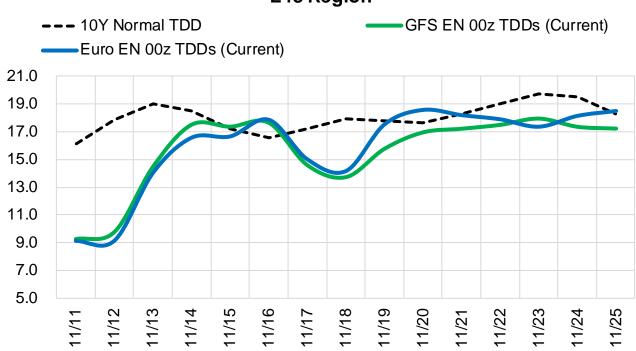


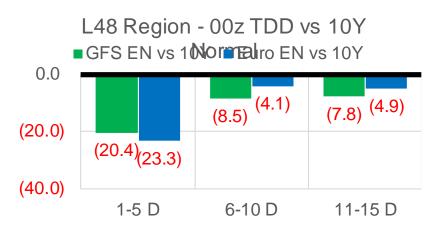


Short-term Weather Model Outlooks (00z)



L48 Region

Vs. 10Y Normal



Source: WSI, Bloomberg

Market Report

11 November 2021

Daily Balances

	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov	11-Nov	DoD	vs.7D
Lower 48 Dry Production	95.3	96.9	95.8	96.3	95.1	95.6	95.4	▼ -0.2	v -0.5
Canadian Imports	5.3	5.5	5.5	5.6	5.0	4.7	4.0	▼ -0.7	▼ -1.3
L48 Power	29.1	26.5	25.8	27.0	27.4	27.6	27.8	a 0.2	0.6
L48 Residential & Commercial	29.4	27.0	24.1	21.2	20.1	20.5	19.6	- 0.9	▼ -4.1
L48 Industrial	22.9	22.6	22.2	22.2	22.0	22.0	21.9	▼ -0.1	▼ -0.4
L48 Lease and Plant Fuel	5.2	5.3	5.2	5.2	5.2	5.2	5.1	▼ -0.1	▼ -0.1
L48 Pipeline Distribution	3.1	2.9	2.7	2.6	2.5	2.6	2.5	▼ 0.0	▼ -0.2
L48 Regional Gas Consumption	89.7	84.2	80.0	78.2	77.2	77.9	77.0	-0.9	▼ -4.2
Net LNG Delivered	10.14	11.38	11.62	11.39	11.31	11.20	11.23	0.0	0.1
Total Mexican Exports	6.1	6.1	5.9	6.2	6.3	6.1	6.2	▲ 0.0	▲ 0.0
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	-5.4	0.6	3.7	6.1	5.2	5.0	4.9		

Lower 48 Component Models

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	93.3	93.0	92.8	94.0	95.0	95.6	0.7	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	23.1	T -1.0	6.8
L48 Industrial	22.3	19.9	18.8	18.8	21.2	22.3	🔺 1.1	2 .6
L48 Lease and Plant Fuel	5.1	5.1	5.1	5.1	5.2	5.2	a 0.0	a 0.1
L48 Pipeline Distribution	2.2	2.2	2.3	2.5	2.9	2.7	T -0.2	a 0.2
L48 Regional Gas Consumption	70.6	68.4	69.1	73.2	82.8	80.6	▼ -2.2	7.3
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	6.1	▲ 0.0	▼-0.4
Implied Daily Storage Activity	11.6	12.2	12.0	8.8	0.7	2.8	2.0	
EIA Reported Daily Storage Activity	11.6	13.1	12.4	9.0	1.0			
Daily Model Error	0.0	-0.9	-0.5	-0.2	-0.3			

Monthly Balances

	2Yr Ago	LY					MTD		
	Nov-19	Nov-20	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	МоМ	vs. LY
Lower 48 Dry Production	96.2	91.1	93.6	94.1	93.0	93.4	95.4	2.0	4.3
Canadian Imports	4.5	4.6	5.2	5.1	5.1	5.4	5.2	▼ -0.2	0.6
L48 Power	27.5	25.7	39.4	40.1	33.1	30.3	28.8	T -1.5	A 3.1
L48 Residential & Commercial	32.8	24.4	8.1	7.8	7.7	12.9	25.0	12.1	0.7
L48 Industrial	24.9	22.5	21.2	21.7	20.8	19.9	22.2	2 .3	T -0.2
L48 Lease and Plant Fuel	5.2	5.0	5.1	5.1	5.1	5.1	5.2	A 0.1	a 0.2
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	84.1	13.6	3.9
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	6.0	▼ -0.6	▼ 0.0
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	-5.1	-0.7	4.6	4.5	12.1	11.1	-0.6		

