

25 Oct 2020

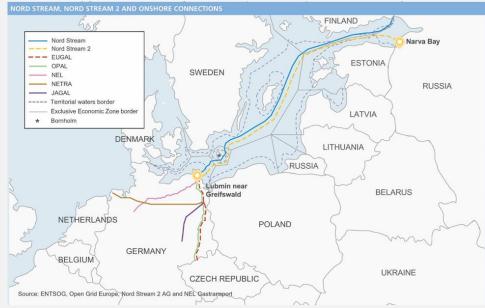
This week we spend some time looking at the brewing situation in Europe. Understanding the situation in Europe is critical to North American energy markets this winter. It's likely not going to result in cancellations, but then again no one expected the deep level of cancellations we had this past summer. My caution would be to understand how LNG flows from the US might look if some of the bearish factors below play out.

1) COVID - Covid-19 cases in the UK, France, Germany, Italy, and Spain all registered highs in recent days. France is in a state of a health emergency, with curfews in Paris and other major cities and restrictions on private gatherings. The UK government has introduced a system of tiered restrictions, and millions of people in England and Wales are already under the maximum third tier. Ireland has effectively re-entered total lockdown, and private gatherings are restricted in Italy, Spain, and other countries.

The length of these restrictions will surely impact natural gas consumption from both the power sector and industrial sector, leading to potentially fewer LNG imports.

2) Nordstream 2 - A little over 150 km of Nord Stream 2 remains to be laid in Danish and German waters after an initial threat of US sanctions last December forced principal pipe-layer Allseas to halt work. On Oct. 20 widened the scope of sanctions against the pipeline and warned companies involved in the final installation that they face sanctions if they do not wind down activities.

Capacity would double the Russia-Germany subsea gas export corridor to 10.64 Bcf/d or 110 Bcm/year. Denmark cleared on Oct 1st the final hurdle to Nord Stream 2 potentially starting operations in Danish waters, with rumors of a Q1 startup.



3) BP and its partners finished a major new pipeline from Azerbaijan into southern Europe. The Trans Adriatic Pipeline, or TAP, project is "substantially complete. The link will bring an additional 0.8 Bcf/d to Italy, and 0.1 Bcf/d to Greece and Bulgaria. The plan is for max flows by mid-2021.



Source: BNN Bloomberg

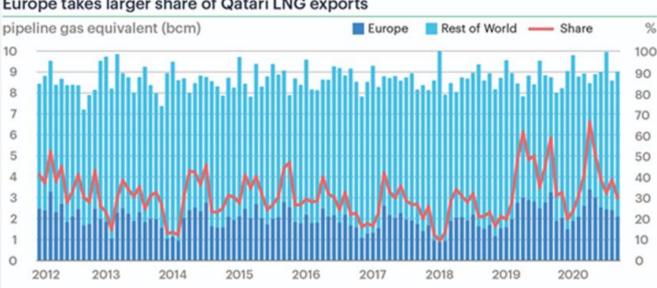
4) Qatar recently booked 10 Bcm/day of long-term capacity at the UK Isle of Grain terminal. This follows a similar move last year when Qatar booked up long-term capacity at the Zeebrugge terminal in Belgium, which will run until 2044. The company has secured all unloading slots at the site until that year.

IUK, which operates the bidirectional interconnector pipeline linking Britain and Belgium, has reduced tariffs to increase bookings. The normal flow direction on the pipeline is to Britain during the winter and Belgium in the summer, but the interconnector now has competition from the BBL, which previously only flowed towards Britain from the Netherlands but is now bidirectional.



Qatar looking to monetize volumes at the NBP, or to ship that gas into Europe

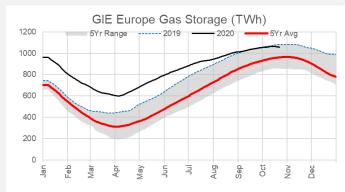
Qatari LNG exports to Europe are driven by Asian prices. Europe becomes a sink market for excess cargoes, particularly during the shoulder months.



