

### **4 October 2021**

	Cı	ırrent	Δ fro	m YD		m 7D vg
Nat Gas Prompt	\$	5.74	<b>\$</b>	0.12	<b>\$</b>	0.06

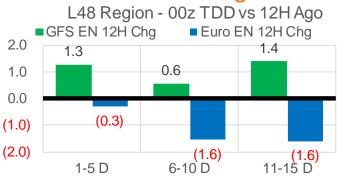
	С	urrent	Δf	ro	m YD	Δ froi Α	
WTI Prompt	\$	75.90		\$	0.02	<b>\$</b>	0.4

	_	urront	Λ fro	m VD	∆ fror	n 7D
Current	Δπο	טו וווי	Avg			
Brent Prompt	\$	79.38	<b>\$</b>	0.10	<b>\$</b>	0.3

#### Page Menu

Short-term Weather Model Outlooks
Lower 48 Component Models
Regional S/D Models Storage Projection
Weather Model Storage Projection
Supply – Demand Trends
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 1.0 0.4 0.0 (0.3) (1.0)(0.9)(1.4)(2.0)(2.2)(3.0)1-5 D 6-10 D 11-15 D

Current		Δ from YD	Δ from 7D Avg		
US Dry Production	92.2	▲ 0.04	▼ -0.80		

	Current	Δ from YD	Δ from 7D Avg
US ResComm	7.3	<b>-</b> 0.05	<b>-</b> 0.98

	Current	Δ from YD	Δ from 7D Avg		
Net LNG Exports	10.3	▼ -0.12	▲ 0.08		

	Current		Δ from 7D Avg		
US Power Burns	30.4	<b>▼</b> -0.64	<b>-</b> 0.87		

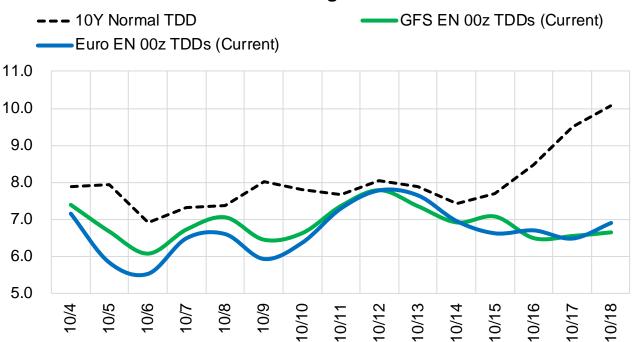
	Current	Δ from YD	Δ from 7D Avg
Canadian Imports	4.5	▼ -0.26	<b>-</b> 0.85

	Current	Δ from YD	Δ from 7D Avg
Mexican Exports	6.6	<b>a</b> 0.16	<b>-</b> 0.07

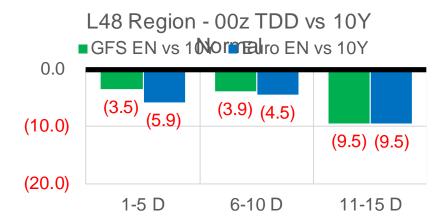


### Short-term Weather Model Outlooks (00z)

### L48 Region



### Vs. 10Y Normal



Source: WSI, Bloomberg



# Lower 48 Component Models

#### **Daily Balances**

	28-Sep	29-Sep	30-Sep	1-Oct	2-Oct	3-Oct	4-Oct	DoD	vs. 7D
Lower 48 Dry Production	93.4	93.0	93.2	92.5	92.9	92.1	90.5	▼-1.7	▼ -2.4
Canadian Imports	5.7	5.9	5.7	4.9	4.7	4.7	4.5	▼-0.3	▼ -0.8
L48 Power	31.8	31.8	32.1	31.1	29.9	31.1	30.4	▼-0.6	▼-0.9
L48 Residential & Commercial	7.9	9.1	9.4	9.4	7.8	7.4	7.3	▼ 0.0	<b>▼</b> -1.1
L48 Industrial	20.2	20.5	20.9	21.4	21.9	22.1	22.0	▼-0.2	<b>8.0</b>
L48 Lease and Plant Fuel	5.1	5.1	5.1	5.0	5.1	5.0	4.9	▼ -0.1	▼ -0.1
L48 Pipeline Distribution	2.2	2.2	2.3	2.2	2.0	2.1	2.0	▼ 0.0	▼ -0.1
L48 Regional Gas Consumption	67.1	68.7	69.7	69.1	66.7	67.7	66.7	<b>▼-1.0</b>	<b>▼-1.5</b>
Net LNG Delivered	9.52	10.57	10.47	10.08	10.60	10.39	10.27	▼-0.1	<b>0.0</b>
Total Mexican Exports	6.9	6.8	6.9	6.7	6.4	6.4	6.6	<b>0.2</b>	▼ -0.1
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	15.6	12.8	11.8	11.5	14.0	12.4	11.4		

