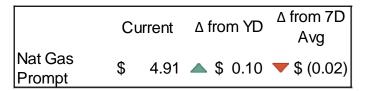


Market Report

18 November 2021



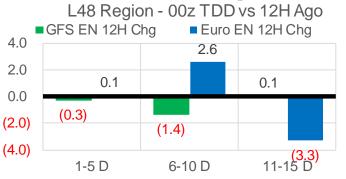
	С	urrent	Δ from YD	_	m 7D vg
WTI Prompt	\$	77.88	\$ (0.48)	~ \$	(2.7)

	_	urrant	Δ from YD	∆ fro	m 7D
	C	Current	ם וווטווו דם	A	vg
Brent	\$	80 11	\$ (0.17)	* \$	(1 9)
Prompt	Ψ	00.11	Ψ (0.17)	Ψ	(1.3)

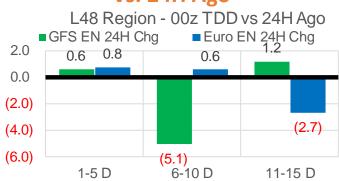
Page Menu

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



	Current	Δ from YD	Δ from 7D Avg
US Dry Production	95.4	▼ -0.15	▼ -1.21

	Current	Δfı	rom YD	Δf	rom 7D Avg
US ResComm	25.0		1.85	•	-1.69

	Current	Δ from YD	Δ from 7D Avg
Net LNG Exports	11.9	0.73	▲ 0.86

	Current	Δ from YD	Δ from 7D Avg
US Power Burns	27.2	- 0.09	- 0.03

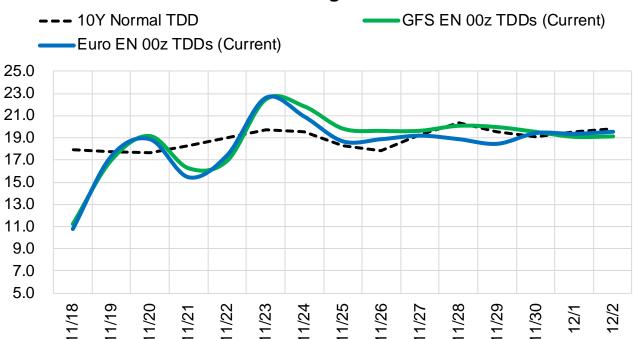
	Current		Δ from 7D Avg		
Canadian Imports	4.5	a 0.06	▼ -0.25		

	Current	Δ from YD	Δ from 7D Avg
Mexican Exports	6.1	- 0.09	a 0.04

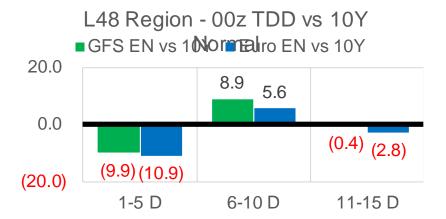


Short-term Weather Model Outlooks (00z)

L48 Region



Vs. 10Y Normal





Market Report

Lower 48 Component Models

Daily Balances

	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov	18-Nov	DoD	vs. 7D
Lower 48 Dry Production	96.5	97.3	97.1	97.3	95.7	95.6	95.4	▼-0.2	▼-1.2
Canadian Imports	4.4	4.9	5.3	5.4	4.9	4.5	4.5	0.1	▼ -0.3
L48 Power	27.9	26.1	25.8	27.9	27.9	27.3	27.2	▼-0.1	0.1
L48 Residential & Commercial	24.6	30.0	30.6	30.2	27.0	23.1	25.0	1.9	▼ -2.6
L48 Industrial	24.3	25.2	25.4	25.3	24.5	24.0	24.0	0.0	▼ -0.8
L48 Lease and Plant Fuel	5.3	5.3	5.3	5.3	5.2	5.2	5.2	▼ -0.1	▼ -0.1
L48 Pipeline Distribution	2.8	3.0	3.0	3.1	2.9	2.7	2.8	0.1	▼ -0.1
L48 Regional Gas Consumption	84.8	89.6	90.1	91.8	87.6	82.3	84.1	1.8	▼ -3.6
Net LNG Delivered	10.42	11.57	11.38	10.50	11.09	11.20	11.93	0.7	0.9
Total Mexican Exports	6.5	5.9	5.7	5.7	6.1	6.2	6.1	▼ -0.1	▲ 0.1
Implied Daily Storage Activity EIA Reported Daily Storage Activity	-0.8	-4.9	-4.8	-5.3	-4.2	0.3	-2.2		
Daily Model Error									

