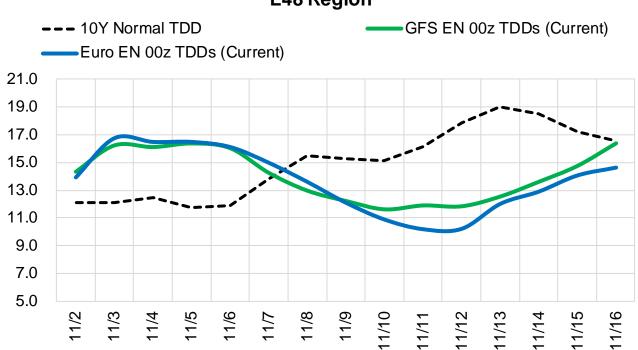


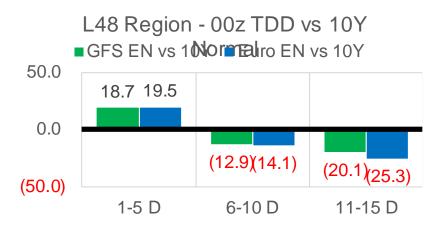


Short-term Weather Model Outlooks (00z)



L48 Region

Vs. 10Y Normal



Source: WSI, Bloomberg

Market Report

2 November 2021

Daily Balances

	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	1-Nov	2-Nov	DoD	vs.7D
Lower 48 Dry Production	94.9	94.9	95.0	94.9	94.2	93.4	94.7	1.3	0.1
Canadian Imports	5.7	5.2	5.5	5.6	5.6	5.3	5.3	▼ 0.0	V -0.2
L48 Power	29.3	28.7	27.6	26.2	26.4	28.7	29.4	A 0.7	1.6
L48 Residential & Commercial	19.3	18.3	18.2	18.0	18.8	24.3	26.3	2 .0	6.8
L48 Industrial	19.9	19.4	19.0	18.6	18.5	19.1	19.6	A 0.5	0.5
L48 Lease and Plant Fuel	5.2	5.2	5.2	5.2	5.1	5.1	5.1	0 .0	▼ 0.0
L48 Pipeline Distribution	2.6	2.5	2.4	2.4	2.4	2.8	3.0	A 0.1	0 .4
L48 Regional Gas Consumption	76.2	74.1	72.4	70.4	71.3	80.1	83.3	3.2	9.3
Net LNG Delivered	10.86	11.11	11.74	10.90	10.37	11.03	10.99	▼ 0.0	▼ 0.0
Total Mexican Exports	7.2	7.2	6.6	6.6	6.3	5.0	6.5	1.5	▼ 0.0
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	6.2	7.7	9.8	12.6	11.8	2.6	-0.9		