Source: Bloomberg, analytix.ai

Daily Average Generation Data

Nuclear Generation Daily Average - GWh (NRC)

ENERGY

	3-Nov	4-Nov	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov	DoD	vs. 7D
NRC Nuclear Daily Output	73.4	74.9	76.0	77.4	78.8	80.6	81.7	1.1	4.8
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	31.5	29.9	28.9	27.5	26.1	24.3	23.2	-1.1	-4.8
NRC % Nuclear Cap Utilization	74.6	76.2	77.3	78.7	80.2	81.9	83.0	1.1	4.9

Wind Generation Daily Average - MWh (EIA)

	3-Nov	4-Nov	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov	DoD	vs. 7D
CALI Wind	362	2356	893	2071	3302	1231	2831	1600	1129
TEXAS Wind	7268	4582	7879	9903	15300	16548	10746	-5802	500
US Wind	17608	27034	41258	46281	60521	54674	37866	-16807	-3363

Generation Daily Average - MWh (EIA)

	3-Nov	4-Nov	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov	DoD	vs.7D
US Wind	17608	27034	41258	46281	60521	54674	37866	-16807	-3363
US Solar	8966	8478	9436	9903	9551	11116	9079	-2037	-496
US Petroleum	4211	3793	3573	2434	1810	2499	2878	379	-175
US Other	10005	10450	9880	8302	7439	8041	7994	-47	-1025
US Coal	89168	87398	83058	76931	71807	78367	84647	6280	3526
US Nuke	77899	79304	80587	81804	83574	84844	86125	1281	4790
US Hydro	27328	26709	25857	22598	23096	26317	26747	430	1430
US Gas	183453	180948	168722	148374	124702	137716	150494	12779	-6825

See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

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	79.7	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	2284	615	-0.1
TEXAS Wind	4890	15396	10729	15462	8472	11696	3224	-0.6
US Wind	20468	49918	43721	49870	32110	45190	13081	-2.4
					-17760.5			
					-36%			

Generation Weekly Average - MWh (EIA)

								VVOVV
	8-Oct	15-Oct	22-Oct	29-Oct	5-Nov	12-Nov	WoW	Bcf/d
								Impact
US Wind	20468	49918	43721	49870	32110	45190	13081	-2.4
US Solar	11294	10530	12209	10138	9855	9606	-249	0.0
US Petroleum	3901	3224	3092	2815	3517	2707	-810	0.1
US Other	10973	12221	12109	10196	9229	8235	-994	0.2
US Coal	100713	89841	74011	73355	77385	80587	3202	-0.6
US Nuke	83696	77046	73748	73713	75510	84169	8659	-1.6
US Hydro	24553	24699	23105	23540	25529	25444	-85	0.0
US Gas	176848	162707	150057	152802	158806	147285	-11520	2.1

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.



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	80.2	76.2	91.5	87.2	75.5	77.3	74.4	1.8	-1.8
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	24.7	28.7	13.4	17.7	29.4	27.6	30.5	-1.8	1.8
NRC % Nuclear Cap Utilization	81.6	77.5	93.0	88.7	76.8	78.6	75.7	1.8	-1.8

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	919	1209	2442	2020	1765	2047	1833	282	624
TEXAS Wind	9064	10377	9901	9400	11565	9817	11520	-1748	1144
US Wind	35531	42228	35830	40223	40991	38020	42784	-2970	557

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	35531	42228	35830	40223	40991	38020	42784	4764.0	557
US Solar	6659	7673	13787	13380	11044	9369	10543	A 1173.9	2869
US Petroleum	3139	2502	4484	2452	3238	3128	3086	- 42	585
US Other	8314	8822	9928	9008	11099	8788	10097	1 308	1275
US Coal	90850	86454	137655	110037	82734	82408	77288	T -5120	T -9166
US Nuke	86707	79743	94062	90146	76700	81590	76793	-4796	T -2949
US Hydro	25139	26900	28533	25665	23895	26124	24384	T -1740	▼ -2516
US Gas	150274	147660	210824	173538	158237	157655	153706	▼ -4452	6046
US Total	407064	402178	534937	464626	410685	407340	401639	▼-13668	-539