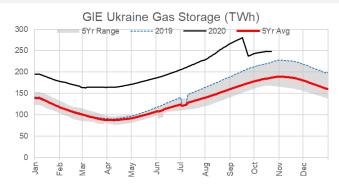
Europe takes larger share of Qatari LNG exports

Source: ICIS

5) Europe LNG and Ukraine LNG - After two warm winters and the coronavirus pandemic, demand for gas is sagging across Europe, leaving inventories well above the average for the season.



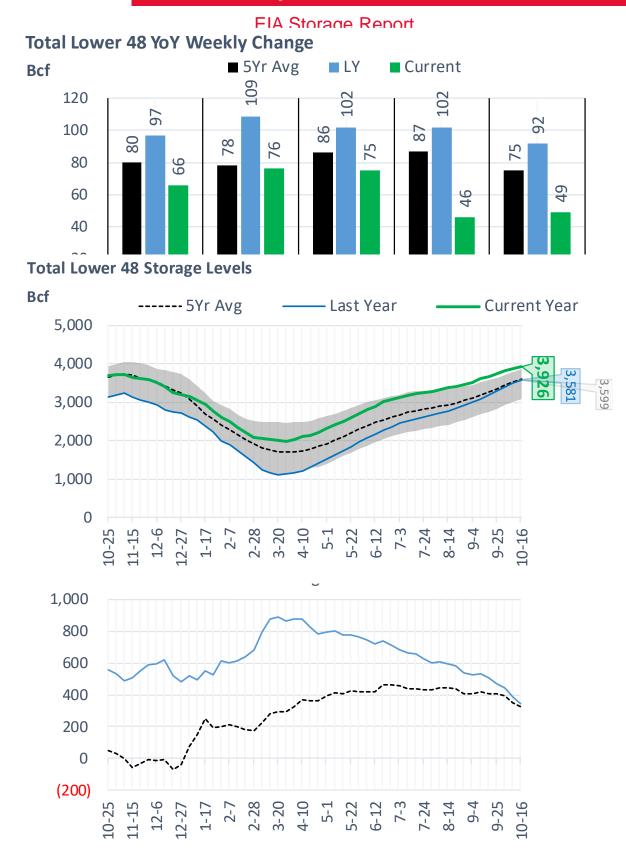
ENERGY



	Level (TWh)	Capacity (TWh)	% Utilization		
Country	2020-10-22	2020-10-22	2020-10-22	YoY	vs. 5Yr Avg
Europe	1054.4	1116.0	94%	-3%	5%
Germany	215.4	228.3	94%	-5%	4%
France	126.8	132.2	96%	-3%	7%
Netherlands Gas Storage (T	123.7	143.0	86%	-10%	-9%
United Kingdom Gas Storage	10.9	12.3	89%	-4%	2%
Belgium	8.8	9.0	98%	1%	23%
Italy	194.7	196.9	99%	1%	2%
Austria	86.2	95.5	90%	-9%	6%
Slovakia	39.7	42.6	93%	-6%	7%
Czech Republic Gas Storage	35.1	36.0	98%	0%	2%
Poland	34.7	35.8	97%	-3%	-2%
Hungary	68.2	69.6	98%	0%	28%
Bulgaria	6.1	6.3	97%	-2%	12%
Spain	32.5	34.3	95%	3%	15%
Denmark	10.3	11.0	94%	-4%	1%
Croatia	4.9	5.2	95%	-4%	2%
Ireland	1.6	1.8	87%	87%	87%
Latvia	21.6	21.5	100%	100%	100%
Portugal	3.7	3.6	100%	0%	38%
Romania	31.1	33.0	94%	0%	17%
Sweden	0.1	0.1	95%	-2%	47%
Non-EU					
Ukraine	248.0	321.4	77%	7%	21%