Lower 48 Component Models

Daily Model Error

EIA Storage Week Balances

	24-Sep	1-Oct	8-Oct	15-Oct	22-Oct	29-Oct	WoW	vs. 4W
Lower 48 Dry Production	93.5	93.8	93.3	93.0	92.8	94.0	1.2	▲ 0.8
Canadian Imports	5.2	5.7	5.3	5.0	5.6	5.6	▲ 0.0	0.2
L48 Power	33.3	30.3	32.9	31.8	29.0	29.0	• 0.0	- 2.0
L48 Residential & Commercial	8.1	8.4	8.2	9.5	13.9	17.7	3.8	A 7.7
L48 Industrial	21.0	20.5	22.3	19.9	18.9	19.7	a 0.8	- 0.7
L48 Lease and Plant Fuel	5.1	5.1	5.1	5.1	5.1	5.1	0.1	0.0
L48 Pipeline Distribution	2.3	2.1	2.2	2.2	2.3	2.5	0.2	a 0.3
L48 Regional Gas Consumption	69.8	66.5	70.6	68.4	69.2	74.0	4.9	5.4
Net LNG Exports	9.9	10.3	9.9	10.7	10.8	10.8	▼ 0.0	0.4
Total Mexican Exports	6.8	6.7	6.6	6.6	6.6	6.9	0.3	0.3
Implied Daily Storage Activity	12.2	16.0	11.6	12.2	11.9	7.8	-4.0	
EIA Reported Daily Storage Activity	12.6	16.9	11.6	13.1	12.4			
Daily Model Error	-0.4	-0.8	0.0	-0.9	-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	94.1	93.0	93.4	93.6	0.2	2.5
Canadian Imports	4.5	4.6	5.2	5.1	5.1	5.4	5.3	-0.1	0.7
L48 Power	27.5	25.7	39.4	40.1	33.1	30.3	29.1	▼-1.2	3 .3
L48 Residential & Commercial	32.8	24.4	8.1	7.8	7.7	12.9	25.3	12.4	A 0.9
L48 Industrial	24.9	22.5	21.2	21.7	20.8	20.1	19.4	▼ -0.7	▼ -3.1
L48 Lease and Plant Fuel	5.2	5.0	5.1	5.1	5.1	5.1	5.1	▲ 0.0	A 0.1
L48 Pipeline Distribution	3.0	2.7	2.5	2.6	2.2	2.3	2.9	0.6	a 0.2
L48 Regional Gas Consumption	93.5	80.2	76.3	77.3	68.9	70.6	81.7	▲11.1	1.5
Net LNG Exports	7.2	10.1	10.8	10.5	10.3	10.6	11.0	0.4	0.9
Total Mexican Exports	5.2	6.1	7.1	6.9	6.7	6.6	5.8	▼ -0.9	T -0.3
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	-5.1	-0.7	4.6	4.5	12.1	10.9	0.4		

Source: Bloomberg, analytix.ai

Daily Average Generation Data

Nuclear Generation Daily Average - GWh (NRC)

ENERGY

	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	DoD	vs. 7D
NRC Nuclear Daily Output	71.8	70.6	70.7	71.5	71.1	71.0	71.1	0.1	0.0
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	33.1	34.2	34.1	33.4	33.7	33.9	33.8	-0.1	0.0
NRC % Nuclear Cap Utilization	73.0	71.8	71.9	72.7	72.3	72.2	72.3	0.1	0.0

Wind Generation Daily Average - MWh (EIA)

	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	DoD	vs.7D
CALI Wind	3363	2314	739	739	485	1946	2725	779	1127
TEXAS Wind	8865	20948	20185	18446	13630	7276	12278	5002	-2613
US Wind	46570	69731	64064	63086	54877	37047	53208	16161	-2688

Generation Daily Average - MWh (EIA)

	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	DoD	vs.7D
US Wind	46570	69731	64064	63086	54877	37047	53208	16161	-2688
US Solar	8262	9987	10413	9171	10654	11277	10506	-771	545
US Petroleum	2387	2264	3356	3204	3306	3114	2737	-377	-201
US Other	9559	9137	8754	9161	8869	8199	7977	-222	-969
US Coal	77849	72418	74196	72900	73786	73747	68302	-5445	-5847
US Nuke	74786	74184	74646	74714	74753	74619	74876	257	259
US Hydro	25513	23945	23450	24683	23778	23546	24075	529	-78
US Gas	171554	153515	148975	145901	146491	141569	125338	-16231	-25996

See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

Storage Week Average Generation Data

Nuclear Generation Weekly Average - GWh (NRC)

	24-Sep	1-Oct	8-Oct	15-Oct	22-Oct	29-Oct	WoW	WoW Bcf/d Impact
NRC Nuclear Daily Output	85.9	85.1	82.1	76.5	73.6	71.6	-2.1	0.4
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	0.0	
NRC Nuclear Outage	19.0	19.8	22.7	28.3	31.2	33.3	2.1	
NRC % Nuclear Cap Utilization	0.1	0.1	0.1	0.1	0.1	0.1	0.0	

Wind Generation Weekly Average - MWh (EIA)

	24-Sep	1-Oct	8-Oct	15-Oct	22-Oct	29-Oct	WoW	WoW Bcf/d Impact
CALI Wind	1936	2467	1099	2400	1270	2314	1044	-0.2
TEXAS Wind	9780	10364	4890	15396	10729	15462	4733	-0.9
US Wind	43250	43478	20468	49922	43721	49860	6138	-1.1
					-6200.4			
					-12%			

