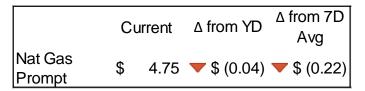


## **Market Report**

## **15 November 2021**



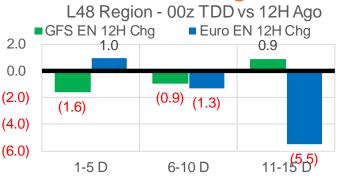
	С	urrent	Δ from YD		m 7D vg
WTI Prompt	\$	79.61	<b>\$</b> (1.18)	<b>~</b> \$	(2.0)

	_	urront	Δ from YD	∆ fro	m 7D
		ם וווטווו דם	Avg		
Brent	Φ	80 02	<b>\$</b> (1.25)	<b>*</b> ¢	(2.0)
Prompt	Ψ	00.92	Ψ ψ (1.23)	ΨΨ	(2.0)

### Page Menu

Short-term Weather Model Outlooks
Lower 48 Component Models
Regional S/D Models Storage Projection
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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
5.0
0.8
1.7
0.0
(0.8)
(5.0)
1-5 D 6-10 D 11-15 D

	Current	Δ from YD	Δ from 7D Avg
US Dry Production	95.7	<b>a</b> 0.31	▲ 0.21

	Current	Δ from YD	Δ from 7D Avg
US ResComm	29.0	<b>▼</b> -1.30	<b>4</b> .94

	Current	Δ from YD	Δ from 7D Avg
Net LNG Exports	10.8	<b>▼</b> -0.62	<b>▼</b> -0.45

Current		Δ from YD	Δ from 7D Avg		
US Power Burns	27.9	<b>2.08</b>	<b>a</b> 0.81		

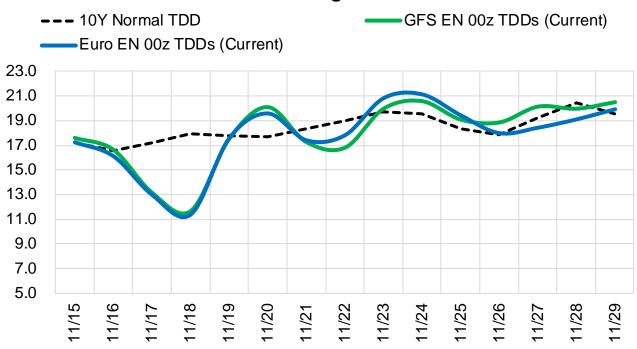
	Current	Δ from YD	Δ from 7D Avg
Canadian Imports	4.9	<b>▼</b> -0.35	<b>0.07</b>

	Current	Δ from YD	Δ from 7D Avg
Mexican Exports	5.8	<b>0.03</b>	<b>▼</b> -0.39

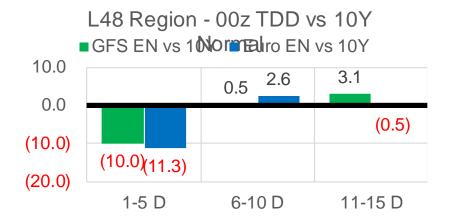


### Short-term Weather Model Outlooks (00z)

## L48 Region



## Vs. 10Y Normal



Source: WSI, Bloomberg



## **Market Report**

## Lower 48 Component Models

### **Daily Balances**

	9-Nov	10-Nov	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	DoD	vs.7D
Lower 48 Dry Production	95.2	95.7	95.4	94.9	95.5	95.4	95.7	<b>0.3</b>	▲ 0.4
Canadian Imports	5.0	4.5	4.3	4.4	4.9	5.3	4.9	▼-0.4	<b>▲</b> 0.2
L48 Power	27.4	27.6	27.8	27.9	26.1	25.8	27.9	<b>2.1</b>	▲ 0.8
L48 Residential & Commercial	20.3	20.6	21.3	24.8	29.8	30.3	29.0	<b>▼</b> -1.3	<b>4.5</b>
L48 Industrial	21.4	21.4	21.5	22.1	22.5	22.4	22.3	▼ 0.0	<b>0.4</b>
L48 Lease and Plant Fuel	5.2	5.2	5.2	5.2	5.2	5.2	5.2	▼ 0.0	▼ 0.0
L48 Pipeline Distribution	2.5	2.6	2.6	2.8	3.0	3.0	3.0	<b>0.0</b>	<b>a</b> 0.3
L48 Regional Gas Consumption	76.9	77.4	78.5	82.7	86.6	86.7	87.4	<b>0.7</b>	<b>6.0</b>
Net LNG Delivered	11.31	11.20	11.45	10.42	11.57	11.42	10.80	▼-0.6	▼ -0.4
Total Mexican Exports	6.3	6.2	6.5	6.5	5.9	5.8	5.8	▲ 0.0	▼ -0.4
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	5.6	5.5	3.2	-0.3	-3.7	-3.2	-3.4		

