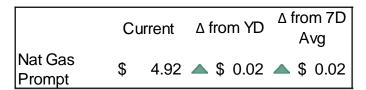


## **Market Report**

## **19 November 2021**



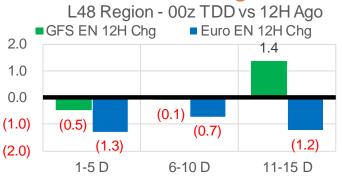
	С	urrent	Δ from YD		m 7D vg
WTI Prompt	\$	76.53	<b>\$</b> (2.48)	<b>~</b> \$	(3.7)

	_	urront	Δ from YD	∆ fro	m 7D
	Current	םו וווטוו ב	Avg		
Brent	\$	78 23	<b>*</b> \$ (3.01)	<b>-</b> \$	(3.6)
Prompt	Ψ	10.20	Ψ (0.01)	Ψ	(0.0)

### Page Menu

Short-term Weather Model Outlooks
Lower 48 Component Models
Regional S/D Models 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

GFŞ.FN 24H Chg

0.7

0.0

(2.0)

(4.0)

L48 Region - 00z TDD vs 24H Ago

Euro EN 24H Chg

(0.5)

(0.8)

	Current	Δ from YD	Δ from 7D Avg		
US Dry Production	95.8	<b>a</b> 0.20	<b>-</b> 0.55		

	Current	Δ from YD	Δ from 7D Avg		
US Power Burns	27.4	<b>0.13</b>	<b>0.19</b>		

	Current	Δ from YD	Δ from 7D Avg
US ResComm	32.5	<b>4.87</b>	<b>4.80</b>

	Current	Δ from YD	Δ from 7D Avg		
Canadian Imports	4.7	▼ -0.23	<b>▼</b> -0.16		

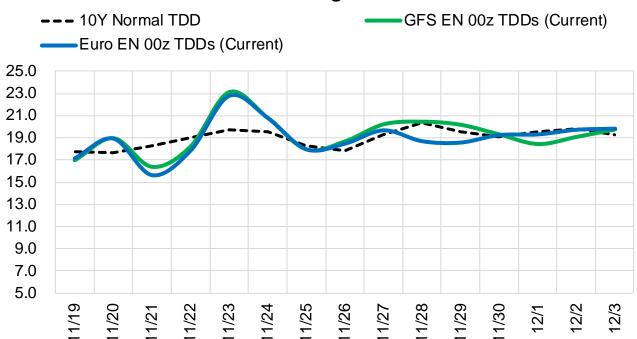
	Current	Δ from YD	Δ from 7D Avg		
Net LNG Exports	12.0	<b>0.49</b>	▲ 0.93		

	Current	Δ from YD	Δ from 7D Avg
Mexican Exports	6.1	▼ -0.06	<b>a</b> 0.05

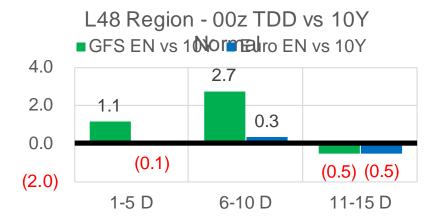


### Short-term Weather Model Outlooks (00z)

## L48 Region



## Vs. 10Y Normal



Source: WSI, Bloomberg



## **Market Report**

## Lower 48 Component Models

### **Daily Balances**

	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	DoD	vs. 7D
Lower 48 Dry Production	97.2	97.1	97.3	95.6	95.5	95.6	95.8	<b>0.2</b>	▼ -0.5
Canadian Imports	4.9	5.3	5.4	4.9	4.4	4.9	4.7	▼-0.2	▼ -0.2
L48 Power	26.1	25.8	27.9	27.9	27.3	27.2	27.4	<b>0.1</b>	<b>a</b> 0.3
L48 Residential & Commercial	30.0	30.6	30.5	27.3	23.2	27.6	32.5	<b>4.9</b>	<b>4.3</b>
L48 Industrial	25.3	25.5	25.4	24.6	24.1	24.5	24.2	▼-0.3	▼ -0.7
L48 Lease and Plant Fuel	5.3	5.3	5.3	5.2	5.2	5.2	5.2	▼ 0.0	▼ -0.1
L48 Pipeline Distribution	3.0	3.0	3.1	2.9	2.7	2.9	3.2	<b>0.3</b>	<b>0.2</b>
L48 Regional Gas Consumption	89.6	90.2	92.2	87.9	82.6	87.5	92.4	<b>5.0</b>	<b>4.1</b>
Net LNG Delivered	11.57	11.38	10.50	11.09	11.20	11.54	12.03	<b>0.5</b>	8.0 🛋
Total Mexican Exports	5.9	5.7	5.7	6.1	6.2	6.1	6.1	▼ -0.1	<b>▲ 0.1</b>
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	-5.1	-5.0	-5.7	-4.7	0.0	-4.5	-10.0		

