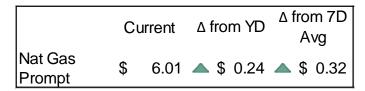


### **5 October 2021**



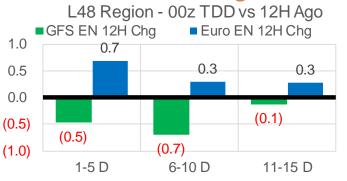
		urrant	Λ fro	m VD	Δ from 7D			
	C	Current		טו ווו	Avg			
WTI Prompt	\$	78.57	<b>\$</b>	0.95	<b>\$</b>	2.8		

	С	urrent	Δf	roı	m YD	om 7D Avg
Brent Prompt	\$	82.42		\$	1.16	J

### Page Menu

Short-term Weather Model Outlooks
Lower 48 Component Models
Regional S/D Models Storage Projection
Weather Model Storage Projection
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Nat Gas Options Volume and Open Interest
Nat Gas Futures Open Interest
Price Summary

### Vs. 12H Ago



# Vs. 24H Ago

L48 Region - 00z TDD vs 24H Ago

GFS EN 24H Chg

Euro EN 24H Chg

(0.2) (0.2) (0.2)

(0.6)

1-5 D 6-10 D 11-15 D

	Current	Δ from YD	Δ from 7D Avg
US Dry Production	91.9	<b>▼</b> -0.32	<b>▼</b> -0.95

	Current	Δ from YD	Δ from 7D Avg
US Powe Burns	er 32.6	<b>▼</b> -1.25	<b>a</b> 0.96

	Current	Δ from YD	Δ from 7D Avg
US ResComm	7.8	<b>a</b> 0.21	<b>-</b> 0.56

	Current	Δ from YD	Δ from 7D Avg
Canadian Imports	4.7	<b>a</b> 0.08	<b>▼</b> -0.51

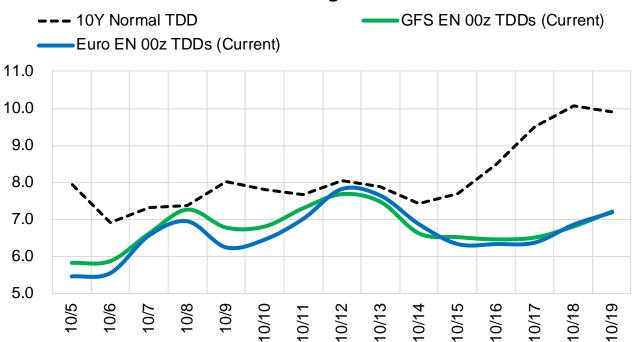
	Current	Δ from YD	Δ from 7D Avg
Net LNG Exports	9.7	<b>-</b> 0.56	<b>▼</b> -0.58

	Current	Δ from YD	Δ from 7D Avg
Mexican Exports	6.6	▼ -0.12	<b>▼</b> -0.10

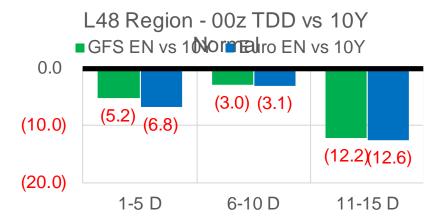


### Short-term Weather Model Outlooks (00z)

### L48 Region



### Vs. 10Y Normal



Source: WSI, Bloomberg



# Lower 48 Component Models

#### **Daily Balances**

	29-Sep	30-Sep	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct	DoD	vs. 7D
Lower 48 Dry Production	93.0	93.3	92.8	92.9	92.2	92.2	91.9	▼ -0.3	▼-0.9
Canadian Imports	5.9	5.7	4.9	4.7	4.7	4.6	4.7	<b>0.1</b>	▼ -0.4
L48 Power	31.8	32.1	31.2	30.0	31.1	33.9	32.6	▼-1.3	<b>1.0</b>
L48 Residential & Commercial	9.1	9.3	9.5	7.7	7.4	7.6	7.8	<b>0.2</b>	▼ -0.6
L48 Industrial	19.9	19.9	20.0	20.1	20.1	20.0	20.2	<b>0.2</b>	<b>0.2</b>
L48 Lease and Plant Fuel	5.1	5.1	5.1	5.1	5.0	5.0	4.9	▼ -0.1	▼ -0.1
L48 Pipeline Distribution	2.2	2.3	2.2	2.0	2.1	2.2	2.2	▼-0.1	▼ 0.0
L48 Regional Gas Consumption	68.1	68.7	67.9	64.9	65.6	68.8	67.7	▼-1.1	<b>0.4</b>
Net LNG Delivered	10.57	10.47	10.08	10.60	10.39	10.25	9.68	▼ -0.6	▼ -0.7
Total Mexican Exports	6.8	6.9	6.7	6.4	6.4	6.7	6.6	▼ -0.1	▼ -0.1
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	13.4	12.9	13.0	15.9	14.6	11.1	12.6		