### **EIA Storage Week Balances**

	8-Oct	15-Oct	22-Oct	29-Oct	5-Nov	12-Nov	WoW	vs. 4W
Lower 48 Dry Production	93.3	93.0	92.8	94.0	94.9	95.8	<b>0.9</b>	<b>2.1</b>
Canadian Imports	5.3	5.0	5.6	5.6	5.5	5.1	▼-0.4	▼-0.3
L48 Power	32.9	31.7	29.0	29.0	29.5	27.3	▼-2.1	<b>▼</b> -2.5
L48 Residential & Commercial	8.1	9.5	13.9	17.7	24.1	23.5	▼ -0.6	<b>7.2</b>
L48 Industrial	22.3	19.9	18.8	19.4	21.4	21.8	<b>0.4</b>	<b>1.9</b>
L48 Lease and Plant Fuel	5.1	5.1	5.1	5.1	5.2	5.2	<b>0.0</b>	<b>0.1</b>
L48 Pipeline Distribution	2.2	2.2	2.3	2.5	2.9	2.7	▼ -0.1	<b>0.2</b>
L48 Regional Gas Consumption	70.6	68.5	69.1	73.7	83.0	80.6	▼ -2.5	<b>7.0</b>
Net LNG Exports	9.9	10.7	10.8	10.8	10.9	11.2	<b>0.4</b>	<b>0.4</b>
Total Mexican Exports	6.6	6.6	6.6	6.9	6.1	6.2	<b>0.1</b>	▼-0.4
Implied Daily Storage Activity	11.6	12.2	11.9	8.2	0.5	3.0	2.5	
EIA Reported Daily Storage Activity	11.6	13.1	12.4	9.0	1.0			
Daily Model Error	0.0	-0.9	-0.5	-0.8	-0.5			

Monthly Balances									
•	2Yr Ago	LY					MTD		
	Nov-19	Nov-20	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	MoM	vs. LY
Lower 48 Dry Production	96.2	91.1	93.6	94.1	93.0	93.4	95.4	<b>2.0</b>	<b>4.3</b>
Canadian Imports	4.5	4.6	5.2	5.1	5.1	5.4	5.1	▼ -0.2	<b>0.5</b>
L48 Power	27.5	25.7	39.4	40.1	33.1	30.3	28.3	<b>▼</b> -2.0	<b>2.6</b>
L48 Residential & Commercial	32.8	24.4	8.1	7.8	7.7	12.9	26.1	<b>▲</b> 13.2	<b>1.7</b>
L48 Industrial	24.9	22.5	21.2	21.7	20.8	20.1	22.1	<b>1.9</b>	<b>-</b> 0.4
L48 Lease and Plant Fuel	5.2	5.0	5.1	5.1	5.1	5.1	5.2	<b>0.1</b>	<b>0.2</b>
L48 Pipeline Distribution	3.0	2.7	2.5	2.6	2.2	2.3	2.9	<b>a</b> 0.6	<b>0.2</b>
L48 Regional Gas Consumption	93.5	80.2	76.3	77.3	68.9	70.7	84.6	<b>13.9</b>	<b>4.4</b>
Net LNG Exports	7.2	10.1	10.8	10.5	10.3	10.6	11.0	<b>0.5</b>	▲ 0.9
Total Mexican Exports	5.2	6.1	7.1	6.9	6.7	6.6	6.1	▼ -0.6	▼ 0.0
Implied Daily Storage Activity	-5.1	-0.7	4.6	4.5	12.1	10.9	-1.1		
EIA Reported Daily Storage Activity Daily Model Error									