### **EIA Storage Week Balances**

	15-Oct	22-Oct	29-Oct	5-Nov	12-Nov	19-Nov	WoW	vs. 4W
Lower 48 Dry Production	94.7	94.6	95.7	96.4	97.2	96.4	₹-0.8	<b>0.4</b>
Canadian Imports	5.0	5.6	5.6	5.5	5.1	4.9	▼-0.2	▼-0.6
L48 Power	31.7	29.0	29.0	29.5	27.3	27.2	▼-0.2	<b>▼</b> -1.5
L48 Residential & Commercial	9.5	13.9	17.7	24.1	23.4	27.7	<b>4.3</b>	<b>7.9</b>
L48 Industrial	21.5	20.5	21.0	22.8	23.0	24.8	<b>1.8</b>	<b>3.0</b>
L48 Lease and Plant Fuel	5.2	5.1	5.2	5.2	5.3	5.2	▼ 0.0	<b>0.0</b>
L48 Pipeline Distribution	2.2	2.3	2.5	2.9	2.7	2.9	<b>0.2</b>	<b>0.3</b>
L48 Regional Gas Consumption	70.1	70.8	75.4	84.5	81.7	87.9	<b>▲ 6.1</b>	<b>9.8</b>
Net LNG Exports	10.7	10.8	10.8	10.9	11.2	11.1	▼ -0.1	<b>0.2</b>
Total Mexican Exports	6.6	6.6	6.9	6.1	6.2	6.0	▼ -0.1	▼-0.4
Implied Daily Storage Activity	12.2	12.0	8.2	0.4	3.2	-3.7	-6.9	
EIA Reported Daily Storage Activity	13.1	12.4	9.0	1.0	3.7			
Daily Model Error	-0.9	-0.5	-0.8	-0.6	-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	94.2	94.4	95.1	96.6	<b>1.5</b>	<b>5.5</b>
Canadian Imports	4.5	4.6	5.2	5.1	5.1	5.4	5.1	▼ -0.3	<b>0.5</b>
L48 Power	27.5	25.7	39.4	40.1	33.1	30.3	28.1	<b>▼</b> -2.2	<b>2.4</b>
L48 Residential & Commercial	32.8	24.4	8.1	7.8	7.7	12.9	26.5	<b>▲</b> 13.6	<b>2.1</b>
L48 Industrial	24.9	22.4	21.2	21.9	22.1	21.7	23.9	<b>2.2</b>	<b>1.4</b>
L48 Lease and Plant Fuel	5.2	5.0	5.1	5.1	5.2	5.2	5.3	<b>0.1</b>	<b>0.3</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	77.5	70.3	72.4	86.7	<b>▲14.3</b>	<b>6.5</b>
Net LNG Exports	7.2	10.1	10.8	10.5	10.3	10.6	11.1	<b>0.5</b>	<b>1.0</b>
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	4.6	12.2	10.9	-2.2		
EIA Reported Daily Storage Activity Daily Model Error									



## **Daily** Average Generation Data

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

	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	DoD	vs. 7D
NRC Nuclear Daily Output	82.1	82.6	82.7	83.7	84.0	84.1	85.2	1.1	2.0
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	22.7	22.2	22.1	21.2	20.9	20.7	19.6	-1.1	-2.0
NRC % Nuclear Cap Utilization	83.5	84.0	84.1	85.1	85.4	85.6	86.7	1.1	2.1

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

	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	DoD	vs. 7D
CALI Wind	603	484	342	272	1244	2362	832	-1530	-53
TEXAS Wind	6916	11152	12085	8889	10264	20787	19938	-849	8256
US Wind	55365	64722	50577	49269	43525	73089	72121	-968	16030

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

	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	DoD	vs. 7D
US Wind	55365	64722	50577	49269	43525	73089	72121	-968	16030
US Solar	9798	10225	9884	10351	10356	8699	9468	769	-417
US Petroleum	2042	1941	2754	2549	3233	2436	1950	-486	-542
US Other	7762	8013	7477	7581	7887	7860	7981	121	218
US Coal	73780	73139	78116	78007	84359	77787	74464	-3324	-3068
US Nuke	86829	86997	87358	87638	88332	89358	89575	217	1823
US Hydro	26603	24353	24850	24970	26951	27265	27251	-14	1419
US Gas	143938	140713	138454	140797	162152	140627	137731	-2896	-6716