Generation Weekly Average - MWh (EIA)

								VVOVV
	24-Sep	1-Oct	8-Oct	15-Oct	22-Oct	29-Oct	WoW	Bcf/d
								Impact
US Wind	43250	43478	20468	49922	43721	49860	6138	-1.1
US Solar	12185	12957	11295	10530	12209	9897	-2312	0.4
US Petroleum	2594	2712	3901	3224	3092	2815	-278	0.0
US Other	9121	8709	10972	12221	12109	10058	-2051	0.4
US Coal	109062	94792	100713	89841	74011	73354	-657	0.1
US Nuke	88789	88402	83696	77046	73748	73713	-35	0.0
US Hydro	25340	25370	24518	24701	23105	23541	436	-0.1
US Gas	175354	153813	176848	162707	150057	152282	2225	-0.4

See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

The risk of trading futures and options and other derivatives involves a substantial risk of loss and is not suitable for all persons. Each person must consider whether a particular trade, combination of trades, or strategy is suitable for that person's financial means and objectives. Past results are not necessarily indicative of future results. This communication may contain links to third party websites which are not under the control of and are not maintained by ION Energy Group, and ION Energy Group is not responsible for their content.

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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	79.5	76.1	91.5	87.2	75.5	71.6	74.5	-3.9	-1.6
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	25.3	28.8	13.4	17.7	29.4	33.3	30.4	3.9	1.6
NRC % Nuclear Cap Utilization	80.9	77.4	93.0	88.7	76.8	72.8	75.7	-3.9	-1.6

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	1207	1327	2442	2020	1765	2725	1971	959	644
TEXAS Wind	9393	9637	9901	9400	11565	12278	12541	713	2905
US Wind	37827	39979	35830	40222	41707	53208	45279	11501	5299

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
US Wind	37827	39979	35830	40222	41707	53208	45279	▼-7929.4	5299
US Solar	7714	8169	13787	13379	10966	10506	10762	256.5	2593
US Petroleum	3456	2534	4484	2452	3238	2737	3111	A 374	577
US Other	8352	8376	9928	9008	11051	7977	11025	a 3048	2649
US Coal	83857	82016	137655	110037	83267	68302	80513	A 12210	T -1503
US Nuke	85766	79440	94062	90146	76828	74876	75761	885	▼ -3679
US Hydro	23372	25382	28532	25661	23950	24075	24042	- 32	T -1339
US Gas	151219	158700	210824	173536	158279	125338	154972	8811	▼ -3727
US Total	402059	404661	534937	464627	411123	367523	407374	A 25552	2713



See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

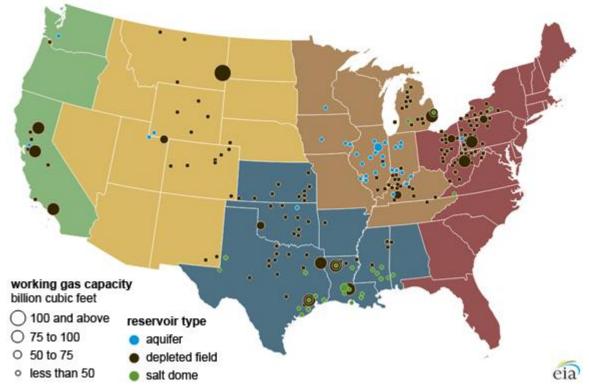


Regional S/D Models Storage Projection

Week Ending	29-Oct			
		Daily	Daily Average Storage	Weekly Adjusted
	Daily Raw Storage	Adjustment Factor	Activity (Adjusted) *	Storage Activity
L48	7.6	0.8	8.4	59
East	1.9	0.0	1.9	13
Midwest	1.2	-0.1	1.2	8
Mountain	3.5	-3.1	0.3	2
South Central	0.5	4.3	4.8	34
Pacific	0.5	-0.3	0.1	1