### **EIA Storage Week Balances**

	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	WoW	vs. 4W
Lower 48 Dry Production	93.1	90.9	91.3	91.8	92.9	93.2	<b>0.4</b>	<b>1.5</b>
Canadian Imports	5.3	5.0	4.8	5.2	5.2	5.7	<b>0.6</b>	<b>0.7</b>
L48 Power	41.9	38.1	33.8	35.0	33.2	30.2	▼-3.0	<b>▼</b> -4.8
L48 Residential & Commercial	7.8	7.4	6.9	7.2	8.0	8.3	<b>0.3</b>	<b>0.9</b>
L48 Industrial	21.0	18.9	19.6	20.8	20.4	20.1	▼-0.4	<b>0.1</b>
L48 Lease and Plant Fuel	5.1	5.0	5.0	5.0	5.1	5.1	<b>0.0</b>	<b>0.1</b>
L48 Pipeline Distribution	2.6	2.4	2.2	2.3	2.3	2.1	▼ -0.1	<b>▼</b> -0.2
L48 Regional Gas Consumption	78.3	71.7	67.5	70.2	69.0	65.8	▼-3.2	▼-3.8
Net LNG Exports	10.6	10.5	11.0	10.2	9.9	10.3	<b>0.4</b>	▼-0.1
Total Mexican Exports	6.8	7.0	6.7	6.6	6.8	6.6	▼ -0.1	▼-0.1
Implied Daily Storage Activity	2.8	6.7	10.9	9.9	12.3	16.2	3.8	
EIA Reported Daily Storage Activity	2.9	7.4	11.9	10.9	12.6			
Daily Model Error	-0.1	-0.8	-1.0	-1.0	-0.2			

Monthly Balances									
•	2Yr Ago	LY					MTD		
	Oct-19	Oct-20	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	MoM	vs. LY
Lower 48 Dry Production	95.1	88.3	93.3	93.3	92.4	92.2	92.1	▼ -0.1	<b>3.7</b>
Canadian Imports	4.6	4.3	4.9	5.2	5.1	5.2	4.7	▼ -0.4	<b>0.5</b>
L48 Power	30.3	30.8	35.9	39.4	40.2	33.1	31.8	<b>▼</b> -1.3	<b>1.0</b>
L48 Residential & Commercial	15.3	15.3	8.8	8.1	7.7	7.6	8.0	<b>0.4</b>	<b>▼</b> -7.3
L48 Industrial	23.5	22.6	20.5	20.8	20.2	20.1	20.1	▼ 0.0	<b>-2.5</b>
L48 Lease and Plant Fuel	5.1	4.8	5.0	5.1	5.0	5.0	5.0	▼ 0.0	<b>0.2</b>
L48 Pipeline Distribution	2.4	2.5	2.4	2.5	2.5	2.2	2.1	▼ -0.1	▼-0.3
L48 Regional Gas Consumption	76.6	75.9	72.7	76.0	75.7	68.1	67.0	▼-1.1	▼-8.9
Net LNG Exports	6.7	8.0	10.2	10.8	10.5	10.3	10.2	▼ -0.1	<b>2.2</b>
Total Mexican Exports	5.4	6.0	7.4	7.1	6.9	6.7	6.5	▼-0.2	<b>0.5</b>
Implied Daily Storage Activity	11.1	2.7	7.8	4.6	4.5	12.2	13.1		
EIA Reported Daily Storage Activity Daily Model Error									