### **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	91.2	91.8	92.9	93.2	<b>0.3</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>a</b> 0.3	<b>1.0</b>
L48 Industrial	21.0	18.9	19.6	20.8	20.5	20.4	▼ -0.1	<b>0.5</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	70.3	69.0	66.1	▼ -2.9	▼ -3.5
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	▼ -0.2	▼-0.2
Implied Daily Storage Activity	2.8	6.7	10.9	9.9	12.3	15.8	3.5	
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	-0.3			

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	92.0	▼-0.2	<b>3.7</b>
Canadian Imports	4.6	4.3	4.9	5.2	5.1	5.2	4.7	▼ -0.5	<b>0.5</b>
L48 Power	30.3	30.8	35.9	39.4	40.2	33.1	30.6	<b>▼</b> -2.5	▼-0.1
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	20.2	21.8	<b>1.7</b>	▼-0.8
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	▼ -0.2	<b>▼</b> -0.4
L48 Regional Gas Consumption	76.6	75.9	72.7	76.0	75.7	68.2	67.5	▼ -0.6	▼-8.4
Net LNG Exports	6.7	8.0	10.2	10.8	10.5	10.3	10.3	▼ 0.0	<b>2.3</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 EIA Reported Daily Storage Activity Daily Model Error	11.1	2.7	7.8	4.6	4.5	12.1	12.3		

# **Daily** Average Generation Data

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

	26-Sep	27-Sep	28-Sep	29-Sep	30-Sep	1-Oct	2-Oct	DoD	vs. 7D
NRC Nuclear Daily Output	85.7	84.6	84.5	84.5	84.5	84.5	84.5	0.0	-0.2
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	19.2	20.2	20.4	20.4	20.4	20.4	20.4	0.0	0.2
NRC % Nuclear Cap Utilization	87.1	86.1	85.9	85.9	85.9	85.9	85.9	0.0	-0.2

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

	26-Sep	27-Sep	28-Sep	29-Sep	30-Sep	1-Oct	2-Oct	DoD	vs. 7D
CALI Wind	3242	4569	4121	1907	917	295	313	18	-2196
TEXAS Wind	11806	9937	10983	11385	11121	3603	1684	-1918	-8121
US Wind	53275	47614	46045	43045	32138	13566	13223	-343	-26057

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

	26-Sep	27-Sep	28-Sep	29-Sep	30-Sep	1-Oct	2-Oct	DoD	vs. 7D
US Wind	53275	47614	46045	43045	32138	13566	13223	-343	-26057
US Solar	12249	12428	11997	12647	12038	11689	12987	1298	813
US Petroleum	2017	3239	3244	3279	4102	4456	4058	-398	669
US Other	7513	8404	8681	9307	9253	9167	8705	-462	-16
US Coal	84417	94994	97855	99622	103268	106201	99597	-6604	1871
US Nuke	88851	87958	87806	87770	87822	87850	85063	-2787	-2946
US Hydro	23417	26559	24475	25099	24195	24136	22657	-1479	-1990
US Gas	129950	161274	170114	163040	170012	173603	164196	-9408	2864

See National Wind and Nuclear daily charts



# **Storage Week** Average Generation Data

Nuclear	Generation	Weekly	Average -	<b>GWh</b>	(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	19.7	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	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	12551	367	-0.1
US Petroleum	5323	3135	2072	2470	2594	2775	182	0.0
US Other	10131	9765	8934	9277	9125	8576	-548	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	25130	-208	0.0
US Gas	216025	205503	181094	182116	175354	153551	-21803	3.9