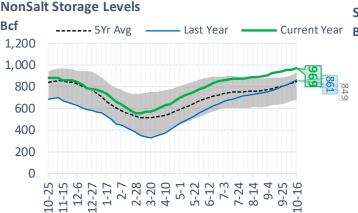
Market Report

ENERGY

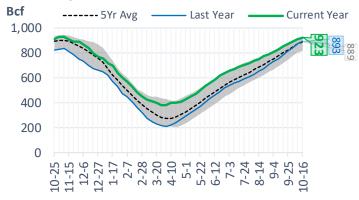


Natural Gas Storage Stats - Last 5 Weeks

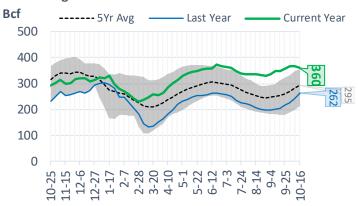
	Current	Week - 1	Week - 2	Week - 3	Week - 4	Week - 5
Week Ending	16-Oct	9-Oct	2-Oct	25-Sep	18-Sep	11-Sep
Total Lower 48 Storage Level	3926	3877	3831	3756	3680	3614
Weekly Change	+49	+46	+75	+76	+66	+89
vs LY	+345	+388	+444	+471	+504	+535
vs 5Yr Avg	+327	+353	+394	+405	+407	+421
S. Central Salt Storage Level	360	366	366	358	349	349
Weekly Change	-6	0	+8	+9	0	+14
vs LY	+98	+125	+140	+142	+144	+149
vs 5Yr Avg	+65	+85	+98	+99	+94	+98
S. Central NonSalt Storage Level	969	960	955	945	934	927
Weekly Change	+9	+5	+10	+11	+7	+19
vs LY	+108	+119	+135	+141	+149	+157
vs 5Yr Avg	+120	+125	+136	+139	+138	+142
Midwest Storage Level	1105	1081	1062	1033	1009	983
Weekly Change	+24	+19	+29	+24	+26	+30
vs LY	+43	+47	+63	+71	+85	+95
vs 5Yr Avg	+66	+70	+83	+87	+95	+101
East Storage Level	923	908	893	872	851	825
Weekly Change	+15	+15	+21	+21	+26	+20
vs LY	+30	+35	+47	+55	+66	+69
vs 5Yr Avg	+34	+35	+41	+45	+48	+46
Mountain Storage Level	245	241	236	231	225	221
Weekly Change	+4	+5	+5	+6	+4	+5
vs LY	+38	+37	+34	+33	+33	+34
vs 5Yr Avg	+32	+30	+27	+26	+24	+24
Pacific Storage Level	323	320	318	316	312	310
Weekly Change	+3	+2	+2	+4	+2	+2
vs LY	+26	+24	+23	+26	+28	+32
vs 5Yr Avg	+10	+7	+8	+10	+9	+11