## **Daily** Average Generation Data

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

	7-Nov	8-Nov	9-Nov	10-Nov	11 <b>-N</b> ov	12-Nov	13-Nov	DoD	vs. 7D
NRC Nuclear Daily Output	78.8	80.6	81.7	81.7	81.7	82.6	82.6	0.0	1.4
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	26.1	24.3	23.2	23.1	23.1	22.2	22.2	0.0	-1.4
NRC % Nuclear Cap Utilization	80.2	81.9	83.0	83.1	83.1	84.0	84.0	0.0	1.5

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

	7-Nov	8-Nov	9-Nov	10-Nov	11 <b>-N</b> ov	12-Nov	13-Nov	DoD	vs. 7D
CALI Wind	3302	1231	2831	1703	603	484	342	-142	-1351
TEXAS Wind	15300	16548	10746	16930	6916	11152	12085	933	-847
US Wind	60534	54905	38002	60852	55365	64774	50577	-14197	-5162

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

	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov	12-Nov	13-Nov	DoD	vs. 7D
US Wind	60534	54905	38002	60852	55365	64774	50577	-14197	-5162
US Solar	9540	11156	8694	9586	9796	10225	9885	-340	52
US Petroleum	1810	2499	2878	2489	2042	1941	2754	813	478
US Other	7440	8041	7982	8077	7790	8013	7475	-538	-415
US Coal	71806	78974	84701	76438	73780	73119	78150	5031	1680
US Nuke	83574	84844	86125	86527	86829	86997	87358	361	1542
US Hydro	23096	26376	26752	26074	26602	24345	24791	446	-750
US Gas	124695	138881	150689	135154	143965	140769	138485	-2284	-540

See National Wind and Nuclear daily charts



## **Storage Week** Average Generation Data

Nuclear Generation \	Weekly	Average - G	}Wh (	(NRC)
----------------------	--------	-------------	-------	-------

	8-Oct	15-Oct	22-Oct	29-Oct	5-Nov	12-Nov	WoW	WoW Bcf/d Impact
NRC Nuclear Daily Output	82.1	76.5	73.6	71.6	72.2	79.7	7.5	-1.4
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	0.0	
NRC Nuclear Outage	22.7	28.3	31.2	33.3	32.7	25.2	-7.5	
NRC % Nuclear Cap Utilization	0.1	0.1	0.1	0.1	0.1	0.1	0.0	

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

	8-Oct	15-Oct	22-Oct	29-Oct	5-Nov	12-Nov	WoW	WoW Bcf/d Impact
CALI Wind	1099	2400	1270	2314	1669	1805	136	0.0
TEXAS Wind	4890	15396	10729	15462	8472	12032	3560	-0.6
US Wind	20468	49918	43721	49870	32114	51028	18914	-3.4
					-17756.0			
					-36%			

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

	8-Oct	15-Oct	22-Oct	29-Oct	5-Nov	12-Nov	WoW	WoW Bcf/d Impact
US Wind	20468	49918	43721	49870	32114	51028	18914	-3.4
US Solar	11294	10530	12209	10138	9979	9732	-247	0.0
US Petroleum	3901	3224	3092	2815	3517	2532	-985	0.2
US Other	10973	12221	12109	10196	9288	8221	-1067	0.2
US Coal	100713	89841	74011	73355	77392	77956	564	-0.1
US Nuke	83696	77046	73748	73713	75510	84327	8817	-1.6
US Hydro	24553	24699	23105	23540	25530	25338	-192	0.0
US Gas	176848	162707	150057	152802	159071	144638	-14433	2.6

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	Aug-21	Sep-21	Oct-21	Nov-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY		
NRC Nuclear Daily Output	80.7	76.8	91.5	87.2	75.5	78.7	75.3	3.2	-1.5		
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	24.1	28.1	13.4	17.7	29.4	26.2	29.6	-3.2	1.5		
NRC % Nuclear Cap Utilization	82.1	78.1	93.0	88.7	76.8	80.0	76.6	3.3	-1.5		