# **Daily** Average Generation Data

### **Nuclear Generation Daily Average - GWh (NRC)**

	27-Sep	28-Sep	29-Sep	30-Sep	1-Oct	2-Oct	3-Oct	DoD	vs. 7D
NRC Nuclear Daily Output	84.6	84.5	84.4	84.4	84.8	82.0	83.0	1.0	-1.1
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	104.9	0.0	0.0
NRC Nuclear Outage	20.2	20.4	20.4	20.5	20.1	22.8	21.9	-1.0	1.1
NRC % Nuclear Cap Utilization	86.1	85.9	85.9	85.8	86.2	83.4	84.4	1.0	-1.1

### Wind Generation Daily Average - MWh (EIA)

	27-Sep	28-Sep	29-Sep	30-Sep	1-Oct	2-Oct	3-Oct	DoD	vs. 7D
CALI Wind	4569	4121	1907	917	295	313	425	113	-1595
TEXAS Wind	9937	10983	11385	11121	3603	1684	1553	-131	-6565
US Wind	47614	46045	43045	32138	13566	13223	14182	959	-18423

#### **Generation Daily Average - MWh (EIA)**

	27-Sep	28-Sep	29-Sep	30-Sep	1-Oct	2-Oct	3-Oct	DoD	vs. 7D
US Wind	47614	46045	43045	32138	13566	13223	14182	959	-18423
US Solar	12428	11997	12647	12038	11689	13033	11941	-1092	-364
US Petroleum	3239	3244	3279	4102	4456	4058	4016	-43	286
US Other	8412	8681	9307	9253	9167	8703	9102	399	181
US Coal	94994	97855	99622	103268	106201	99597	96699	-2898	-3557
US Nuke	87958	87806	87770	87822	87850	85063	85687	624	-1691
US Hydro	26561	24475	25099	24195	24136	22657	22506	-150	-2014
US Gas	161292	170114	163040	170012	173603	164196	170510	6314	3467

See National Wind and Nuclear daily charts



# **Storage Week** Average Generation Data

Nuclear (	Generation	Weekly	Average -	GWh	(NRC)
-----------	------------	--------	-----------	-----	-------

	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	WoW	WoW Bcf/d Impact
NRC Nuclear Daily Output	91.9	90.2	90.3	86.7	85.9	85.1	-0.8	0.1
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	0.0	
NRC Nuclear Outage	12.9	14.7	14.6	18.2	19.0	19.8	8.0	
NRC % Nuclear Cap Utilization	0.1	0.1	0.1	0.1	0.1	0.1	0.0	

### Wind Generation Weekly Average - MWh (EIA)

	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	WoW	Bcf/d Impact
CALI Wind	2052	2247	1236	2083	1936	2467	531	-0.1
TEXAS Wind	12600	7534	7327	9541	9780	10364	584	-0.1
US Wind	41912	35441	30659	42378	43250	43246	-4	0.0
					872.3			
					2%			

### **Generation Weekly Average - MWh (EIA)**

	27-Aug	3-Sep	10-Sep	17-Sep	24-Sep	1-Oct	WoW	WoW Bcf/d Impact
US Wind	41912	35441	30659	42378	43250	43246	-4	0.0
US Solar	14469	13358	14254	14057	12185	12647	462	-0.1
US Petroleum	5323	3135	2072	2470	2594	2775	182	0.0
US Other	10131	9765	8934	9277	9125	8602	-522	0.1
US Coal	136177	136318	116993	115066	109063	94622	-14440	2.6
US Nuke	94358	92365	93162	89490	88789	88403	-385	0.1
US Hydro	30621	28181	26944	24138	25338	25131	-207	0.0
US Gas	216025	205503	181094	182116	175354	153288	-22066	4.0

See National Wind and Nuclear daily charts



# **Monthly** Average Generation Data

Nuclear Generation Monthly Average - GWh (NRC)										
	2Yr Ago	LY				MTD				
	Same 30 days	Same 30 days	Jul-21	Aug-21	Sep-21	Oct-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY	
NRC Nuclear Daily Output	87.2	86.9	90.1	91.5	87.2	83.2	86.0	-4.0	-0.8	
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	104.9	0.0	0.0	
NRC Nuclear Outage	17.7	18.0	14.8	13.4	17.7	21.7	18.8	4.0	8.0	
NRC % Nuclear Cap Utilization	88.7	88.3	91.6	93.0	88.7	84.6	87.5	-4.1	-0.8	