See National Wind and Nuclear daily charts



## **Storage Week** Average Generation Data

Nuclear	Generation	Weekly	Average -	<b>GWh</b>	(NRC)

	15-Oct	22-Oct	29-Oct	5-Nov	12-Nov	19- <b>N</b> ov	WoW	WoW Bcf/d Impact
NRC Nuclear Daily Output	76.5	73.6	71.6	72.2	79.8	83.9	4.1	-0.7
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	0.0	
NRC Nuclear Outage	28.3	31.2	33.3	32.7	25.1	21.0	-4.1	
NRC % Nuclear Cap Utilization	0.1	0.1	0.1	0.1	0.1	0.1	0.0	

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

	15-Oct	22-Oct	29-Oct	5-Nov	12-Nov	19- <b>N</b> ov	WoW	WoW Bcf/d Impact
CALI Wind	2400	1270	2314	1669	1805	909	-896	0.2
TEXAS Wind	15396	10729	15462	8472	12032	14722	2690	-0.5
US Wind	49918	43721	49870	32116	50997	60775	9777	-1.8
					18881.8 59%			

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

	15-Oct	22-Oct	29-Oct	5-Nov	12-Nov	19- <b>N</b> ov	WoW	WoW Bcf/d Impact
US Wind	49918	43721	49870	32116	50997	60775	9777	-1.8
US Solar	10530	12209	10138	9979	9963	9779	-185	0.0
US Petroleum	3224	3092	2815	3517	2532	2402	-130	0.0
US Other	12221	12109	10196	9288	8187	7826	-361	0.1
US Coal	89841	74017	73355	77392	77955	77191	-764	0.1
US Nuke	77046	73748	73713	75510	84337	88405	4067	-0.7
US Hydro	24699	23105	23540	25530	25348	26127	780	-0.1
US Gas	162707	150057	152802	159071	145066	142601	-2465	0.4

See National Wind and Nuclear daily charts



## **Monthly** Average Generation Data

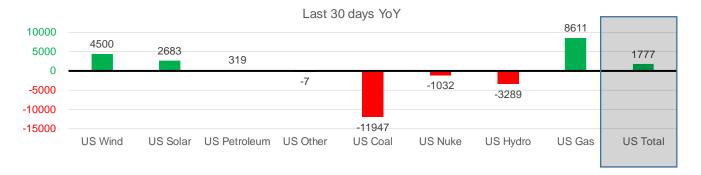
Nuclear Generation Monthly Average - GWh (NRC)										
2Yr Ago LY MTD										
	Same 30 days	Same 30 days	Aug-21	Sep-21	Oct-21	Nov-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY	
NRC Nuclear Daily Output	81.6	77.9	91.5	87.2	75.5	80.1	77.0	4.6	-0.9	
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	104.9	0.0	0.0	
NRC Nuclear Outage	23.3	27.0	13.4	17.7	29.4	24.8	27.9	-4.6	0.9	
NRC % Nuclear Cap Utilization	82.9	79.2	93.0	88.7	76.8	81.5	78.3	4.7	-0.9	

### 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	691	1290	2442	2020	1765	1387	1606	-378	316	
TEXAS Wind	9118	10250	9901	9400	11565	12281	12672	715	2421	
US Wind	34162	44229	35830	40223	40991	50340	48729	9349	4500	

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

Concration monthly Avorage	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	34162	44229	35830	40223	40991	50340	48729	▼-1610.4	<b>4500</b>
US Solar	6099	7297	13787	13382	11044	9702	9980	<b>278.1</b>	<b>2683</b>
US Petroleum	3101	2492	4484	2452	3238	2734	2811	<b>~</b> 77	<b>319</b>
US Other	8177	8980	9928	9008	11099	8396	8972	<b>577</b>	▼ -7
US Coal	100156	88412	137655	110037	82735	79101	76466	<b>▼</b> -2635	<b>▼-11947</b>
US Nuke	88386	81589	94062	90146	76700	84583	80558	<b>▼</b> -4025	<b>▼</b> -1032
US Hydro	26273	28517	28533	25665	23895	26149	25228	▼ -922	▼ -3289
US Gas	151173	141665	210824	173538	158237	150340	150275	▼ -8261	<b>8611</b>
US Total	417841	403569	534937	464626	410686	411915	405346	▼-14911	<b>1777</b>