See National Wind and Nuclear daily charts



# **Market Report**

# **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	87.6	87.3	90.1	91.5	87.2	84.5	86.5	-2.7	-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	17.3	17.6	14.8	13.4	17.7	20.4	18.4	2.7	0.8
NRC % Nuclear Cap Utilization	89.0	88.7	91.6	93.0	88.7	85.9	87.9	-2.7	-0.8

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

	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
CALI Wind	2230	1268	2338	2442	2020	308	1769	-1712	501
TEXAS Wind	8837	7332	7217	9901	9400	2164	8199	-7236	868
US Wind	34881	31910	29217	35830	40162	13309	37036	-26854	5125

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

•	2Yr Ago	ĹY				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	34881	31910	29217	35830	40162	13309	37036	<b>2</b> 3726.7	<b>5125</b>
US Solar	8358	9062	14140	13787	13285	12663	13041	<b>378.1</b>	<b>3978</b>
US Petroleum	4377	2866	4233	4484	2467	4158	2737	<b>▼</b> -1421	<b>▼</b> -129
US Other	8318	8254	9327	9929	8979	8820	8972	<b>152</b>	<b>~</b> 718
US Coal	115670	86336	137228	137655	109998	101248	107273	<b>6025</b>	<b>20937</b>
US Nuke	94154	90387	92911	94062	90146	85760	89180	<b>3420</b>	<b>▼</b> -1207
US Hydro	25677	26013	29941	28532	25604	23027	24944	<b>1917</b>	<b>▼</b> -1069
US Gas	186182	171720	207823	210824	173475	166548	172770	<b>34199</b>	<b>1050</b>
US Total	478954	426660	524834	534937	464280	415295	456106	<b>44671</b>	<b>29447</b>



See National Wind and Nuclear daily charts



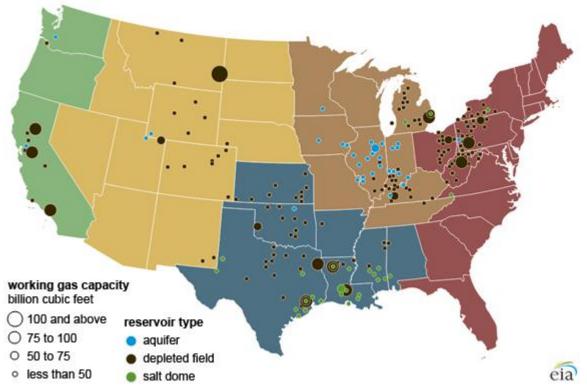
# Regional S/D Models Storage Projection

Week Ending 1-Oct

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	15.5	1.0	16.5	115
East	3.7	0.5	4.2	29
Midwest	5.7 5.9	-0.8	4.2 5.1	36
Mountain	3.7	-3.3	0.4	3
South Central	1.0	5.1	6.1	43
Pacific	1.3	-0.5	0.7	5

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

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



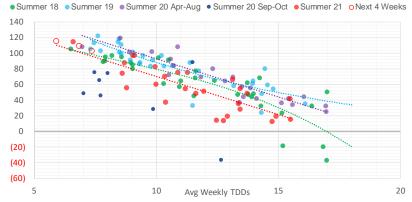


# Weather Model Storage Projection

Next r	eport
and b	eyond

Week Ending	GWDDs	Week Storage Projection
01-Oct	5.9	115
08-Oct	6.8	109
15-Oct	7.4	103
22-Oct	#N/A	#N/A

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



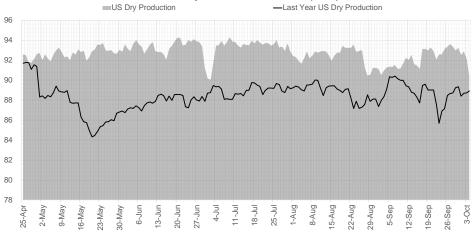
Go to larger image



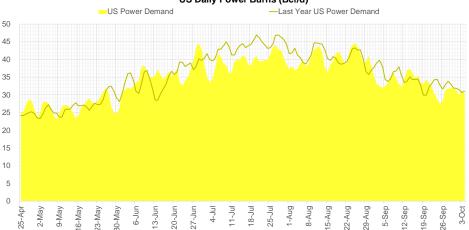


### Supply - Demand Trends

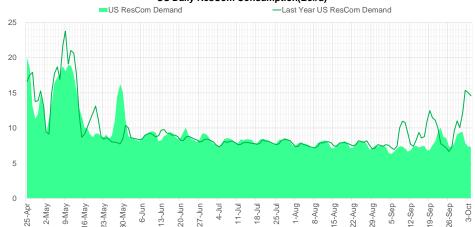
#### US Dry Natural Gas Production (Bcf/d)