*Adjustment Factor is calcuated based on historical regional deltas

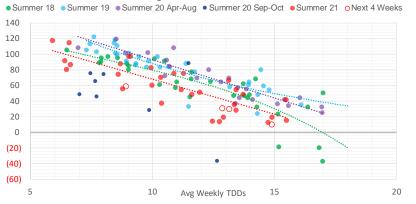
U.S. underground natural gas storage facilities by type (July 2015)



Weather Model Storage Projection

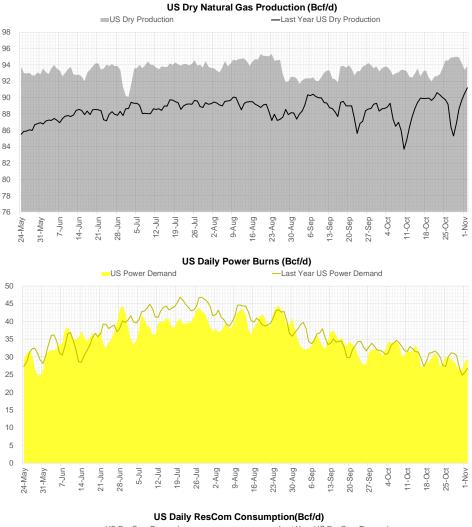
Next report and beyond		
Week Ending	GWDDs	Week Storage Projection
29-Oct	8.9	59
05-Nov	12.9	31
12-Nov	13.2	30
19-Nov	14.9	10