#### Wind Generation Monthly Average - MWh (EIA)

	2Yr Ago	LY				MTD			
	Same 30 S days	Same 30 days	Jul-21	Aug-21	Sep-21	Oct-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
CALI Wind	2169	1277	2338	2442	2020	377	1770	-1643	493
TEXAS Wind	8943	7540	7217	9901	9400	1989	8065	-7410	525
US Wind	35228	32453	29217	35830	40162	13867	36847	-26295	4394

### **Generation Monthly Average - MWh (EIA)**

- concentration and processing	2Yr Ago	LY				MTD			
	Same 30 days	Same 30 days	Jul-21	Aug-21	Sep-21	Oct-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
US Wind	35228	32453	29217	35830	40162	13867	36847	<b>22980.1</b>	<b>4394</b>
US Solar	8511	9012	14140	13787	13307	12109	12911	<b>801.5</b>	<b>3899</b>
US Petroleum	4346	2837	4233	4484	2467	4112	2818	<b>▼</b> -1294	<b>▼</b> -19
US Other	8341	8240	9327	9929	8985	9035	9020	<b>▼</b> -15	<b>~</b> 780
US Coal	114510	84869	137228	137655	109998	99179	106446	<b>~</b> 7267	<b>21577</b>
US Nuke	93750	90037	92911	94062	90146	85995	88968	<b>2973</b>	<b>▼</b> -1069
US Hydro	25393	25946	29941	28532	25604	22862	24865	<b>2003</b>	<b>▼</b> -1080
US Gas	184450	171336	207823	210824	173414	169866	173192	<b>34716</b>	<b>1856</b>
US Total	475848	424831	524834	534937	464324	416099	455172	<b>46452</b>	<b>30341</b>



See National Wind and Nuclear daily charts



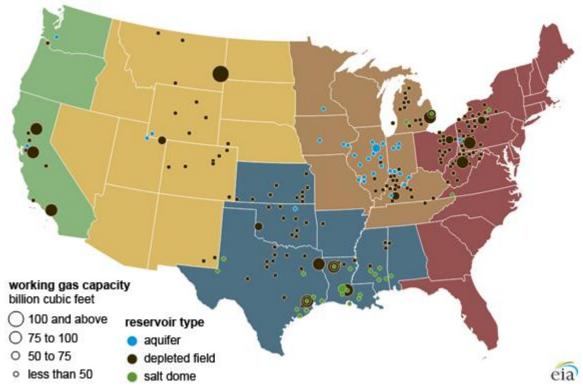
# Regional S/D Models Storage Projection

Week Ending 1-Oct

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	15.9	1.0	16.8	118
East	3.7	0.5	4.3	30
Midwest	5.9	-0.8	5.2	36
Mountain	3.7	-3.3	0.4	3
South Central	1.2	5.1	6.3	44
Pacific	1.3	-0.5	8.0	5

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

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



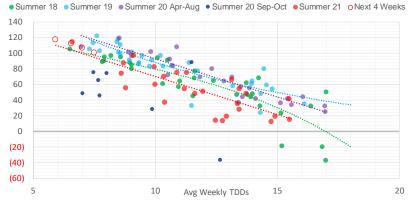


# Weather Model Storage Projection

# Next report and beyond

Week Ending	GWDDs	Week Storage Projection
01-Oct	5.9	118
08-Oct	6.6	113
15-Oct	7.0	107
22-Oct	7.5	101