EIA Storage Week Balances

	8-Oct	15-Oct	22-Oct	29-Oct	5-Nov	12-Nov	WoW	vs. 4W
Lower 48 Dry Production	94.9	94.8	94.6	95.7	96.5	97.3	0.9	1.9
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	▼ -2.5
L48 Residential & Commercial	8.1	9.5	13.9	17.7	24.1	23.4	▼ -0.7	7.1
L48 Industrial	23.8	21.6	20.5	21.0	22.9	22.8	▼ -0.1	1.3
L48 Lease and Plant Fuel	5.2	5.2	5.2	5.2	5.3	5.3	0.0	0.1
L48 Pipeline Distribution	2.2	2.2	2.3	2.5	2.9	2.7	▼ -0.2	0.2
L48 Regional Gas Consumption	72.2	70.2	70.9	75.4	84.6	81.5	▼ -3.1	6.2
Net LNG Exports	9.9	10.7	10.8	10.8	10.9	11.2	0.3	0.4
Total Mexican Exports	6.6	6.6	6.6	6.9	6.1	6.2	▲ 0.1	▼-0.4
Implied Daily Storage Activity	11.6	12.2	12.0	8.2	0.4	3.5	3.1	
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	-0.6			

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	95.2	96.7	1.6	5.7
Canadian Imports	4.5	4.6	5.2	5.1	5.1	5.4	5.1	▼ -0.3	0.5
L48 Power	27.5	25.7	39.4	40.1	33.1	30.3	28.2	▼-2.1	2.5
L48 Residential & Commercial	32.8	24.4	8.1	7.8	7.7	12.9	26.0	▲ 13.1	1.6
L48 Industrial	24.9	22.4	21.2	21.9	22.1	21.7	23.7	2.0	1.3
L48 Lease and Plant Fuel	5.2	5.0	5.1	5.1	5.2	5.2	5.3	0.1	0.3
L48 Pipeline Distribution	3.0	2.7	2.5	2.6	2.2	2.3	2.9	a 0.6	0.2
L48 Regional Gas Consumption	93.5	80.2	76.3	77.5	70.4	72.4	86.0	▲13.6	5.9
Net LNG Exports	7.2	10.1	10.8	10.5	10.3	10.6	11.1	0.5	1.0
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 EIA Reported Daily Storage Activity	-5.1	-0.7	4.6	4.6	12.2	10.9	-1.4		
Daily Model Error									



Daily Average Generation Data

Nuclear Generation Daily Average - GWh (NRC)

	10-Nov	11- N ov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	DoD	vs. 7D
NRC Nuclear Daily Output	81.7	82.1	82.6	82.7	83.7	84.0	84.1	0.2	1.3
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	23.1	22.7	22.2	22.1	21.2	20.9	20.7	-0.2	-1.3
NRC % Nuclear Cap Utilization	83.1	83.5	84.0	84.1	85.1	85.4	85.6	0.2	1.3

Wind Generation Daily Average - MWh (EIA)

	10-Nov	11- N ov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	DoD	vs. 7D
CALI Wind	1703	603	484	342	272	1244	2362	1118	1587
TEXAS Wind	16930	6916	11152	12085	8889	10264	20787	10523	9748
US Wind	60852	55365	64722	50577	49269	43525	73089	29564	19037

Generation Daily Average - MWh (EIA)

	10-Nov	11- N ov	12- N ov	13-Nov	14-Nov	15-Nov	16-Nov	DoD	vs. 7D
US Wind	60852	55365	64722	50577	49269	43525	73089	29564	19037
US Solar	9586	9798	10225	9885	10351	10356	8742	-1614	-1291
US Petroleum	2489	2042	1941	2754	2549	3233	2436	-797	-65
US Other	7821	7757	8013	7477	7581	7887	7859	-28	103
US Coal	76438	73780	73139	78168	78007	84341	77785	-6556	473
US Nuke	86527	86829	86997	87358	87638	88332	89358	1026	2078
US Hydro	26074	26602	24353	24796	24970	26944	27244	300	1621
US Gas	135131	143909	140713	138431	140797	162151	140627	-21525	-2896