See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

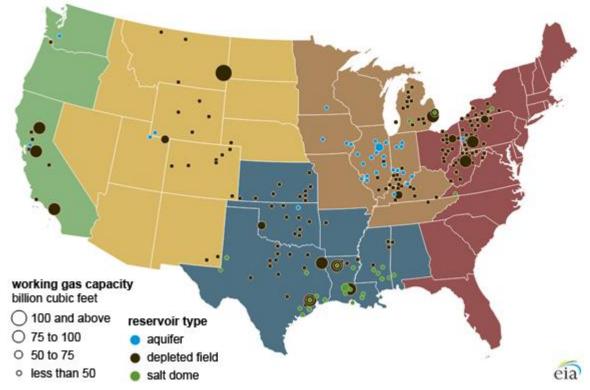


Regional S/D Models Storage Projection

Week Ending	12-Nov			
	Daily Raw	Daily Adjustment	Daily Average Storage Activity	Weekly Adjusted Storage
	Storage	Factor	(Adjusted) *	Activity
L48	2.5	0.6	3.1	22
East	0.1	0.0	0.1	1
Midwest	0.4	1.0	1.4	10
Mountain	3.1	-3.2	-0.1	-1
South Central	-1.7	3.0	1.3	9
Pacific	0.6	-0.3	0.4	3

*Adjustment Factor is calcuated based on historical regional deltas

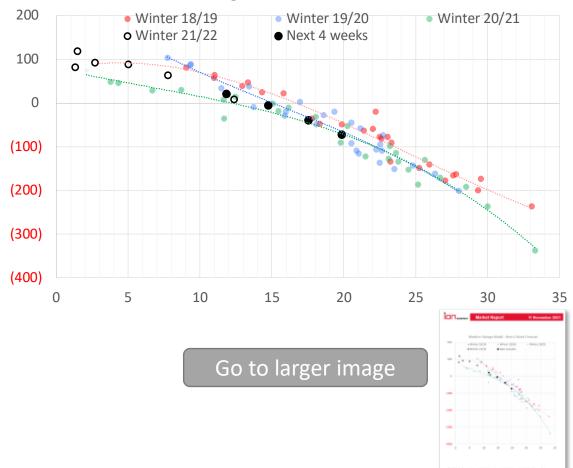
U.S. underground natural gas storage facilities by type (July 2015)



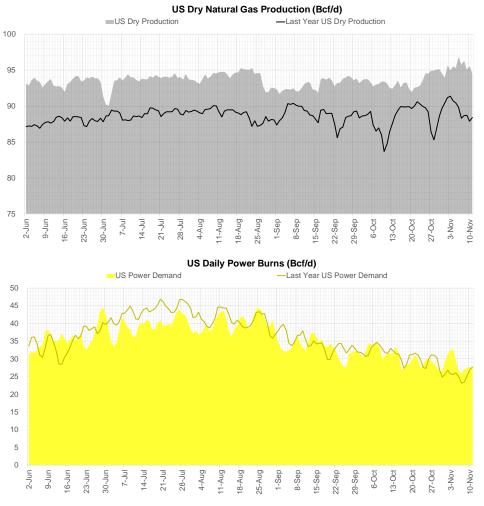
Weather Model Storage Projection

Next report and beyond		
Week Ending	GWDDs	Week Storage Projection
12-Nov	11.8	22
19-Nov	15	-5
26-Nov	18	-39
03-Dec	20	-73

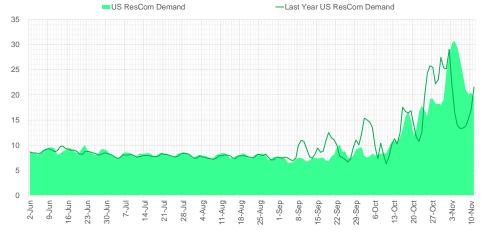
Weather Storage Model - Next 4 Week Forecast





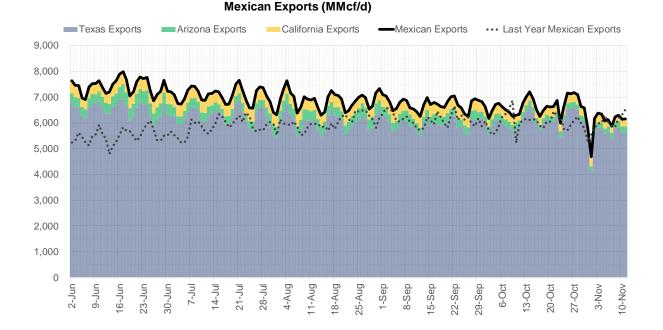


US Daily ResCom Consumption(Bcf/d)