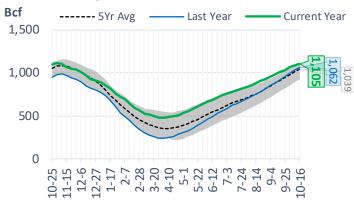
East Storage Levels

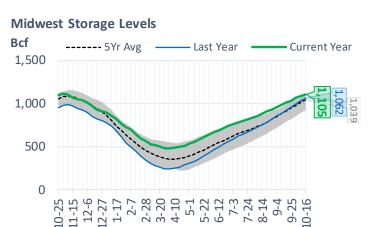


Salt Storage Levels

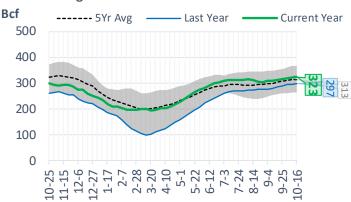


Midwest Storage Levels



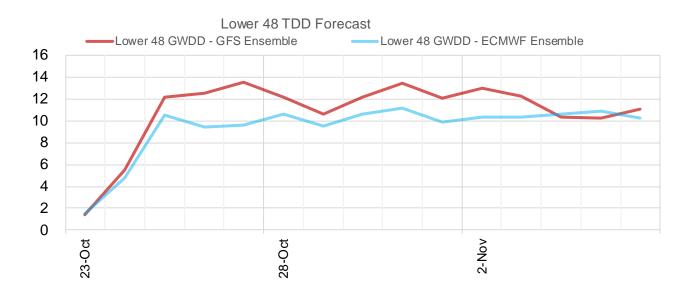


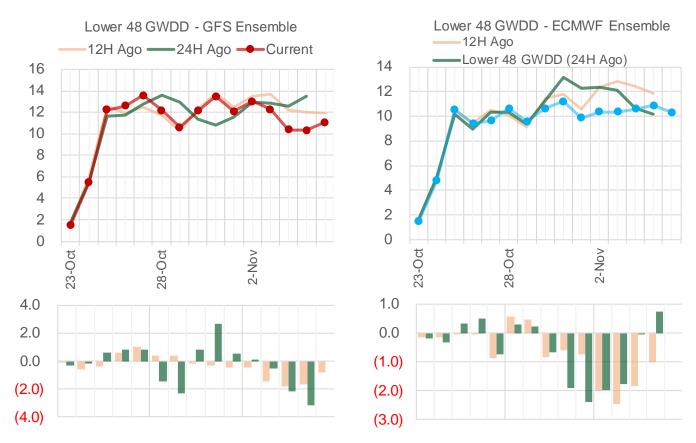
Pacific Storage Levels





Current Short-term Weather Model Outlooks (00z)





Source: WSI, Bloomberg

EIA Storage Week Balances

	18-Sep	25-Sep	2-Oct	9-Oct	16-Oct	23-Oct	WoW	vs. 4W
Lower 48 Dry Production	87.8	86.9	87.2	87.2	85.8	89.1	▲ 3.2	2.3
Canadian Imports	3.8	3.6	3.9	4.5	4.0	3.6	▼-0.4	▼-0.4
L48 Power	33.5	30.8	30.7	30.8	30.1	28.0	▼-2.1	- 2.6
L48 Residential & Commercial	8.0	9.9	9.5	13.6	11.5	17.0	5.5	5 .9
L48 Industrial	21.3	21.1	22.2	21.7	22.3	23.5	1.2	1 .7
L48 Lease and Plant Fuel	4.8	4.8	4.8	4.8	4.7	4.9	a 0.2	a 0.1
L48 Pipeline Distribution	2.1	2.0	2.0	2.2	2.0	2.2	a 0.2	A 0.1
L48 Regional Gas Consumption	69.7	68.6	69.2	73.0	70.6	75.6	4.9	5.2
Net LNG Exports	7.3	5.8	6.8	7.5	6.9	8.0	▲ 1.1	1.3
Total Mexican Exports	6.2	6.4	6.3	6.2	6.2	6.3	0.1	▲ 0.0
Implied Daily Storage Activity	8.3	9.7	8.9	5.1	6.1	2.8	-3.3	
EIA Reported Daily Storage Activity Daily Model Error	9.4 -1.1	10.9 -1.2	10.7 -1.8	6.6 -1.5	7.0 -0.9			

Monthly Balances

	274 400	LY					MTD		
	2Yr Ago Oct-18	Oct-19	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	МоМ	vs. LY
Lower 48 Dry Production	86.7	95.0	86.6	87.8	87.7	87.7	87.4	▼ -0.2	-7.5
Canadian Imports	4.7	4.6	4.0	4.4	4.9	3.8	4.0	0.2	-0.6
L48 Power	28.8	30.8	35.0	43.8	40.7	33.2	29.6	▼-3.6	▼-1.1
L48 Residential & Commercial	16.1	15.2	8.8	8.0	7.7	8.7	14.0	5 .3	▼-1.3
L48 Industrial	22.6	24.0	19.2	19.3	20.6	21.0	22.4	1.5	T -1.5
L48 Lease and Plant Fuel	4.9	5.2	4.8	4.9	4.8	4.8	4.8	▼ 0.0	V -0.4
L48 Pipeline Distribution	2.1	2.3	2.2	2.4	2.3	2.1	2.1	a 0.1	▼-0.1
L48 Regional Gas Consumption	74.5	77.4	70.1	78.4	76.1	69.8	73.0	3.2	▼ -4.5
Net LNG Exports	3.3	6.7	4.0	3.3	4.0	5.9	7.5	A 1.5	0.8
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	8.6	10.0	10.9	4.4	6.2	9.4	4.8		