See National Wind and Nuclear daily charts



Storage Week Average Generation Data

Nuclear	Generation	Weekly	Average -	GWh	(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	79.8	7.6	-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	25.1	-7.6	
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	32116	50996	18881	-3.4
					-17754.6			
					-36%			

Generation Weekly Average - MWh (EIA)

	9.004	15 Oct	22 004	20.004	E Nov	12-Nov	MoM	WoW Pot/d
	8-Oct	15-Oct	22-Oct	29-Oct	5-Nov	ı∠-NOV	WoW	Bcf/d Impact
US Wind	20468	49918	43721	49870	32116	50996	18881	-3.4
US Solar	11294	10530	12209	10138	9979	9897	-82	0.0
US Petroleum	3901	3224	3092	2815	3517	2532	-985	0.2
US Other	10973	12221	12109	10196	9288	8168	-1121	0.2
US Coal	100713	89841	74017	73355	77392	77955	563	-0.1
US Nuke	83696	77046	73748	73713	75510	84337	8827	-1.6
US Hydro	24553	24699	23105	23540	25530	25347	-182	0.0
US Gas	176848	162707	150057	152802	159071	144943	-14128	2.5

See National Wind and Nuclear daily charts



Monthly Average Generation Data

Nuclear Generation Monthly Average - GWh (NRC)									
	2Yr Ago	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	81.3	77.6	91.5	87.2	75.5	79.9	76.6	4.4	-1.0
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	23.6	27.3	13.4	17.7	29.4	25.0	28.3	-4.4	1.0
NRC % Nuclear Cap Utilization	82.7	78.9	93.0	88.7	76.8	81.2	77.9	4.5	-1.0

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	651	1254	2442	2020	1765	1588	1694	-177	441
TEXAS Wind	8758	10114	9901	9400	11565	11950	12348	384	2235
US Wind	33951	43199	35830	40223	40991	49237	47958	8246	4759

Generation Monthly Average - MWh (EIA)

Concretion 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	33951	43199	35830	40223	40991	49237	47958	▼-1278.4	4759
US Solar	6192	7301	13787	13382	11044	9611	10004	393.2	2703
US Petroleum	3135	2511	4484	2452	3238	2832	2886	5 4	375
US Other	8210	8979	9928	9008	11099	8397	9101	~ 704	122
US Coal	99507	88822	137655	110037	82735	79730	76749	▼ -2981	▼ -12073
US Nuke	88114	81234	94062	90146	76700	84281	80003	▼ -4278	▼ -1230
US Hydro	26155	28316	28533	25665	23895	26082	25140	▼ -942	▼ -3176
US Gas	151697	142699	210824	173538	158237	151313	151134	▼ -8328	8436
US Total	417309	403407	534937	464626	410686	411991	405252	▼-15377	1845



See National Wind and Nuclear daily charts



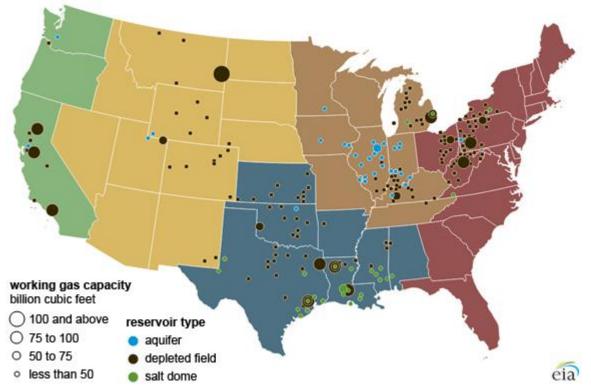
Regional S/D Models Storage Projection

Week Ending 12-Nov

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	3.2	0.9	4.1	29
East	0.1	0.3	0.4	3
Midwest	0.3	1.4	1.6	11
Mountain	3.3	-3.3	0.0	0
South Central	-1.0	2.5	1.5	11
Pacific	0.6	-0.1	0.5	4

^{*}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
12-Nov	12.2	29
19-Nov	15	-4
26-Nov	19	-56
03-Dec	19	-65