See National Wind and Nuclear daily charts



## Regional S/D Models Storage Projection

Week Ending 19-Nov

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	-4.0	0.8	-3.2	-22
East	-1.5	0.4	-1.1	-8
Midwest	-2.4	0.9	-1.5	-10
Mountain	3.0	-3.4	-0.4	-3
South Central	-3.3	3.0	-0.2	-2
Pacific	0.2	-0.1	0.1	0

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

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



03-Dec

10-Dec

-69

-119



## Weather Model Storage Projection

Next report and beyond		
Week Ending	GWDDs	Week Storage Projection
19-Nov	15.5	-22
26-Nov	19	-57

### Weather Storage Model - Next 4 Week Forecast

19

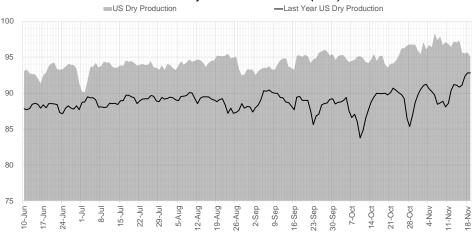
23



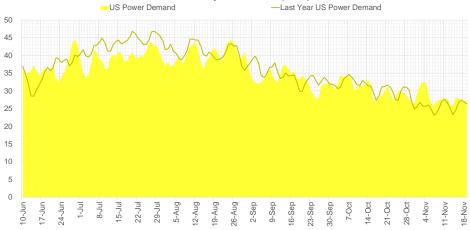


### Supply - Demand Trends

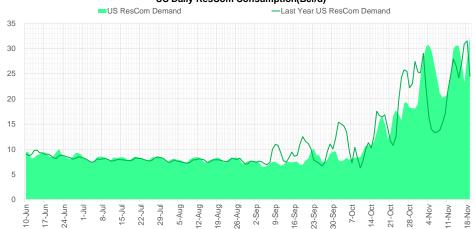
#### US Dry Natural Gas Production (Bcf/d)



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



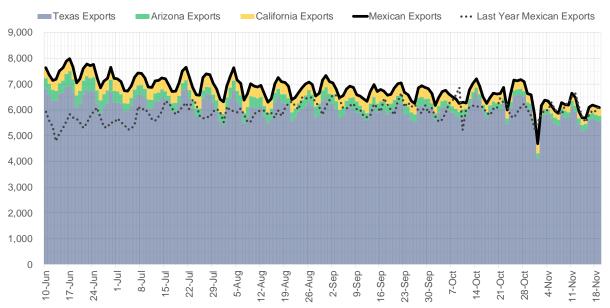
#### US Daily ResCom Consumption(Bcf/d)