#### Weather Storage Model - Next 4 Week Forecast



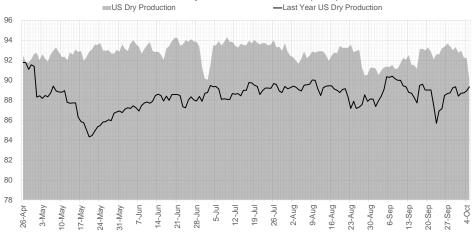
Go to larger image



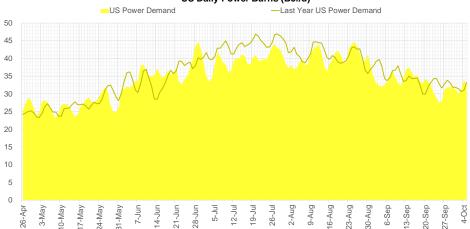


### Supply - Demand Trends

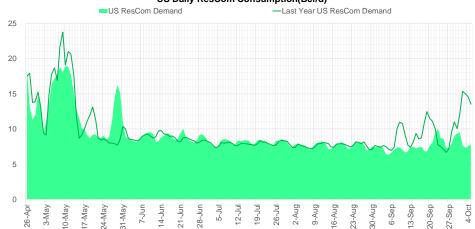
#### US Dry Natural Gas Production (Bcf/d)



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



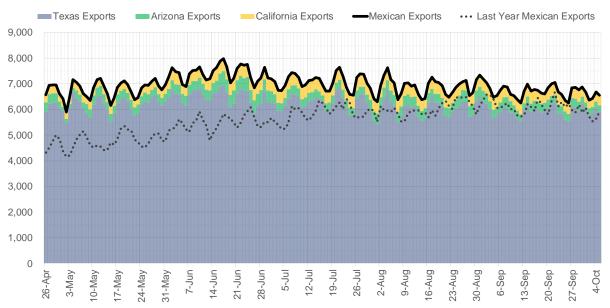
#### US Daily ResCom Consumption(Bcf/d)