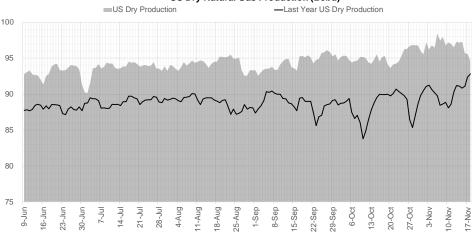
Weather Storage Model - Next 4 Week Forecast



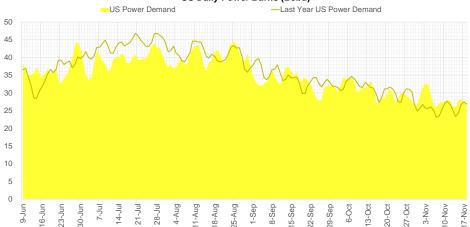


Supply - Demand Trends

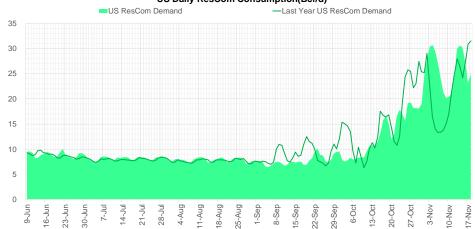
US Dry Natural Gas Production (Bcf/d)



US Daily Power Burns (Bcf/d)



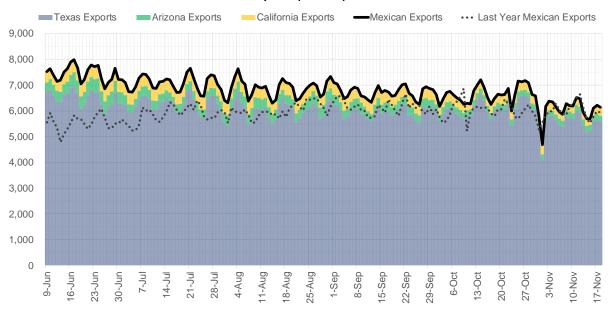
US Daily ResCom Consumption(Bcf/d)



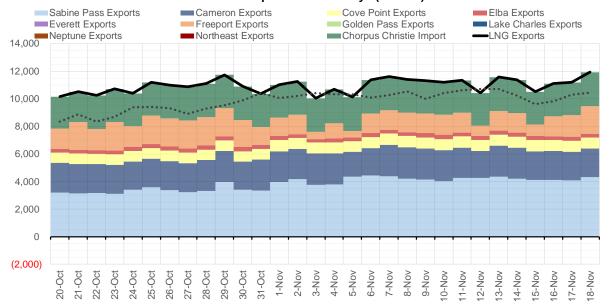
Source: Bloomberg



Mexican Exports (MMcf/d)



Net LNG Exports - Last 30 days (MMcf/d)