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

	2Yr Ago	LY	MTD								
	Same 30 days	Same 30 days	Aug-21	Sep-21	Oct-21	Nov-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY		
CALI Wind	801	1269	2442	2020	1765	1378	1640	-387	371		
TEXAS Wind	9083	10055	9901	9400	11565	10517	11833	-1049	1778		
US Wind	35334	42283	35830	40223	40991	45041	45868	4049	3584		

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

Conclusion Monthly Average	2Yr Ago	LY				MTD			
	Same 30 days	Same 30 days	Aug-21	Sep-21	Oct-21	Nov-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
US Wind	35334	42283	35830	40223	40991	45041	45868	<b>827.1</b>	<b>3584</b>
US Solar	6377	7402	13787	13382	11044	9645	10285	<b>4</b> 640.0	<b>2883</b>
US Petroleum	3177	2532	4484	2452	3238	2893	2910	<b>18</b>	<b>378</b>
US Other	8254	8911	9928	9008	11099	8496	9501	<b>1006</b>	<b>590</b>
US Coal	96008	87646	137655	110037	82734	79713	75698	<b>▼</b> -4015	<b>▼-</b> 11948
US Nuke	87425	80377	94062	90146	76700	83178	78348	<b>▼</b> -4829	<b>▼</b> -2029
US Hydro	25725	27489	28533	25665	23895	25689	24561	<b>▼</b> -1128	<b>▼</b> -2928
US Gas	150998	143477	210824	173538	158237	151584	149684	<b>▼ -7482</b>	<b>6207</b>
US Total	413697	400447	534937	464626	410685	406642	399035	▼-15790	▼ -1412



See National Wind and Nuclear daily charts



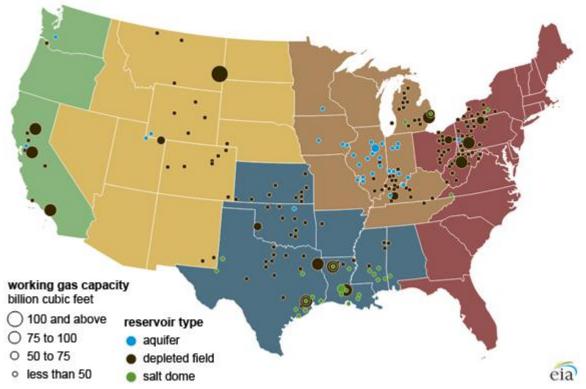
## Regional S/D Models Storage Projection

Week Ending 12-Nov

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	2.7	0.9	3.5	25
East	0.1	0.1	0.2	2
Midwest	0.4	1.0	1.5	10
Mountain	3.0	-3.2	-0.1	-1
South Central	-1.6	3.2	1.5	11
Pacific	0.7	-0.2	0.5	3

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

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



03-Dec



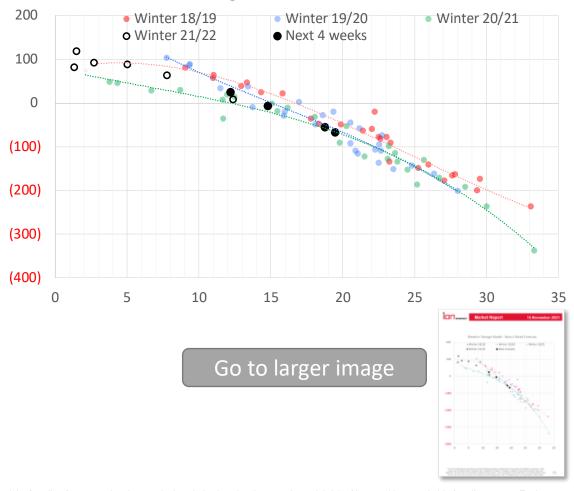
## Weather Model Storage Projection

Next report and beyond		
Week Ending	GWDDs	Week Storage Projection
12-Nov	12.2	25
19-Nov	15	-6
26-Nov	19	-55