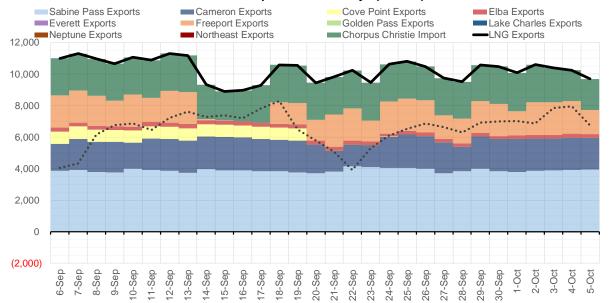
Source: Bloomberg



#### Mexican Exports (MMcf/d)







Source: Bloomberg



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

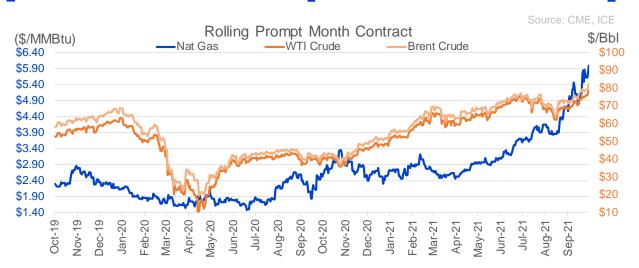
	CONTRACT	PUT/CALL	STRIKE	CUMULATIVE	CONTRACT	CONTRACT	PUT/CALL	STRIKE	CUMULATIVE OI
MONTH	YEAR	. 5 ., 5 / 122	5 11 till t2	VOL	MONTH	YEAR	. 0.707.22	5 · · · · · · · · ·	555 <u>2</u> 2 5.
11	2021	Р	5.00	7112	12	2021	Р	2.75	43712
11	2021	Р	4.50	3253	12	2021	P	2.50	38567
12	2021	P	5.00	3140	12	2021	Р	3.00	32086
11	2021	C	7.00	2892	12	2021	Р	4.00	30899
12	2021	Ċ	8.00	2784	3	2022	С	10.00	30461
12	2021	C	15.00	2433	11	2021	Р	3.00	30169
12	2021	C	11.00	2219	11	2021	Р	4.00	26937
11	2021	C	6.50	1761	3	2022	С	8.00	25934
11	2021	C	9.00	1687	12	2021	Р	3.50	25806
12	2021	C	10.00	1505	11	2021	Р	4.50	24782
12	2021	С	12.00	1358	11	2021	С	7.00	24010
11	2021	Р	4.75	1299	12	2021	С	4.00	22528
12	2021	Р	5.50	1279	11	2021	Р	5.00	22378
1	2022	Р	3.00	1202	3	2022	Р	3.50	20936
12	2021	С	5.50	1175	3	2022	С	5.00	20472
12	2021	Č	7.00	1173	11	2021	С	4.00	20146
11	2021	Ċ	8.00	1115	11	2021	Р	3.50	20047
4	2022	Č	4.25	1100	4	2022	С	3.00	19760
3	2022	P	4.25	1075	11	2021	С	6.00	19385
1	2022	P	2.50	1001	1	2022	Р	3.50	18671
3	2022	P	2.50	1001	2	2022	Р	3.50	18595
2	2022	P	2.50	1000	1	2022	С	5.00	18197
5	2022	C	4.00	1000	2	2022	С	5.00	17437
5	2022	P	3.50	1000	12	2021	С	6.00	17314
5 6	2022	P P			3	2022	Р	4.00	16955
		P P	3.50	1000	3	2022	Р	2.50	16807
11	2021		5.50	995	3	2022	С	4.00	16341
11	2021	C P	6.00	960	12	2021	С	7.00	15879
12	2021	P P	4.50	928	11	2021	С	5.00	15172
3	2022		4.75	926	11	2021	С	4.50	14904
12	2021	P	6.00	897	11	2021	Р	2.50	14488
11	2021	P	5.25	894	1	2022	С	4.00	14488
2	2022	P	5.00	890	11	2021	С	3.75	14480
3	2022	C	20.00	879	4	2022	С	5.00	14447
1	2022	P	3.50	806	12	2022	С	5.00	14372
11	2021	С	5.75	773	11	2021	Р	3.25	14216
2	2022	Р	3.00	710	4	2022	Р	2.50	14206
3	2022	С	8.00	706	1	2022	С	6.00	13937
12	2021	Р	4.60	704	2	2022	С	4.00	13914
3	2022	Р	3.00	700	12	2021	Р	2.00	13885
12	2021	Р	4.75	681	11	2021	С	5.50	13688
12	2021	Р	4.30	679	11	2021	С	4.25	13296
3	2022	С	15.00	650	1	2022	С	7.00	13295
11	2021	Р	4.00	645	1	2022	Р	4.00	13292
12	2021	Р	4.00	621	2	2022	С	6.00	13204
4	2022	Р	3.80	600	12	2021	С	8.00	13176
5	2022	Р	3.80	600	3	2022	С	3.00	13127
12	2021	Р	3.50	599	12	2022	С	4.50	13115
12	2021	С	6.50	598	5	2022	С	3.00	13110
12	2021	Р	4.25	574	12	2021	C	e: CME, ICE	12870.5
							Source	e: CME, ICE	