Source: Bloomberg



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

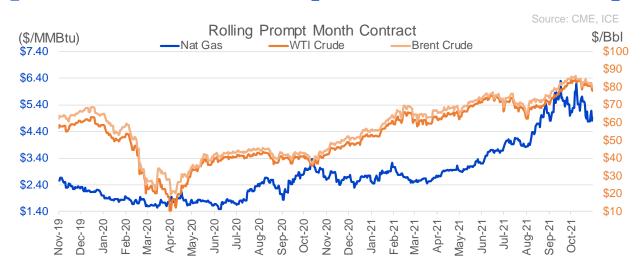
	CONTRACT	PUT/CALL	STRIKE	CUMULATIVE		NTRACT	CONTRACT	PUT/CALL	STRIKE	CUMULATIVE OI
MONTH	YEAR			VOL	ı	MONTH	YEAR			
12	2021	Р	4.00	8935		12	2021	Р	2.75	54612
12	2021	С	6.50	6771		12	2021	Р	4.00	42243
12	2021	С	6.00	6570		12	2021	Р	3.00	40234
1	2022	Р	4.00	3254		12	2021	Р	2.50	39420
12	2021	С	5.50	3185		3	2022	С	10.00	34416
12	2021	Р	4.25	2661		12	2021	Р	3.50	33469
12	2021	Р	4.50	2581		12	2021	С	6.00	25905
1	2022	С	7.50	2079		12	2021	Р	4.25	25625
12	2021	Р	5.00	1959		3	2022	С	8.00	25215
12	2021	С	5.00	1835		12	2021	Р	5.00	25119
3	2022	С	9.00	1700		1	2022	С	6.00	23604
1	2022	С	10.00	1424		1	2022	Р	2.75	23229
12	2021	С	7.50	1347		12	2021	С	7.00	23229
3	2022	С	7.00	1258		3	2022	С	5.00	22591
12	2021	Р	4.75	1228		12	2021	С	4.00	22526
3	2022	С	5.25	1000		1	2022	Р	3.00	22304
1	2022	P	3.50	897		12	2021	С	8.00	20818
3	2022	P	3.00	856		3	2022	Р	3.00	20801
12	2021	Р	4.40	834		4	2022	С	3.00	19710
12	2021	C	5.25	814		3	2022	Р	2.50	18808
2	2022	P	4.00	787		3	2022	Р	3.50	18620
12	2021	Ċ	5.60	738		1	2022	С	5.00	18476
12	2021	Č	5.75	669		1	2022	Р	3.50	17725
2	2022	P	3.50	601		3	2022	Р	4.00	17699
4	2022	P	3.50	577		2	2022	С	5.00	17698
5	2022	P	3.50	550		1	2022	С	7.00	17498
		P				1	2022	Р	4.00	17458
6	2022	P P	3.50	550		3	2022	С	6.00	17298
7	2022		3.50	550		12	2021	Р	4.50	17292
8	2022	P	3.50	550		12	2021	Р	2.00	16834
9	2022	P	3.50	550		12	2022	С	5.00	16047
10	2022	P	3.50	550		12	2021	С	5.00	15931
1	2022	P	4.25	548		2	2022	Р	3.50	15825
4	2023	P -	2.75	525		4	2022	С	5.00	15654
5	2023	P	2.75	525		3	2022	С	4.00	15506
6	2023	P -	2.75	525		4	2022	Р	2.50	15264
7	2023	Р	2.75	525		12	2021	С	5.50	14920
8	2023	Р	2.75	525		1	2022	С	4.00	14369
9	2023	Р	2.75	525		3	2022	Р	5.00	14023
10	2023	Р	2.75	525		1	2022	С	8.00	13920
12	2021	Р	4.90	519		2	2022	С	6.00	13899
1	2022	С	8.00	519		3	2022	С	7.00	13876
1	2022	Р	3.00	519		5	2022	С	3.00	13733
3	2022	С	8.50	500		12	2021	С	15.00	13491
1	2022	Р	4.50	481		1	2022	С	10.00	13448
4	2023	С	4.50	400		6	2022	С	3.00	13438
5	2023	С	4.50	400		3	2022	C	9.00	13337
6	2023	С	4.50	400		12	2022	C	4.50	13267
7	2023	С	4.50	400		12	2022	С	5.25	13263
8	2023	С	4.50	400		7	2022	C Source		13230
								Source	: CME, ICE	