Source: Bloomberg, analytix.ai

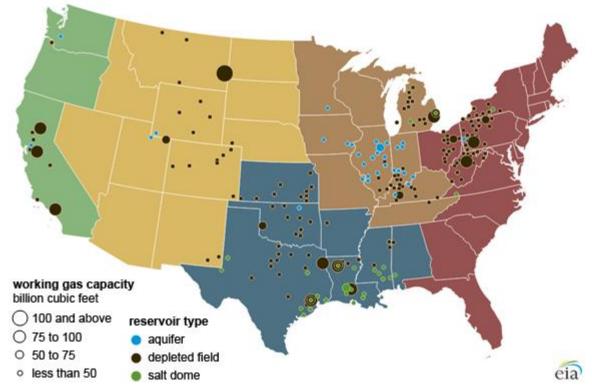


Regional S/D Models Storage Projection

Week Ending	23-Oct			
			Daily	
			Average	Weekly
		Daily	Storage	Adjusted
	Daily Raw	Adjustment	Activity	Storage
	Storage	Factor	(Adjusted) *	Activity
L48	2.5	1.4	4.0	28
East	0.6	1.7	2.3	16
Midwest	0.1	0.8	0.9	6
Mountain	3.3	-3.2	0.1	1
South Central	-1.5	2.1	0.7	5
Pacific	-0.1	0.0	-0.1	-1

*Adjustment Factor is calcuated based on historical regional deltas

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

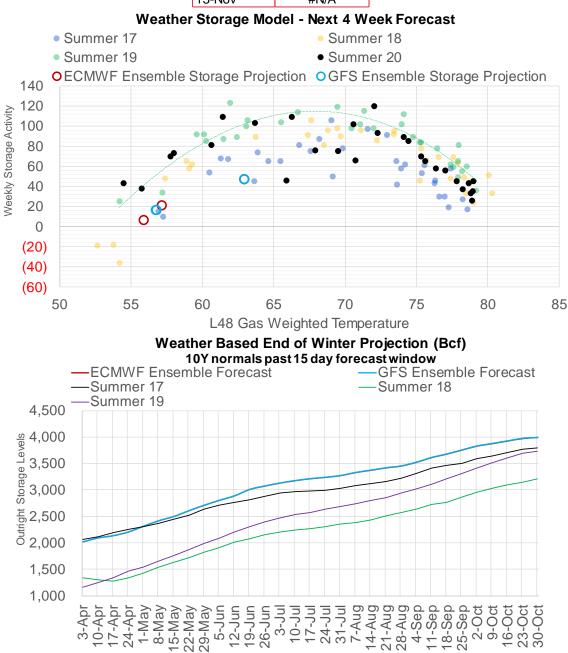




Market Report

Weather Model Storage Projection

Next report and beyond								
	Week Storage							
Week Ending	Projection							
30-Oct	19							
06-Nov	12							
13-Nov	#N/A							



