	SEP 21	54045	53699	346.75
OCT 21	80649	79358	1291	OCT 21	74355	74076	278.75
NOV 21	30411	30098	313	NOV 21	47583	47201	382.75
DEC 21	25830	25724	106	DEC 21	45406	45236	170.5
JAN 22	27552	27241	311	JAN 22	41007	40958	48.5
FEB 22	16179	15864	315	FEB 22	34043	33878	165
MAR 22	19442	19165	277	MAR 22	36902	36900	2.5
APR 22	24485	24334	151	APR 22	37519	37327	192.5
MAY 22	7692	7736	-44	MAY 22	26781	26665	116.5
JUN 22	3847	3932	-85	JUN 22	25703	25413	290.25
JUL 22	3718	3559	159	JUL 22	27410	27195	215.5
AUG 22	2474	2343	131	AUG 22	25679	25632	46.75
SEP 22	2290	2246	44	SEP 22	24720	24582	137.5
OCT 22	3675	3688	-13	OCT 22	27733	26855	877.5
NOV 22	2871	2795	76	NOV 22	24228	24247	-19.5
DEC 22	3079	3028	51	DEC 22	27384	27358	26.25
JAN 23	2858	2834	24	JAN 23	13917	13935	-18
FEB 23	890	887	3	FEB 23	12948	12950	-1.75
MAR 23	896	897	-1	MAR 23	13153	13139	14.25
APR 23	2449	2450	-1	APR 23	12275	12293	-17.75

Source: CME, ICE







					VS	s. 4 Weeks		
	Units	Current Price	VS.	Last Week		Ago	VS	. Last Year
NatGas Jan/Apr	\$/MMBtu	-0.49	$\overline{}$	-0.076	$\overline{}$	-0.025	$\overline{}$	-0.068
NatGas Mar/Apr	\$/MMBtu	-0.334	$\overline{}$	-0.066	$\overline{}$	-0.646	$\overline{}$	-0.598
NatGas Oct/Nov	\$/MMBtu	0.64	_	0.303	_	0.165		0.570
NatGas Oct/Jan	\$/MMBtu	1.25		0.209	_	0.225		0.892
WTI Crude	\$/Bbl	40.60		3.550	_	3.270	$\overline{}$	-14.100
Brent Crude	\$/Bbl	42.85		3.580		3.020	$\overline{}$	-17.660
Fuel Oil, NY Harbour 1%	\$/Bbl	98.03		0.000	A	0.000		0.000
Heating Oil	cents/Gallon	119.33	_	10.830	A	10.370	$\overline{}$	-76.430
Propane, Mt. Bel	cents/Gallon	0.52	_	0.034	_	0.044		0.052
Ethane, Mt. Bel	cents/Gallon	0.20		0.006	$\overline{}$	-0.013		0.004
Coal, PRB	\$/MTon	12.30	_	0.000	_	0.000		0.100
Coal, ILB	\$/MTon	31.05		0.000		0.000		-4.500

Source: CME, Bloomberg



Baker Hughes Rig Counts

Oil rigs increased by 6 each this week, while natural gas rigs was flat. The weekly changes for the major basins are listed below.

Rotary Rig Count

10/9/2020

Baker Hughes 🔰

U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago
Oil	193	4	189	-519	712
Gas	73	-1	74	-70	143
Miscellaneous	3	0	3	2	1
Directional	21	0	21	-34	55
Horizontal	233	4	229	-517	750
Vertical	15	-1	16	-36	51
Canada Breakout	This Week	+/-	Last Week	+/-	Year Ago
Oil	39	2	37	-63	102
Gas	41	3	38	-3	44
Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago
					Year Ago
Ardmore Woodford	This Week 0	0	Last Week 0	-2	Year Ago 2
Ardmore Woodford Arkoma Woodford				-2 -2	Year Ago 2 3
Ardmore Woodford Arkoma Woodford Barnett	0 1 0	0	0	-2 -2 -4	2 3 4
Ardmore Woodford Arkoma Woodford Barnett Cana Woodford	0 1	0 0	0	-2 -2 -4 -27	2 3 4 33
Ardmore Woodford Arkoma Woodford Barnett Cana Woodford DJ-Niobrara	0 1 0 6 4	0 0 0	0 1 0 6 4	-2 -2 -4 -27 -17	2 3 4 33 21
Ardmore Woodford Arkoma Woodford Barnett Cana Woodford DJ-Niobrara Eagle Ford	0 1 0 6	0 0 0 0	0 1 0 6 4 12	-2 -2 -4 -27 -17 -47	2 3 4 33 21 60
Ardmore Woodford Arkoma Woodford Barnett Cana Woodford DJ-Niobrara Eagle Ford Granite Wash	0 1 0 6 4 13	0 0 0 0	0 1 0 6 4 12 1	-2 -2 -4 -27 -17 -47	2 3 4 33 21 60 2
Ardmore Woodford Arkoma Woodford Barnett Cana Woodford DJ-Niobrara Eagle Ford Granite Wash Haynesville	0 1 0 6 4 13 1 36	0 0 0 0 0	0 1 0 6 4 12 1 36	-2 -2 -4 -27 -17 -47 -1	2 3 4 33 21 60 2 52
Ardmore Woodford Arkoma Woodford Barnett Cana Woodford DJ-Niobrara Eagle Ford Granite Wash Haynesville Marcellus	0 1 0 6 4 13 1 36 25	0 0 0 0 0 1	0 1 0 6 4 12 1 36 26	-2 -4 -27 -17 -47 -1 -16 -22	2 3 4 33 21 60 2
Ardmore Woodford Arkoma Woodford Barnett Cana Woodford DJ-Niobrara Eagle Ford Granite Wash Haynesville Marcellus Mississippian	0 1 0 6 4 13 1 36 25 0	0 0 0 0 0 1 0	0 1 0 6 4 12 1 36 26 0	-2 -4 -27 -17 -47 -1 -16 -22	2 3 4 33 21 60 2 52 47 2
Ardmore Woodford Arkoma Woodford Barnett Cana Woodford DJ-Niobrara Eagle Ford Granite Wash Haynesville Marcellus Mississippian Permian	0 1 0 6 4 13 1 36 25 0 130	0 0 0 0 1 0 0	0 1 0 6 4 12 1 36 26 0 129	-2 -4 -27 -17 -47 -1 -16 -22 -2	2 3 4 33 21 60 2 52
Ardmore Woodford Arkoma Woodford Barnett Cana Woodford DJ-Niobrara Eagle Ford Granite Wash Haynesville Marcellus Mississippian	0 1 0 6 4 13 1 36 25 0	0 0 0 0 1 0 0 -1	0 1 0 6 4 12 1 36 26 0	-2 -4 -27 -17 -47 -1 -16 -22	2 3 4 33 21 60 2 52 47 2