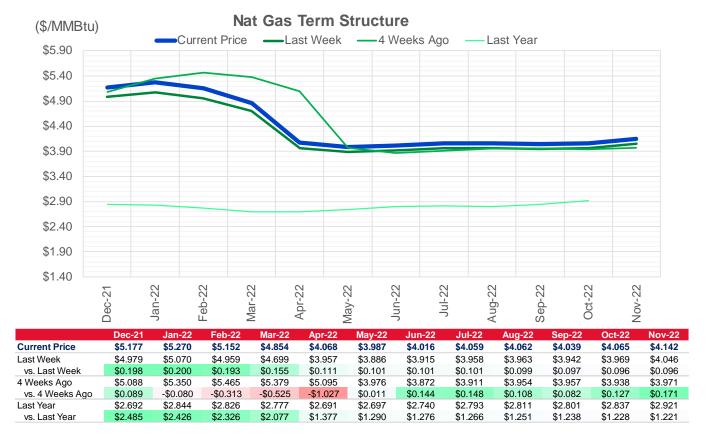
Nat Gas Futures Open Interest

CME, and ICE Combined

CME Henry Hub Futures (10,000 MMBtu) ICE Henry Hub Futures Contract Equivalent (10,000 MM							
CME Henry Hub Futures (10,000 MMBtu)				ICE Henry I			· · · · · · · · · · · · · · · · · · ·
	Current	Prior	Daily Change		Current	Prior	Daily Change
DEC 21	60942	72824	-11882	DEC 21	90163	92613	-2450
JAN 22	262252	255808	6444	JAN 22	89258	87695	1564
FEB 22	79758	78771	987	FEB 22	69148	70293	-1145
MAR 22	158625	157780	845	MAR 22	80385	80074	311
APR 22	115291	117273	-1982	APR 22	75049	76979	-1930
MAY 22	139720	139880	-160	MAY 22	72466	72393	73
JUN 22	45020	44184	836	JUN 22	54675	54768	-93
JUL 22	42963	43131	-168	JUL 22	56607	56834	-228
AUG 22	31616	31738	-122	AUG 22	54898	55015	-117
SEP 22	36882	37113	-231	SEP 22	55793	56090	-297
OCT 22	88185	87638	547	OCT 22	62254	62184	70
NOV 22	35539	35586	-47	NOV 22	47709	47820	-111
DEC 22	27361	27379	-18	DEC 22	50419	50603	-184
JAN 23	31729	31865	-136	JAN 23	40206	40263	-57
FEB 23	11290	11141	149	FEB 23	33516	33430	87
MAR 23	23896	23868	28	MAR 23	37113	37034	79
APR 23	16542	16572	-30	APR 23	38148	37832	316
MAY 23	10124	10033	91	MAY 23	35484	35443	41
JUN 23	8774	9172	-398	JUN 23	31727	31695	32
JUL 23	6311	6237	74	JUL 23	31589	31558	31
AUG 23	5034	4527	507	AUG 23	32658	32627	32
SEP 23	6397	6165	232	SEP 23	30869	30745	124
OCT 23	10497	10814	-317	OCT 23	34525	34484	41
NOV 23	5121	5135	-14	NOV 23	34055	33991	64
DEC 23	8288	8219	69	DEC 23	31580	31507	73
JAN 24	4974	4843	131	JAN 24	19690	19555	135
FEB 24	1449	1451	-2	FEB 24	15170	15043	127
MAR 24	8636	8631	5	MAR 24	20047	19924	123
APR 24	5367	5367	0	APR 24	14430	14306	124
MAY 24	1982	1982	0	MAY 24	14972	14844	128







		Cash	Prompt	Cash to
	Units	Settled	Settle	Prompt
AGT Citygate	\$/MMBtu	4.70	11.69	6.99
TETCO M3	\$/MMBtu	4.44	6.18	1.74
FGT Zone 3	\$/MMBtu	4.49	5.01	0.52
Zone 6 NY	\$/MMBtu	4.49	4.49 6.47	
Chicago Citygate	\$/MMBtu	4.73	5.20	0.47
Michcon	\$/MMBtu	4.71	4.68	-0.03
Columbia TCO Pool	\$/MMBtu	4.64	4.41	-0.23
Ventura	\$/MMBtu	4.79	5.58	0.79
Rockies/Opal	\$/MMBtu	5.67	4.95	-0.72
El Paso Permian Basin	\$/MMBtu	4.63	5.00	0.37
Socal Citygate	\$/MMBtu	6.78	6.17	-0.61
Malin	\$/MMBtu	5.90	5.51	-0.39
Houston Ship Channel	\$/MMBtu	4.91	5.03	0.12
Henry Hub Cash	\$/MMBtu	4.78	4.79	0.01
AECO Cash	C\$/GJ	3.83	3.90	0.07
Station2 Cash	C\$/GJ	3.60	5.84	2.24
Dawn Cash	C\$/GJ	4.73 4.84		0.11

Source: CME, Bloomberg



						4 Weeks		
					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		2.180
NatGas Oct21/Nov21	\$/MMBtu	0.361		0.000		1.032		0.277
NatGas Oct21/Jan22	\$/MMBtu	-0.927		-0.060	•	-0.648		-1.249
NatGas Apr22/Oct22	\$/MMBtu	0.021		0.004		0.036		-0.037
WTI Crude	\$/Bbl	78.36		-2.980	•	-5.510		36.540
Brent Crude	\$/Bbl	80.28		-2.360	▼	-5.540		35.940
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18		0.000		0.000		0.000
Heating Oil	cents/Gallon	236.44		-8.770	\blacksquare	-22.790		110.040
Propane, Mt. Bel	cents/Gallon	1.27		-0.115	•	-0.199		0.725
Ethane, Mt. Bel	cents/Gallon	0.40		0.000	•	-0.028		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