Weather Storage Model - Next 4 Week Forecast

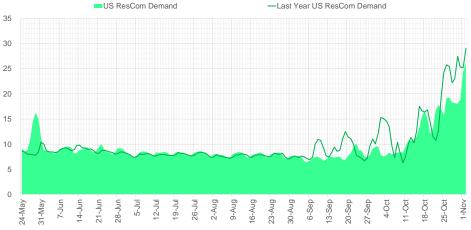


Go to larger image



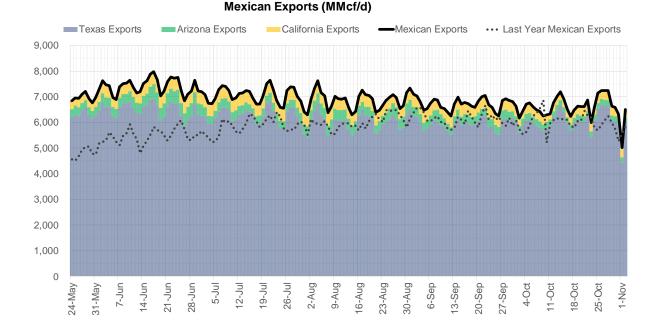


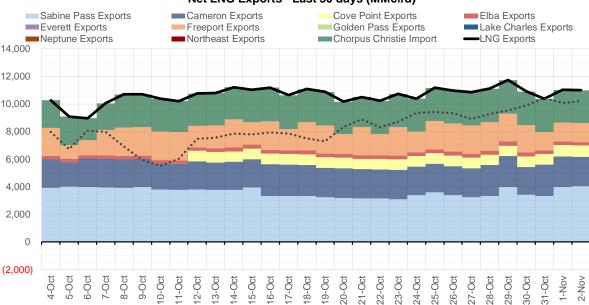
Supply – Demand Trends



Source: Bloomberg







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

Source: Bloomberg

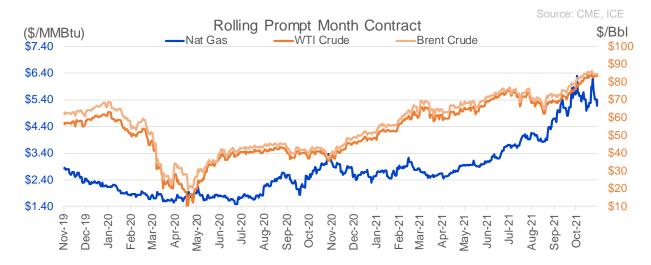


Nat Gas Options Volume and Open Interest CME, ICE and Nasdaq Combined

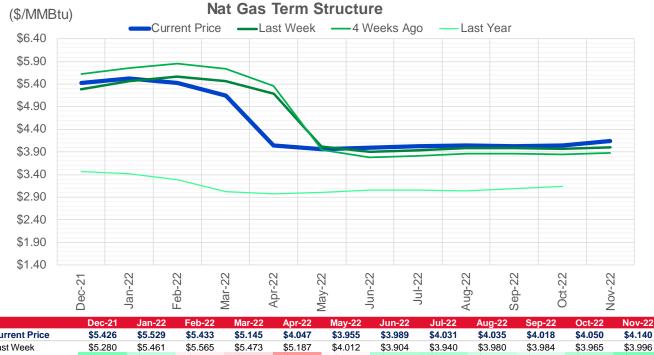
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL		CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
12	2021	Р	4.00	5827	- 1	12	2021	Р	2.75	54603
12	2021	С	6.00	5602		12	2021	Р	4.00	52507
12	2021	P	3.50	4827		12	2021	Р	3.00	40228
12	2021	С	7.50	4188		12	2021	Р	2.50	39420
12	2021	C	5.50	3083		12	2021	Р	3.50	34507
3	2022	С	20.00	2883		3	2022	С	10.00	29877
12	2021	С	8.00	2833		3	2022	С	8.00	24299
1	2022	C	10.00	2516		1	2022	Р	3.00	23349
12	2021	C	7.00	2424		3	2022	С	5.00	23130
12	2021	Р	3.00	2403		12	2021	Р	5.00	23063
2	2022	С	20.00	2289		1	2022	Р	2.75	22906
3	2022	C	10.00	2257		12	2021	С	4.00	22527
3	2022	P	3.00	2243		12	2021	Р	4.25	21227
12	2021	С	6.50	2189		1	2022	С	6.00	20739
1	2022	C	20.00	2103		12	2021	С	6.00	20222
12	2021	P	5.00	2017		4	2022	С	3.00	19710
7	2022	С	8.00	2000		1	2022	Р	3.50	18905
7	2022	C	10.00	2000		3	2022	Р	2.50	18561
2	2022	C	10.00	1902		12	2021	С	7.00	18230
12	2021	C	6.25	1808		1	2022	С	5.00	18123
1	2022	C	6.50	1645		1	2022	P	4.00	18004
12	2021	P	4.50	1628		3	2022	Р	3.50	17921
12	2021	С	5.75	1567		3	2022	Р	4.00	17657
12	2021	P	4.25	1419		12	2021	С	8.00	17510
3	2022	P	3.50	1411		2	2022	С	5.00	16863
12	2021	С	10.00	1218		12	2021	P	2.00	16834
3	2022	C	8.00	1150		12	2021	P	4.50	16398
6	2022	C	6.00	1000		3	2022	P	3.00	15871
6	2022	C	8.00	1000		3	2022	С	4.00	15631
1	2022	C	6.00	945		2	2022	P P	3.50	15498
1	2022	P	3.50	884		4	2022	P C	2.50	15489
2	2022	C	8.00	855		12	2022		5.00	15232
12	2021	C	5.30	822		1 4	2022 2022	C C	4.00 5.00	14408 14293
12	2021	P	3.75	820		4	2022	P	4.00	14293
3	2022	Р	2.25	750		2 1	2022	F C	4.00 7.00	14234
3	2022	Р	2.75	750		5	2022	c	3.00	13733
1	2022	С	15.00	738		3	2022	c	3.00 7.00	13688
1	2022	C	7.00	737		2	2022	c	6.00	13548
12	2021	P	4.75	707		2	2022	P	5.00	13463
12	2021	С	5.40	623		6	2022	C	3.00	13438
1	2022	P	3.00	622		1	2022	c	10.00	13382
2	2022	С	15.00	621		12	2022	c	4.50	13367
12	2021	C	5.00	594		3	2022	c	9.00	13288
12	2021	Č	9.00	560		12	2022	c	5.25	13263
12	2021	P	5.25	551		7	2022	c	3.00	13230
12	2021	C	15.00	547		8	2022	c	3.00	13226
1	2022	c	6.25	538		9	2022	c	3.00	13225
12	2021	c	5.25	533		3	2022	c	3.00	13177
2	2022	č	9.00	521		10	2022			
-		-						Source	: CME, ICE	