### Weather Storage Model - Next 4 Week Forecast

19

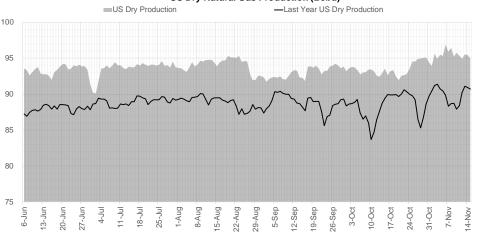
-67



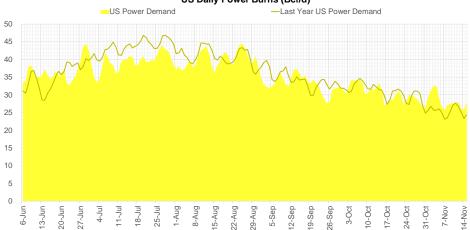


### Supply - Demand Trends

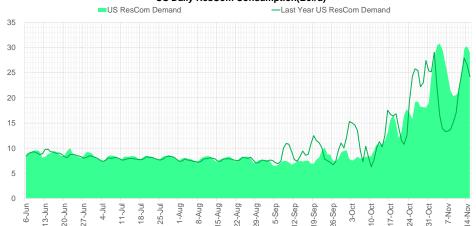
#### US Dry Natural Gas Production (Bcf/d)



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



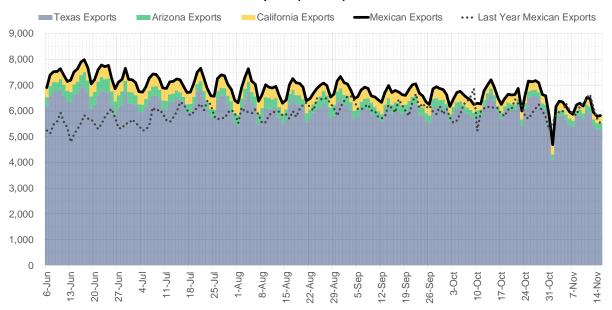
#### US Daily ResCom Consumption(Bcf/d)