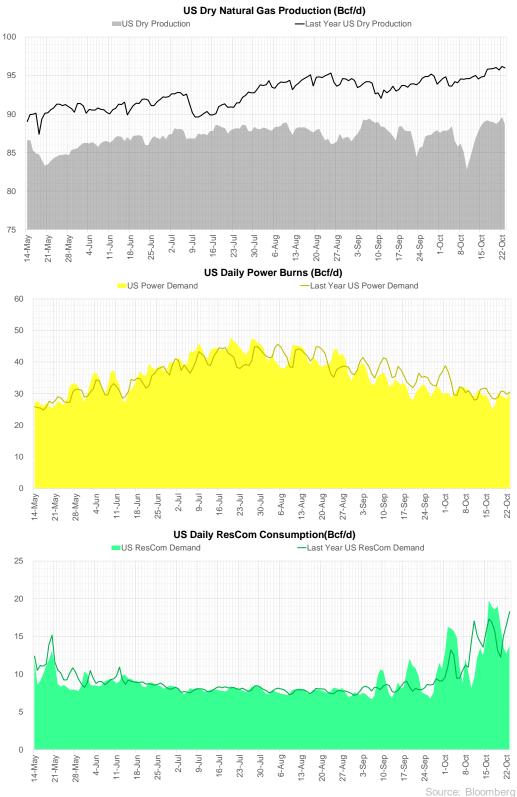
ENERGY

Weather Model Storage Projection to End of Season

L48 Storage Trajectory	8 Storage Trajectory from Weather Model					Forecast Storage Levels				
	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	75		102	(27)	86	(11)	
9-Oct-20	3877	388	353	46		102	(56)	87	(41)	
16-Oct-20	3926	345	327	49		92	(43)	75	(26)	
23-Oct-20					47	89	(42)	67	(20)	
30-Oct-20					19	49	(30)	52	(33)	
			2006	2596	(590)	2024	(18)			

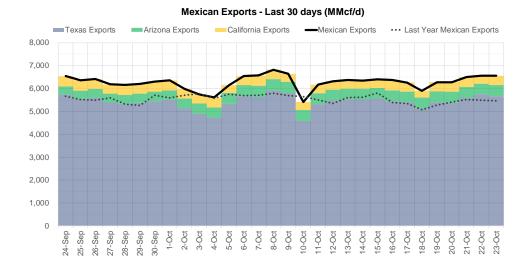
* first 15D change is an average of the GFS Ensemble and ECMWF Ensemble

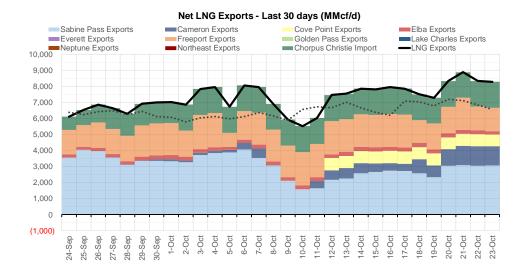
Supply – Demand Trends



Market Report

ENERGY





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	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
11	2020	Р	2.75	9719	11	2020	Р	2.00	56098
11	2020	С	3.25	9254	11	2020	С	3.50	38643
11	2020	С	3.00	5182	3	2021	Р	2.00	36314
3	2021	С	4.00	4813	11	2020	С	3.25	34264
11	2020	Р	2.80	4718	12	2020	Р	2.00	32704
12	2020	С	3.60	4071	3	2021	С	5.00	31674
12	2020	С	4.25	3922	3	2021	С	6.00	30051
11	2020	С	3.50	3915	1	2021	С	4.50	29582
11	2020	С	3.40	3514	3	2021	С	3.25	28033
11	2020	Р	3.00	3212	12	2020	Р	2.50	27473
3	2021	С	3.25	3006	12	2020	С	4.00	27128
12	2020	C	4.00	2384	4	2021	С	5.00	26870
11	2020	P	2.50	2233	3	2021	С	4.00	26429
11	2020	С	3.15	2131	10	2021	С	4.00	26275
12	2020	C	3.80	2014	10	2021	С	3.25	25790