Nat Gas Futures Open Interest CME, and ICE Combined

Civile, and ICE Combined									
CME Henry H	lub Futures (1	0,000 MMBt		ICE Henry I	Hub Futures Cont	ract Equiva			
	Current	Prior	Daily Change		Current	Prior	Daily Change		
DEC 21	148824	154436	-5612	DEC 21	92219	91279	940		
JAN 22	212547	211169	1378	JAN 22	88833	89941	-1108		
FEB 22	77228	76962	266	FEB 22	69603	69994	-392		
MAR 22	158151	155194	2957	MAR 22	77343	76804	539		
APR 22	113143	112109	1034	APR 22	79315	79192	123		
MAY 22	124668	125111	-443	MAY 22	71102	71187	-85		
JUN 22	41126	41233	-107	JUN 22	55548	55359	189		
JUL 22	36583	37327	-744	JUL 22	57621	57653	-32		
AUG 22	29754	29399	355	AUG 22	56440	56280	160		
SEP 22	33775	33787	-12	SEP 22	57079	57049	30		
OCT 22	85015	85296	-281	OCT 22	62205	61920	285		
NOV 22	34379	34716	-337	NOV 22	49202	49005	197		
DEC 22	26925	26350	575	DEC 22	52093	51954	139		
JAN 23	31279	30409	870	JAN 23	40174	39732	442		
FEB 23	10937	10788	149	FEB 23	32953	32579	374		
MAR 23	17902	17984	-82	MAR 23	35381	35017	365		
APR 23	15775	15717	58	APR 23	36023	35584	439		
MAY 23	9249	9241	8	MAY 23	35044	34664	380		
JUN 23	7643	7172	471	JUN 23	31193	30853	340		
JUL 23	5053	4869	184	JUL 23	31388	31054	334		
AUG 23	4181	4026	155	AUG 23	32348	32011	337		
SEP 23	5436	5028	408	SEP 23	30362	30002	361		
OCT 23	6703	6510	193	OCT 23	34299	33911	388		
NOV 23	4055	3783	272	NOV 23	32895	32687	208		
DEC 23	4332	4326	6	DEC 23	30492	27963	2529		
JAN 24	1885	1885	0	JAN 24	18438	18267	171		
FEB 24	1141	1141	0	FEB 24	14181	14019	162		
MAR 24	4406	4670	-264	MAR 24	18929	18844	85		
APR 24	3449	3524	-75	APR 24	13314	13124	190		
MAY 24	1828	1828	0	MAY 24	13891	13806	85		



Market Report



Current Price	\$5.426	\$5.529	\$5.433	\$5.145	\$4.047	\$3.955	\$3.989	\$4.031	\$4.035	\$4.018	\$4.050	\$4.140
Last Week	\$5.280	\$5.461	\$5.565	\$5.473	\$5.187	\$4.012	\$3.904	\$3.940	\$3.980	\$3.984	\$3.965	\$3.996
vs. Last Week	\$0.146	\$0.068	-\$0.132	-\$0.328	-\$1.140	-\$0.057	\$0.085	\$0.091	\$0.055	\$0.034	\$0.085	\$0.144
4 Weeks Ago	\$5.619	\$5.763	\$5.853	\$5.742	\$5.367	\$3.940	\$3.787	\$3.820	\$3.861	\$3.869	\$3.851	\$3.880
vs. 4 Weeks Ago	-\$0.193	-\$0.234	-\$0.420	-\$0.597	-\$1.320	\$0.015	\$0.202	\$0.211	\$0.174	\$0.149	\$0.199	\$0.260
Last Year	\$3.354	\$3.469	\$3.416	\$3.284	\$3.017	\$2.975	\$3.006	\$3.047	\$3.059	\$3.046	\$3.080	\$3.138
vs. Last Year	\$2.072	\$2.060	\$2.017	\$1.861	\$1.030	\$0.980	\$0.983	\$0.984	\$0.976	\$0.972	\$0.970	\$1.002