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



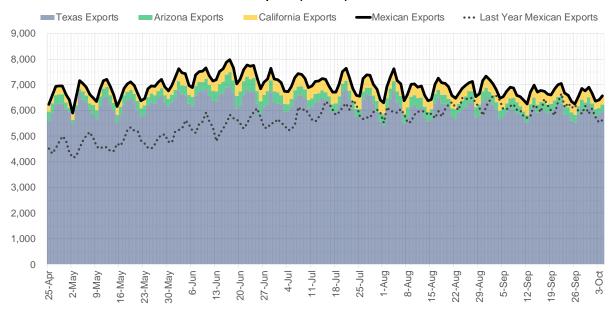
#### US Daily ResCom Consumption(Bcf/d)



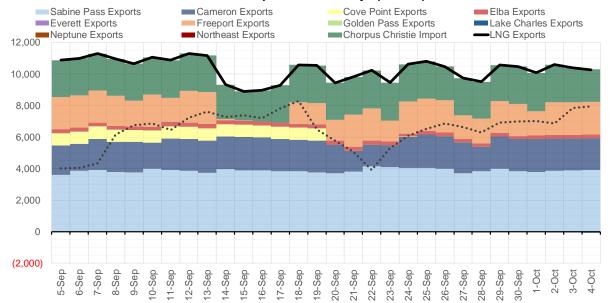
Source: Bloomberg



#### Mexican Exports (MMcf/d)







Source: Bloomberg



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

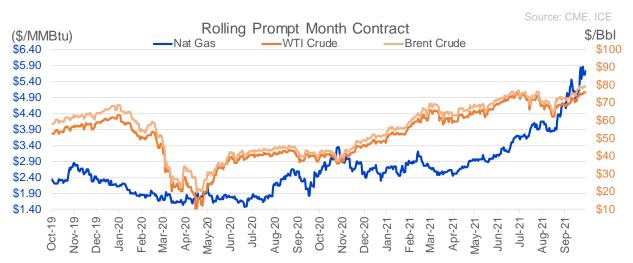
	CONTRACT	PUT/CALL	STRIKE	CUMULATIVE	CONTRACT	CONTRACT	PUT/CALL	STRIKE	CUMULATIVE
MONTH	YEAR			VOL	MONTH	YEAR			
11	2021	С	8.00	4153	12	2021	Р	2.75	42138
11	2021	С	7.00	3567	12	2021	Р	2.50	38567
11	2021	Р	4.00	3079	12	2021	Р	3.00	32164
11	2021	Р	5.00	2820	12	2021	Р	4.00	30875
1	2022	Р	3.50	2703	11	2021	Р	3.00	30170
11	2021	Р	4.50	2329	3	2022	С	10.00	30051
12	2021	Р	4.75	2272	11	2021	Р	4.00	26599
11	2021	C	9.00	2248	12	2021	Р	3.50	26322
11	2021	P	4.75	2093	3	2022	С	8.00	25959
2	2022	Р	4.00	1800	11	2021	Р	4.50	24064
11	2021	C	6.00	1697	11	2021	С	7.00	23826
12	2021	Č	8.00	1658	12	2021	С	4.00	22528
11	2021	Č	6.50	1533	3	2022	Р	3.50	20737
12	2021	C	6.00	1480	3	2022	С	5.00	20255
1	2021	C	10.00	1391	11	2021	C	4.00	20146
3	2022	C			11	2021	P	3.50	19989
			6.50	1355	4	2022	С	3.00	19760
1	2022	P	4.15	1350	11	2021	Č	6.00	19238
11	2021	P	4.25	1295	2	2022	P	3.50	18596
11	2021	С	4.75	1250	1	2022	Р	3.50	18449
11	2021	С	6.20	1114	1	2022	C	5.00	18187
12	2021	Р	4.25	1113	2	2022	Č	5.00	17437
2	2022	Р	3.50	1100	11	2021	P	5.00	17294
12	2021	Р	3.75	1087	12	2021	C	6.00	17274
12	2021	Р	5.50	1025	3	2022	P	4.00	16480
11	2021	С	7.50	1020	3	2022	C	4.00	16441
1	2022	С	11.00	1011	3	2022	P	2.50	16438
1	2022	С	12.00	1000	3 12	2022	C	7.00	15809
2	2022	С	4.00	1000	12 11	2021	C		
3	2022	Р	2.25	1000				5.00	15177
3	2022	С	10.00	915	11	2021	С	4.50	14959
1	2022	C	15.00	902	11	2021	P	2.50	14488
2	2022	Č	10.00	872	1	2022	С	4.00	14488
11	2021	Č	6.75	864	11	2021	С	3.75	14480
1	2022	P	5.00	790	4	2022	С	5.00	14429
3	2022	C	5.50	776	12	2022	C	5.00	14372
12	2022	C	5.50	738	11	2021	Р	3.25	14197
		P			4	2022	P	2.50	14031
1	2022		5.50	702	1	2022	С	6.00	13983
2	2022	С	15.00	700	2	2022	С	4.00	13918
3	2022	С	15.00	700	12	2021	Р	2.00	13885
12	2021	P	6.00	672	11	2021	С	5.50	13729
12	2021	С	12.00	654	1	2022	Р	4.00	13476
1	2022	С	5.50	652	2	2022	С	6.00	13352
12	2021	С	15.00	632	11	2021	С	4.25	13296
12	2021	Р	4.50	627	3	2022	С	3.00	13127
1	2022	Р	3.75	625	12	2022	С	4.50	13115
3	2022	С	8.00	599	5	2022	С	3.00	13110
11	2021	С	8.50	573	1	2022	C	7.00	13003
11	2021	Р	5.50	570	12	2021	С	5.00	12870
12	2021	Р	5.00	561	6	2022			
-					•		Source	: CME, ICE	.20.0