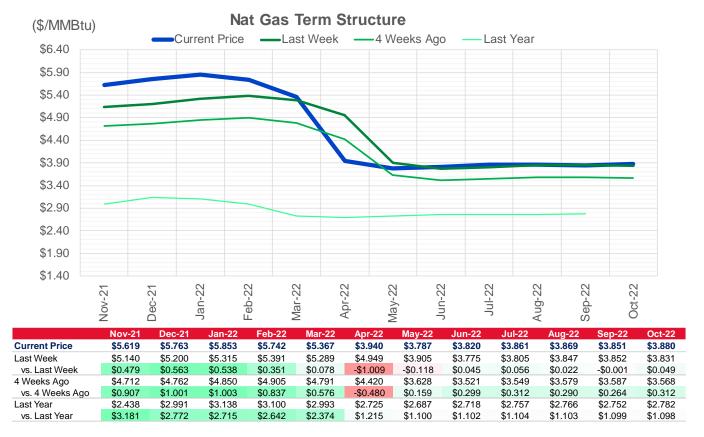
# Nat Gas Futures Open Interest

CME, and ICE 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
NOV 21	260042	255804	4238	NOV 21	87861	87262	599
DEC 21	106126	103750	2376	DEC 21	75454	75848	-394
JAN 22	170053	165038	5015	JAN 22	94385	94355	30
FEB 22	59786	59466	320	FEB 22	70532	70462	70
MAR 22	127728	126593	1135	MAR 22	76155	75479	676
APR 22	123886	124102	-216	APR 22	74380	74246	135
MAY 22	120839	120376	463	MAY 22	70689	70580	110
JUN 22	37059	37550	-491	JUN 22	54607	54276	331
JUL 22	33886	34385	-499	JUL 22	56951	56639	312
AUG 22	32167	32170	-3	AUG 22	55822	55478	344
SEP 22	34711	34873	-162	SEP 22	56803	56354	449
OCT 22	90039	90464	-425	OCT 22	62527	62219	309
NOV 22	31606	31607	-1	NOV 22	48553	48471	82
DEC 22	25690	26286	-596	DEC 22	51823	51762	61
JAN 23	24594	24389	205	JAN 23	38125	38094	31
FEB 23	9879	10075	-196	FEB 23	31524	31515	9
MAR 23	13491	13552	-61	MAR 23	33423	33458	-35
APR 23	12595	12675	-80	APR 23	32508	32517	-9
MAY 23	7806	7922	-116	MAY 23	31676	31609	67
JUN 23	6108	6106	2	JUN 23	29471	29437	35
JUL 23	4226	4236	-10	JUL 23	29720	29700	20
AUG 23	3341	3338	3	AUG 23	29506	29479	28
SEP 23	4580	4557	23	SEP 23	28640	28620	20
OCT 23	5686	5704	-18	OCT 23	31728	31699	28
NOV 23	2514	2504	10	NOV 23	30322	30356	-34
DEC 23	2653	2655	-2	DEC 23	28176	28211	-36
JAN 24	1479	1479	0	JAN 24	15487	15471	16
FEB 24	1084	1084	0	FEB 24	13134	13062	72
MAR 24	3361	3366	-5 -	MAR 24	17902	17894	8
APR 24	3517	3466	51	APR 24	12134	12065	69







			Prompt	Cash to	
	Units	Settled	Settle	Prompt	
AGT Citygate	\$/MMBtu	5.00	5.34	0.34	
TETCO M3	\$/MMBtu	4.66	4.54	-0.12	
FGT Zone 3	\$/MMBtu	4.69	5.79	1.10	
Zone 6 NY	\$/MMBtu	4.69	4.44	-0.25	
Chicago Citygate	\$/MMBtu	5.75	5.52	-0.23	
Michcon	\$/MMBtu	5.78	5.35	-0.43	
Columbia TCO Pool	\$/MMBtu	4.53	4.68	0.15	
Ventura	\$/MMBtu	5.36	5.39	0.02	
Rockies/Opal	\$/MMBtu	5.52	5.42	-0.10	
El Paso Permian Basin	\$/MMBtu	5.61	5.40	-0.21	
Socal Citygate	\$/MMBtu	6.66	6.17	-0.49	
Malin	\$/MMBtu	5.52	5.93	0.41	
Houston Ship Channel	\$/MMBtu	5.74	5.73	-0.02	
Henry Hub Cash	\$/MMBtu	5.80	5.45	-0.35	
AECO Cash	C\$/GJ	4.03	3.99	-0.04	
Station2 Cash	C\$/GJ	3.59	6.02	2.43	
Dawn Cash	C\$/GJ	5.76 5.36		-0.40	

Source: CME, Bloomberg



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					V	s. 4 Weeks		
	Units	Current Price	VS.	Last Week		Ago	VS	s. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224		0.135		1.129		2.200
NatGas Oct21/Nov21	\$/MMBtu	-0.075		-0.100	▼	-0.125		-0.133
NatGas Oct21/Jan22	\$/MMBtu	0.158		-0.046	•	-0.035		-0.136
NatGas Apr22/Oct22	\$/MMBtu	-0.079		0.010	•	-0.046		-0.084
WTI Crude	\$/Bbl	77.62		2.170		8.330		38.400
Brent Crude	\$/Bbl	81.26		1.730		9.040		39.970
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18		0.000		0.000		0.000
Heating Oil	cents/Gallon	243.66		14.060		27.720		130.330
Propane, Mt. Bel	cents/Gallon	1.50		0.219		0.308		0.992
Ethane, Mt. Bel	cents/Gallon	0.44		0.050		0.077		0.239
Coal, PRB	\$/MTon	12.30		0.000		0.000		0.000
Coal, PRB	\$/MMBtu	0.70						
Coal, ILB	\$/MTon	31.05		0.000		0.000		0.000
Coal, ILB	\$/MMBtu	1.32						