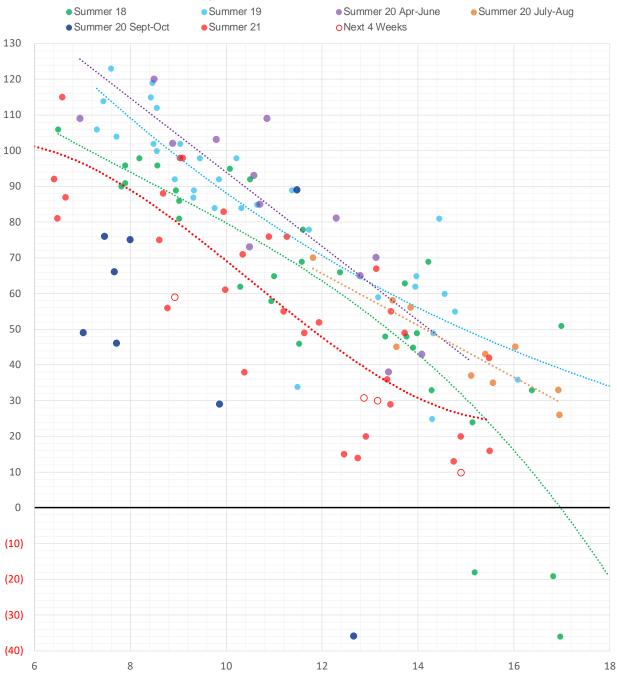
	Units	Cash Settled	Prompt Settle	Cash to Prompt
AGT Citygate	\$/MMBtu	5.23	8.22	2.99
TETCO M3	\$/MMBtu	4.93	5.67	0.74
FGT Zone 3	\$/MMBtu	4.99	6.06	1.07
Zone 6 NY	\$/MMBtu	4.99	5.66	0.67
Chicago Citygate	\$/MMBtu	5.01	5.99	0.98
Michcon	\$/MMBtu	5.04	5.74	0.70
Columbia TCO Pool	\$/MMBtu	4.74	5.34	0.60
Ventura	\$/MMBtu	5.18	6.06	0.88
Rockies/Opal	\$/MMBtu	5.26	5.68	0.42
El Paso Permian Basin	\$/MMBtu	4.25	5.69	1.44
Socal Citygate	\$/MMBtu	6.54	6.48	-0.06
Malin	\$/MMBtu	5.66	6.35	0.69
Houston Ship Channel	\$/MMBtu	4.85	5.87	1.02
Henry Hub Cash	\$/MMBtu	5.18	5.81	0.63
AECO Cash	C\$/GJ	4.50	5.08	0.58
Station2 Cash	C\$/GJ	4.36	6.60	2.24
Dawn Cash	C\$/GJ	5.03	5.79	0.76

Source: CME, Bloomberg



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					VS	s. 4 Weeks		
	Units	Current Price	vs.	Last Week		Ago	vs	. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224		0.000		0.000		2.189
NatGas Oct21/Nov21	\$/MMBtu	0.361		0.304		0.436		0.301
NatGas Oct21/Jan22	\$/MMBtu	-0.536		-0.844		-0.694	▼	-0.835
NatGas Apr22/Oct22	\$/MMBtu	0.002		0.059		0.081	▼	-0.010
WTICrude	\$/Bbl	84.05		0.290		6.430		47.240
Brent Crude	\$/Bbl	84.71	\mathbf{T}	-1.280		3.450		45.740
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18		0.000		0.000		0.000
Heating Oil	cents/Gallon	250.31	\bullet	-6.160		6.650		139.080
Propane, Mt. Bel	cents/Gallon	1.42		-0.024		-0.079		0.901
Ethane, Mt. Bel	cents/Gallon	0.42		-0.018		-0.021		0.194
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

Market Report

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