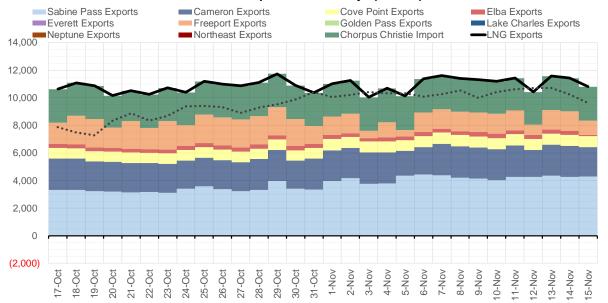
Source: Bloomberg



#### Mexican Exports (MMcf/d)







Source: Bloomberg



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

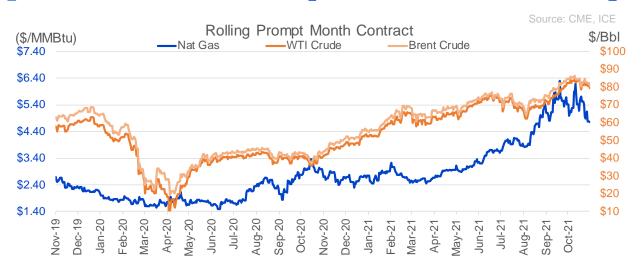
	CONTRACT	PUT/CALL	STRIKE	CUMULATIVE	CONTRACT	CONTRACT	PUT/CALL	STRIKE	CUMULATIVE OI
MONTH	YEAR	1 0 1/0/122	01111112	VOL	MONTH	YEAR	1 01/0/122	OTTAINE	0011021111201
12	2021	С	6.00	5516	12	2021	Р	2.75	54612
12	2021	C	6.50	3888	12	2021	Р	4.00	46086
1	2022	Č	5.40	3636	12	2021	Р	3.00	40224
1	2022	Č	5.30	3515	12	2021	Р	2.50	39420
12	2021	P	4.00	3158	3	2022	С	10.00	35066
12	2021	С	6.75	3149	12	2021	Р	3.50	33527
12	2021	P	4.50	3092	12	2021	Р	4.25	26224
3	2022	P	4.00	3062	12	2021	С	6.00	26002
12	2021	Р	4.25	2915	3	2022	С	8.00	25227
1	2022	С	9.00	2908	12	2021	Р	5.00	24608
1	2022	P	4.50	2817	1	2022	Р	3.00	23622
1	2022	Р	4.00	2148	1	2022	С	6.00	23420
3	2022	C	6.00	2056	1	2022	Р	2.75	23220
2	2022	P	4.00	1958	12	2021	С	4.00	22526
1	2022	P	4.25	1828	3	2022	С	5.00	22497
12	2021	C	5.40	1798	12	2021	С	7.00	22387
1	2022	P	3.00	1667	3	2022	Р	3.00	20575
12	2021	C	7.50	1601	12	2021	С	8.00	20139
1	2022	P	5.00	1533	4	2022	С	3.00	19710
1	2022	C	10.00	1493	3	2022	Р	2.50	18788
12	2022	Č	5.50	1489	1	2022	С	7.00	18459
1	2022	P	3.50	1384	3	2022	Р	3.50	18454
3	2022	P	3.50	1382	1	2022	С	5.00	18184
2		P P			1	2022	Р	4.00	17785
3	2022	P P	3.40	1366	1	2022	Р	3.50	17776
	2022		3.00	1354	2	2022	С	5.00	17607
12	2021	С	5.25	1320	3	2022	Р	4.00	17385
1	2022	С	7.00	1302	12	2021	Р	4.50	17318
12	2021	P	5.00	1209	12	2021	Р	2.00	16834
12	2021	P	4.75	1197	3	2022	С	6.00	16081
12	2021	С	5.00	1124	12	2021	С	5.00	15814
4	2022	P	3.00	1100	12	2022	С	5.00	15682
12	2022	С	5.00	1090	3	2022	С	4.00	15631
12	2021	C	7.00	1087	4	2022	Р	2.50	15564
2	2022	P	3.50	1080	4	2022	С	5.00	15316
1	2022	С	11.00	1024	2	2022	Р	3.50	15272
12	2021	С	5.15	1014	12	2021	С	7.50	14713
3	2022	С	10.00	1012	1	2022	С	4.00	14433
12	2021	Р	3.50	978	12	2021	С	6.50	14393
2	2022	Р	3.00	940	1	2022	С	10.00	14200
12	2021	С	5.75	924	2	2022	С	6.00	13878
12	2021	С	5.65	917	3	2022	С	7.00	13758
2	2022	Р	4.60	848	5	2022	С	3.00	13733
1	2022	Р	4.60	831	3	2022	Р	5.00	13723
12	2021	С	11.00	802	12	2021	С	5.50	13706
3	2022	Р	4.60	800	1	2022	С	8.00	13562
3	2022	С	8.00	730	12	2021	С	15.00	13492
1	2022	С	7.25	710	6	2022	C	3.00	13438
1	2022	Р	3.40	703	2	2022	С	4.00	13320
3	2022	Р	3.40	700	3	2022	C	: CME, ICE	
							Source	: CME, ICE	