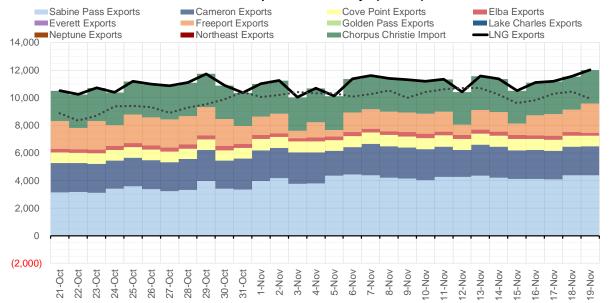
Source: Bloomberg



#### Mexican Exports (MMcf/d)







Source: Bloomberg



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

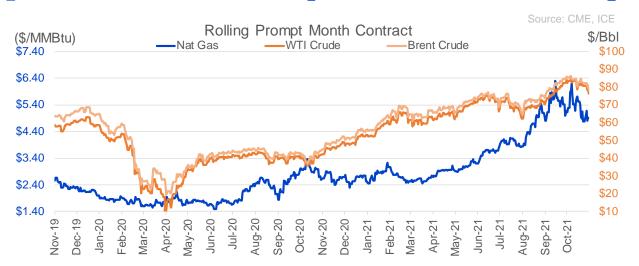
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
							_		
12	2021	P	4.50	6265	12	2021	P	2.75	54612
12	2021	С	5.40	3358	12	2021	P	4.00	42522
3	2022	С	9.00	3200	12	2021	P	3.00	40234
12	2021	С	5.55	3070	12	2021	P	2.50	39420
12	2021	С	6.00	3006	3	2022	С	10.00	34396
4	2022	С	5.00	2277	12	2021	P	3.50	33464
12	2021	С	7.00	2127	12	2021	С	6.00	25608
12	2021	Р	4.75	2114	3	2022	С	8.00	25194
12	2021	С	5.50	2087	12	2021	P P	5.00	24882
9	2022	С	5.00	2075	12	2021		4.25	24460
10	2022	С	5.00	2075	1	2022	С	6.00	23651
5	2022	С	5.00	2050	12	2021	C P	7.00	23322
6	2022	С	5.00	2050	1	2022		2.75	23233
7	2022	С	5.00	2050	3	2022	С	5.00	22598
8	2022	С	5.00	2050	1	2022	P C	3.00	22560
12	2021	Р	4.25	2039	12	2021		4.00	22526
12	2021	С	6.50	1645	12	2021	C P	8.00	20765
1	2022	Р	4.00	1575	3	2022		3.00	20698
10	2022	С	7.00	1500	4	2022	C P	3.00	19710
12	2021	С	5.00	1403	3	2022	P	2.50	18839
1	2022	Р	4.50	1366	12	2021	P P	4.50	18836
1	2022	С	10.00	1336	3	2022		3.50	18730
1	2022	С	12.00	1292	1	2022	C P	5.00	18452
4	2022	Р	3.00	1250	3 2	2022 2022	C	4.00 5.00	17761 17693
4	2023	Р	2.75	1050	1	2022	P	3.50	17439
12	2021	С	5.80	1048	3	2022	C	6.00	17416
3	2022	С	8.00	1045	3 1	2022	C	7.00	17343
12	2021	С	5.90	1008	4	2022	C	5.00	16947
12	2021	С	13.00	1000	12	2022	P	2.00	16834
4	2022	С	4.00	951	12	2021	C	5.00	16144
1	2022	С	8.00	943	12	2021	C	5.00	16047
6	2022	С	4.00	875	3	2022	C	4.00	15506
12	2021	Р	4.40	865	12	2022	C	5.50	15314
1	2022	Р	5.00	859	4	2022	P	2.50	15264
5	2022	С	4.00	825	2	2022	P	3.50	15226
1	2022	С	5.10	811	1	2022	P	4.00	15118
12	2021	Р	4.00	776	1	2022	Ċ	4.00	14369
7	2022	С	4.00	775	2	2022	Č	6.00	14006
8	2022	С	4.00	775	3	2022	P	5.00	13982
9	2022	С	4.00	775	1	2022	C	10.00	13953
10	2022	С	4.00	775	1	2022	Č	8.00	13898
6	2022	Р	3.00	763	5	2022	Č	3.00	13733
7	2022	Р	3.00	763	3	2022	Č	7.00	13563
8	2022	P	3.00	763	12	2021	Č	15.00	13491
9	2022	P	3.00	763	6	2022	Č	3.00	13438
10	2022	Р	3.00	763	6	2022	Č	5.00	13282
1	2022	P	4.45	751	12	2022	Č	4.50	13267
5	2022	Р	3.00	750	12	2022	Č	5.25	13263
12	2021	P	4.90	690	7	2022			13230
· <b>-</b>	-2	•			•		Source	: CME, ICE	.0200