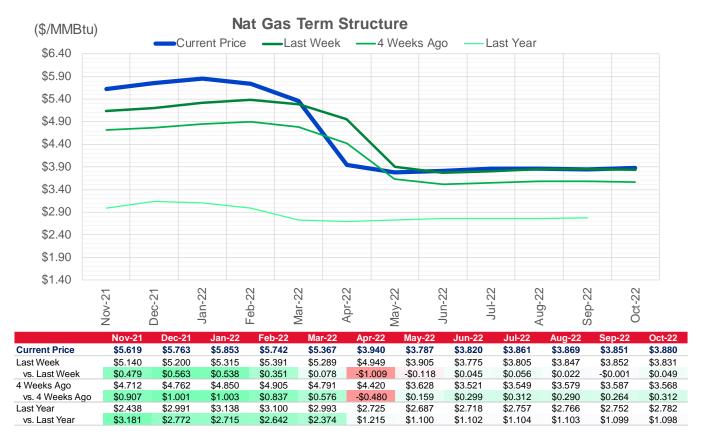
### Nat Gas Futures Open Interest

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	255817	261124	-5307	NOV 21	87262	90025	-2763
DEC 21	103762	104287	-525	DEC 21	75848	76121	-273
JAN 22	165039	164588	451	JAN 22	94355	94887	-532
FEB 22	59466	57282	2184	FEB 22	70462	70083	380
MAR 22	126596	126051	545	MAR 22	75479	75141	338
APR 22	124102	125609	-1507	APR 22	74246	73579	667
MAY 22	120376	120895	-519	MAY 22	70580	70502	78
JUN 22	37550	37467	83	JUN 22	54276	54341	-65
JUL 22	34385	35908	-1523	JUL 22	56639	56662	-23
AUG 22	32170	32076	94	AUG 22	55478	55463	16
SEP 22	34875	34945	-70	SEP 22	56354	56305	50
OCT 22	90464	91090	-626	OCT 22	62219	62310	-92
NOV 22	31607	31725	-118	NOV 22	48471	48316	155
DEC 22	26286	26059	227	DEC 22	51762	51656	105
JAN 23	24389	24311	78	JAN 23	38094	37922	172
FEB 23	10075	9984	91	FEB 23	31515	31399	116
MAR 23	13552	13641	-89	MAR 23	33458	33332	127
APR 23	12675	12568	107	APR 23	32517	32388	129
MAY 23	7922	7879	43	MAY 23	31609	31517	92
JUN 23	6106	6127	-21	JUN 23	29437	29349	88
JUL 23	4236	4237	-1	JUL 23	29700	29608	92
AUG 23	3338	3324	14	AUG 23	29479	29364	115
SEP 23	4557	4544	13	SEP 23	28620	28562	57
OCT 23	5704	5747	-43	OCT 23	31699	31626	74
NOV 23	2504	2504	0	NOV 23	30356	30203	154
DEC 23	2655	2615	40	DEC 23	28211	28051	160
JAN 24	1479	1477	2	JAN 24	15471	15339	132
FEB 24	1084	1082	2	FEB 24	13062	12902	159
MAR 24	3366	3364	2	MAR 24	17894	17747	147
APR 24	3466	3384	82	APR 24	12065	11810	255







		Cash	Prompt	Cash to
	Units	Settled	Settle	Prompt
AGT Citygate	\$/MMBtu	4.75	4.88	0.13
TETCO M3	\$/MMBtu	3.37	4.02	0.65