12	2020	C	3.40	2007	3	2021	С	7.00	25380
11	2020	P	2.85	1606	1	2021	С	3.50	25311
4	2021	C	4.00	1565	11	2020	С	4.00	24005
11	2020	c	3.75	1560	11	2020	Р	2.25	23577
11	2020	P	2.90	1520	11	2020	С	5.00	22403
12	2020	C	3.75	1468	11	2020	С	3.00	21749
11	2020	č	3.20	1461	1	2021	С	6.00	21314
11	2020	č	3.10	1372	3	2021	С	3.00	21049
1	2020	c	4.00	1340	12	2020	С	4.50	20011
1	2021	P	2.60	1298	8	2021	С	4.00	19924
11	2020	P	2.00	1290	4	2021	С	4.00	19746
11	2020	P	2.95	1248	11	2020	Р	2.50	19707
3	2020	C	6.00	1248	3	2021	С	3.50	19541
2	2021	P	2.60	1195	11	2020	Р	1.75	19541
3	2021	P	2.60	1195	2	2021	С	5.00	19428
3 4	2021	P	2.60	1195	11	2020	С	2.75	19317
4 5	2021	P	2.60	1195	2	2021	Р	2.25	18787
6		P			12	2020	С	3.75	18551
	2021	P	2.60	1195	1	2021	Р	2.50	18214
7	2021	P P	2.60	1195	12	2020	С	3.50	18200
8	2021		2.60	1195	1	2021	С	5.00	18200
9	2021	P P	2.60	1195	1	2021	Р	2.25	18135
10	2021		2.60	1195	8	2021	Р	2.25	17442
11	2021	Р	2.60	1195	1	2021	С	3.00	17187
12	2021	P	2.60	1195	1	2021	С	3.75	17117
11	2020	С	3.35	1180	2	2021	С	3.50	16999
11	2020	С	3.05	1177	2	2021	Р	2.50	16455
12	2020	P	3.00	1172	5	2021	С	4.00	16430
6	2021	С	4.00	1165	3	2021	Р	2.50	15766
1	2021	Р	2.50	1137	11	2020	Р	2.65	15580
5	2021	P	2.25	1100	2	2021	С	4.00	15171
11	2020	Р	2.65	1085	10	2021	С	5.00	15065
5	2021	С	4.00	1065	12	2020	С	5.00	14527
4	2021	С	6.00	1000	1	2021	С	7.00	14511
11	2021	С	4.00	990	12	2020	Р	1.5	14450