## Nat Gas Futures Open Interest

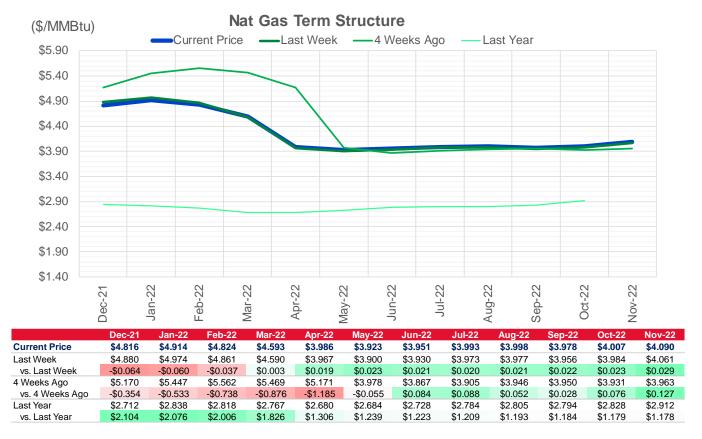
CME, and ICE Combined

CIVIE, 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	54565	60944	-6379	DEC 21	88313	90163	-1850		
JAN 22	263084	262239	845	JAN 22	89939	89258	680		
FEB 22	79297	79758	-461	FEB 22	69230	69148	81		
MAR 22	162129	158625	3504	MAR 22	80169	80385	-216		
APR 22	115688	115300	388	APR 22	75291	75049	242		
MAY 22	139433	139720	-287	MAY 22	72799	72466	333		
JUN 22	45013	45040	-27	JUN 22	54944	54675	269		
JUL 22	43171	42963	208	JUL 22	56923	56607	316		
AUG 22	31856	31615	241	AUG 22	55194	54898	296		
SEP 22	37257	36880	377	SEP 22	56087	55793	294		
OCT 22	88731	88185	546	OCT 22	62442	62254	187		
NOV 22	35537	35539	-2	NOV 22	47720	47709	11		
DEC 22	27311	27361	-50	DEC 22	50466	50419	47		
JAN 23	32312	31729	583	JAN 23	40542	40206	337		
FEB 23	11241	11290	-49	FEB 23	33444	33516	-73		
MAR 23	24565	23896	669	MAR 23	37176	37113	63		
APR 23	16948	16542	406	APR 23	38157	38148	9		
MAY 23	10047	10124	-77	MAY 23	35317	35484	-167		
JUN 23	9055	8774	281	JUN 23	31602	31727	-124		
JUL 23	6198	6311	-113	JUL 23	31468	31589	-121		
AUG 23	5118	5034	84	AUG 23	32499	32658	-159		
SEP 23	6402	6397	5	SEP 23	30715	30869	-154		
OCT 23	10625	10497	128	OCT 23	34780	34525	255		
NOV 23	5287	5121	166	NOV 23	33760	34055	-295		
DEC 23	8339	8288	51	DEC 23	31276	31580	-304		
JAN 24	4900	4974	-74	JAN 24	20389	19690	699		
FEB 24	1449	1449	0	FEB 24	15303	15170	134		
MAR 24	8641	8636	5	MAR 24	20398	20047	351		
APR 24	4868	5367	-499	APR 24	14475	14430	45		
MAY 24	1981	1982	-1	MAY 24	15120	14972	149		





## **Market Report**



		Cash	Prompt	Cash to
	Units	Settled	Settle	Prompt
AGT Citygate	\$/MMBtu	5.06	12.13	7.07
TETCO M3	\$/MMBtu	4.85	6.43	1.58
FGT Zone 3	\$/MMBtu	4.92	4.92 5.26	
Zone 6 NY	\$/MMBtu	4.92	6.89	1.97
Chicago Citygate	\$/MMBtu	4.85	5.43	0.58
Michcon	\$/MMBtu	4.80	4.92	0.12
Columbia TCO Pool	\$/MMBtu	4.66	4.64	-0.02
Ventura	\$/MMBtu	4.79	5.82	1.03
Rockies/Opal	\$/MMBtu	5.66	5.18	-0.48
El Paso Permian Basin	\$/MMBtu	4.62	5.18	0.56
Socal Citygate	\$/MMBtu	6.80	6.80 6.22	
Malin	\$/MMBtu	6.09	5.75	-0.34
Houston Ship Channel	\$/MMBtu	4.72	5.32	0.60
Henry Hub Cash	\$/MMBtu	4.96	5.02	0.06
AECO Cash	C\$/GJ	3.47	4.33	0.86
Station2 Cash	C\$/GJ	3.22	6.09	2.87
Dawn Cash	C\$/GJ	4.83	5.05	0.22

Source: CME, Bloomberg



					M	s. 4 Weeks		
					v			
	Units	Current Price	VS.	Last Week		Ago	VS	s. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224		0.000		0.000		2.169
NatGas Oct21/Nov21	\$/MMBtu	0.361		0.000		1.087		0.283
NatGas Oct21/Jan22	\$/MMBtu	-0.846		-0.250	•	-0.466		-1.167
NatGas Apr22/Oct22	\$/MMBtu	0.017		0.021		0.023		-0.050
WTI Crude	\$/Bbl	79.01		-2.580	•	-3.490		37.270
Brent Crude	\$/Bbl	81.24		-1.630	$\blacksquare$	-3.370		37.040
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18		0.000		0.000		0.000
Heating Oil	cents/Gallon	238.40		-6.310	$\blacksquare$	-16.510		111.330
Propane, Mt. Bel	cents/Gallon	1.26		-0.096	~	-0.198		0.723
Ethane, Mt. Bel	cents/Gallon	0.40		-0.010	•	-0.029		0.184
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