FGT Zone 3	\$/MMBtu	3.25	5.25	2.00
Zone 6 NY	\$/MMBtu	3.25	3.91	0.66
Chicago Citygate	\$/MMBtu	5.28	5.01	-0.27
Michcon	\$/MMBtu	5.24	4.86	-0.38
Columbia TCO Pool	\$/MMBtu	4.11	4.16	0.05
Ventura	\$/MMBtu	5.36	4.94	-0.42
Rockies/Opal	\$/MMBtu	5.52	4.89	-0.63
El Paso Permian Basin	\$/MMBtu	5.20	4.93	-0.27
Socal Citygate	\$/MMBtu	6.02	5.79	-0.23
Malin	\$/MMBtu	5.52	5.61	0.09
Houston Ship Channel	\$/MMBtu	5.39	5.20	-0.19
Henry Hub Cash	\$/MMBtu	5.59	4.94	-0.65
AECO Cash	C\$/GJ	3.11	3.55	0.44
Station2 Cash	C\$/GJ	0.09	5.87	5.78
Dawn Cash	C\$/GJ	5.19	4.82	-0.37

Source: CME, Bloomberg



				vs. 4 Weeks	
	Units	<b>Current Price</b>	vs. Last Week		vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224	<b>0.701</b>	<b>1.129</b>	<b>2.199</b>
NatGas Oct21/Nov21	\$/MMBtu	-0.222	<b>▼</b> -0.282	<b>-</b> 0.272	<b>▼</b> -0.284
NatGas Oct21/Jan22	\$/MMBtu	0.012	<b>-</b> 0.239	<b>-</b> 0.181	<b>▼</b> -0.296
NatGas Apr22/Oct22	\$/MMBtu	-0.060	<b>-</b> 0.014	<b>-</b> 0.027	<b>-</b> 0.072
WTI Crude	\$/Bbl	75.88	<b>1.900</b>	<b>6.590</b>	<b>38.830</b>
Brent Crude	\$/Bbl	79.28	<b>1.190</b>	<b>6.670</b>	<b>4</b> 0.010
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
Heating Oil	cents/Gallon	238.27	<b>11.560</b>	<b>22.330</b>	<b>129.770</b>
Propane, Mt. Bel	cents/Gallon	1.49	<b>0.213</b>	<b>0.297</b>	<b>1.004</b>
Ethane, Mt. Bel	cents/Gallon	0.43	<b>0.040</b>	<b>0.062</b>	<b>a</b> 0.235
Coal, PRB	\$/MTon	12.30	<b>0.000</b>	0.000	<b>0.000</b>
Coal, PRB	\$/MMBtu	0.70			
Coal, ILB	\$/MTon	31.05	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
Coal, ILB	\$/MMBtu	1.32			



### Weather Storage Model - Next 4 Week Forecast