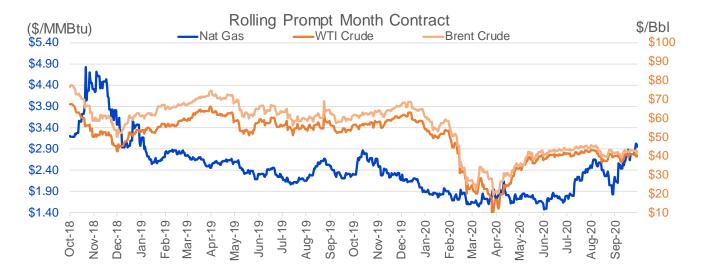
Source: CME, Nasdaq, ICE

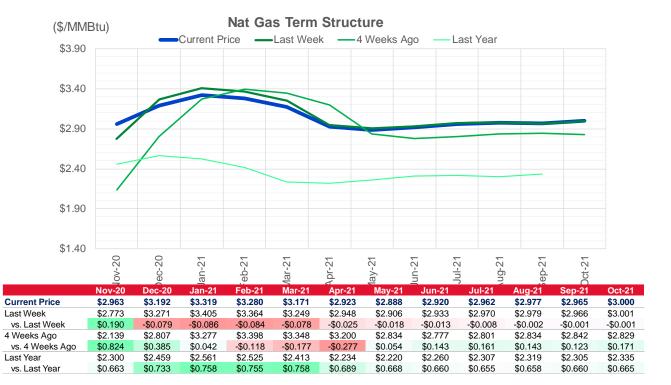


Nat Gas Futures Open Interest CME, ICE and Nasdag Combined

CME Henry H	ub Futures (*	10,000 MMBtu)		ICE Henry Hut	b Futures Co	ntract Equiva	lent (10,000 MN
	Current	Prior [Daily Change	FOR JUNE 26	Current	Prior	Daily Change
NOV 20	30394	44239	-13845	NOV 20	64774	66019	-1245
DEC 20	176348	173748	2600	DEC 20	78866	77323	1542.75
JAN 21	205724	203030	2694	JAN 21	89974	89945	29
FEB 21	83534	82868	666	FEB 21	64612	64670	-58.25
MAR 21	137822	138392	-570	MAR 21	84080	83634	446.25
APR 21	78447	80158	-1711	APR 21	67146	67312	-166.25
MAY 21	49236	48286	950	MAY 21	63635	62719	915.5
JUN 21	33851	33725	126	JUN 21	56795	56598	197
JUL 21	26591	27219	-628	JUL 21	58784	58551	233.25
AUG 21	27011	27003	8	AUG 21	61440	61105	335.75
SEP 21	39116	39281	-165	SEP 21	57067	56760	307
OCT 21	91783	94798	-3015	OCT 21	72354	73057	-703.5
NOV 21	33866	34284	-418	NOV 21	51263	51240	22.25
DEC 21	27458	27990	-532	DEC 21	47134	47109	25.25
JAN 22	31716	30853	863	JAN 22	44550	44592	-41.25
FEB 22	19779	18937	842	FEB 22	36564	36254	309.75
MAR 22	21967	21880	87	MAR 22	39421	39301	120.75
APR 22	21606	21607	-1	APR 22	37509	37493	16.25
MAY 22	9525	9640	-115	MAY 22	28876	28842	33.5
JUN 22	4970	4958	12	JUN 22	27592	27552	40
JUL 22	4252	4215	37	JUL 22	29178	29069	109.5
AUG 22	3124	3044	80	AUG 22	27712	27641	70.75
SEP 22	3176	3149	27	SEP 22	27294	27269	25
OCT 22	4291	4316	-25	OCT 22	30836	30828	7.75
NOV 22	3584	3569	15	NOV 22	26876	26822	54
DEC 22	3808	3782	26	DEC 22	29378	29329	49
JAN 23	3411	3411	0	JAN 23	14461	14420	41.5
FEB 23	919	919	0	FEB 23	13516	13479	37.5
MAR 23	1270	1270	0	MAR 23	13635	13593	41.5
APR 23	1939	1939	0	APR 23	12818	12756	62.5

Source: CME, ICE





					vs	. 4 Weeks		
	Units	Current Price	vs.	Last Week		Ago	V	s. Last Year
NatGas Jan/Apr	\$/MMBtu	-0.40		0.061		0.168		0.029
NatGas Mar/Apr	\$/MMBtu	-0.248		0.053		-0.614		-0.517
NatGas Oct/Nov	\$/MMBtu	0.86		0.190		0.194		0.789
NatGas Oct/Jan	\$/MMBtu	1.22		-0.086		-0.041		0.855
WTICrude	\$/Bbl	39.70		-1.180		-0.550	▼	-16.960
Brent Crude	\$/Bbl	41.63	$\mathbf{\nabla}$	-1.300	•	-0.290	▼	-20.390
Fuel Oil, NY Harbour 1%	\$/Bbl	98.03		0.000		0.000		0.000
Heating Oil	cents/Gallon	114.90	\mathbf{T}	-3.010		2.280		-83.060
Propane, Mt. Bel	cents/Gallon	0.52		0.001		0.029		0.061
Ethane, Mt. Bel	cents/Gallon	0.22		0.003		0.018		0.031
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 this week, while natural gas rigs decreased by 1. The weekly changes for the major basins are listed below.

	Rotary Rig	Count		Baker	Hughes ≽
	10/23/20)20		Duker	nugnes 🥏
U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago
Oil	211	6	205	-485	696
Gas	73	-1	74	-60	133
Miscellaneous	3	0	3	2	1
Directional	21	0	21	-30	51
Horizontal	245	5	240	-483	728
Vertical	21	0 0	21	-30	51
		Ũ			01
Canada Breakout	This Week	+/-	-/- Last Week		Year Ago
Oil	42	2	40	-60	102
Gas	41	1	40	-4	45
Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago
Ardmore Woodford	0	0	0	-1	1
Arkoma Woodford	1	0	1	-2	3
Barnett	0	0	0	-4	4
Cana Woodford	7	0	7	-21	28
DJ-Niobrara	3	0	3	-19	22
Eagle Ford	16	0	16	-47	63
Granite Wash	0	0	0	-1	1
Haynesville	37	0	37	-15	52
Marcellus	26	0	26	-16	42
Mississippian	0	0	0	-3	3
Permian	133	3	130	-284	417
Utica	6	0	6	-5	11