## Nat Gas Futures Open Interest

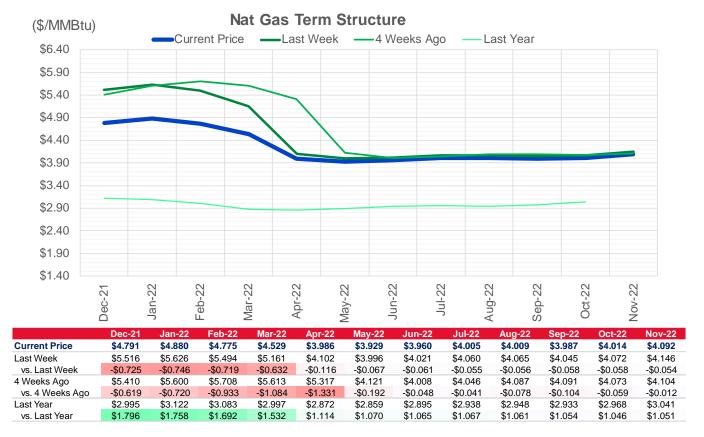
CME, and ICE Combined

ONE, and TOE 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	
DEC 21	90711	98927	-8216	DEC 21	92675	94242	-1567	
JAN 22	248869	246361	2508	JAN 22	87796	87616	180	
FEB 22	78868	77910	958	FEB 22	69969	69624	345	
MAR 22	156502	155958	544	MAR 22	79476	80061	-585	
APR 22	116301	116403	-102	APR 22	77797	77964	-167	
MAY 22	137591	137050	541	MAY 22	72357	72496	-139	
JUN 22	43747	43798	-51	JUN 22	54482	54552	-70	
JUL 22	42190	41747	443	JUL 22	57451	57519	-68	
AUG 22	31646	31531	115	AUG 22	55164	55290	-126	
SEP 22	36864	36713	151	SEP 22	56215	56293	-78	
OCT 22	86409	86813	-404	OCT 22	62140	62137	4	
NOV 22	35665	35638	27	NOV 22	47841	48020	-179	
DEC 22	27534	27499	35	DEC 22	50631	50714	-83	
JAN 23	32544	32397	147	JAN 23	40193	40326	-133	
FEB 23	11189	11230	-41	FEB 23	33371	33455	-85	
MAR 23	23845	23000	845	MAR 23	36907	36988	-82	
APR 23	16819	16757	62	APR 23	37860	37839	21	
MAY 23	10471	10171	300	MAY 23	35305	35388	-83	
JUN 23	9409	8680	729	JUN 23	31521	31504	17	
JUL 23	6035	5993	42	JUL 23	31403	31464	-61	
AUG 23	4436	4319	117	AUG 23	32471	32532	-61	
SEP 23	5811	5782	29	SEP 23	30594	30652	-58	
OCT 23	10840	10867	-27	OCT 23	34382	34417	-35	
NOV 23	4919	5092	-173	NOV 23	33975	33979	-4	
DEC 23	8078	8098	-20	DEC 23	31490	31486	4	
JAN 24	4796	4782	14	JAN 24	19600	19628	-29	
FEB 24	1443	1443	0	FEB 24	15041	15068	-26	
MAR 24	8624	8619	5	MAR 24	19816	19808	8	
APR 24	5357	5347	10	APR 24	14257	14272	-15	
MAY 24	1913	1832	81	MAY 24	14816	14863	-46	





## **Market Report**



			Prompt	Cash to
	Units	Settled	Settle	Prompt
AGT Citygate	\$/MMBtu	5.13	13.61	8.48
TETCO M3	\$/MMBtu	4.49	7.36	2.87
FGT Zone 3	\$/MMBtu	4.58	5.74	1.16
Zone 6 NY	\$/MMBtu	4.58	7.59	3.01
Chicago Citygate	\$/MMBtu	4.71	5.95	1.24
Michcon	\$/MMBtu	4.72	5.39	0.67
Columbia TCO Pool	\$/MMBtu	4.49	5.13	0.64
Ventura	\$/MMBtu	4.69	6.34	1.65
Rockies/Opal	\$/MMBtu	4.57	5.65	1.08
El Paso Permian Basin	\$/MMBtu	4.43	5.73	1.30
Socal Citygate	\$/MMBtu	5.13	7.11	1.98
Malin	\$/MMBtu	4.55	6.29	1.74
Houston Ship Channel	\$/MMBtu	4.62	5.87	1.25
Henry Hub Cash	\$/MMBtu	4.87	5.50	0.63
AECO Cash	C\$/GJ	3.75 4.64		0.89
Station2 Cash	C\$/GJ	3.60	6.84	3.24
Dawn Cash	C\$/GJ	4.83 5.57		0.73

Source: CME, Bloomberg



					\ / C	4 Wooks		
					VS	s. 4 Weeks		
	Units	Current Price	VS.	Last Week		Ago	VS	s. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224		0.000		0.000		2.194
NatGas Oct21/Nov21	\$/MMBtu	0.361		0.000		0.792		0.288
NatGas Oct21/Jan22	\$/MMBtu	-0.961		-0.746	•	-0.828		-1.273
NatGas Apr22/Oct22	\$/MMBtu	0.028		0.058		0.045		-0.003
WTI Crude	\$/Bbl	80.79		-0.480	•	-1.490		40.660
Brent Crude	\$/Bbl	82.17		-0.570	▼	-2.690		39.390
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18		0.000		0.000		0.000
Heating Oil	cents/Gallon	240.37		-5.190	$\blacksquare$	-17.000		119.950
Propane, Mt. Bel	cents/Gallon	1.32		-0.051	•	-0.154		0.770
Ethane, Mt. Bel	cents/Gallon	0.41		-0.021	•	-0.034		0.182
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						



## Weather Storage Model - Next 4 Week Forecast