Source: Bloomberg





Sabine Pass Exports Cameron Exports Cove Point Exports Elba Exports Golden Pass Exports Everett Exports Freeport Exports Lake Charles Exports Chorpus Christie Import LNG Exports Neptune Exports Northeast Exports 14,000 12,000 10,000 8,000 6,000 4,000 2,000 0 (2,000)24-Oct 22-Oct 23-Oct 25-Oct 26-Oct 27-Oct 28-Oct 29-Oct 30-Oct 31-Oct 1-Nov 2-Nov 3-Nov 4-Nov 18-Oct 19-Oct 20-Oct 21-Oct 7-Nov 13-Oct 14-Oct 15-Oct 16-Oct 17-Oct 5-Nov 6-Nov 8-Nov 9-Nov VoV-0 11-Nov

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

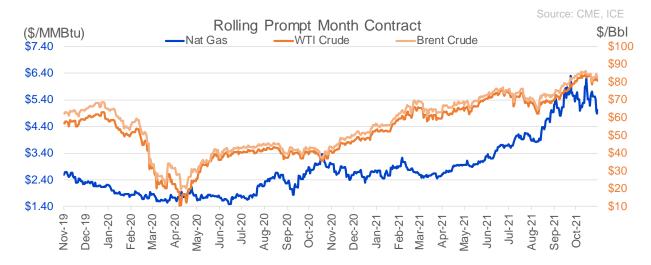


Nat Gas Options Volume and Open Interest CME, ICE and Nasdaq Combined

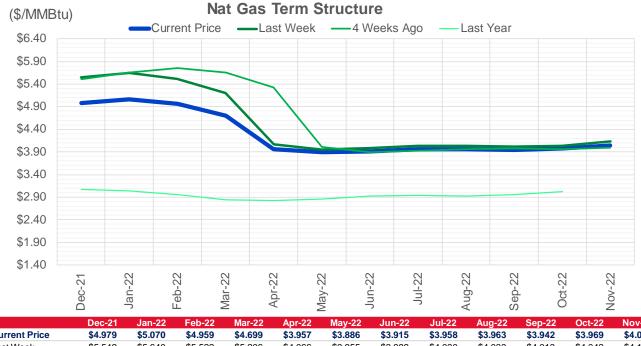
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
12	2021	С	6.00	7556	12	2021	Р	2.75	54612
12	2021	C	6.50	5279	12	2021	Р	4.00	47910
12	2021	P	4.25	4971	12	2021	Р	3.00	40245
12	2021	Р	4.00	4387	12	2021	Р	2.50	39420
12	2021	С	5.00	3778	12	2021	Р	3.50	34378
1	2022	C	5.50	3719	3	2022	С	10.00	33768
12	2021	P	4.50	2722	12	2021	Р	4.25	25517
12	2021	С	5.50	2659	3	2022	С	8.00	25005
12	2021	C	6.25	2633	12	2021	С	6.00	24678
1	2022	C	5.60	2608	12	2021	Р	5.00	24655
5	2022	C	5.50	2537	1	2022	С	6.00	23605
12	2021	C	5.25	2083	1	2022	Р	3.00	23360
12	2021	C	7.00	1998	3	2022	С	5.00	23005
3	2022	Ċ	10.00	1891	1	2022	Р	2.75	22828
1	2022	Ċ	6.00	1848	12	2021	С	4.00	22526
1	2022	P	3.50	1761	12	2021	С	7.00	21676
1	2022	Р	3.00	1681	3	2022	Р	3.00	20973
3	2022	C	20.00	1502	12	2021	С	8.00	20269
12	2021	P	3.50	1458	4	2022	С	3.00	19710
12	2021	P	3.75	1350	1	2022	С	7.00	19201
1	2022	Р	4.00	1290	1	2022	Р	4.00	19173
4	2022	C	6.00	1248	3	2022	Р	2.50	18788
4	2022	Ċ	5.50	1201	12	2021	Р	4.50	18703
12	2021	P	3.00	1141	3	2022	Р	3.50	18644
3	2022	P	4.50	1118	1	2022	Р	3.50	18340
1	2022	P	4.50	1088	1	2022	С	5.00	17877
12	2021	С	5.75	1015	3	2022	Р	4.00	17700
2	2022	C	8.00	1009	2	2022	С	5.00	17246
1	2022	P	3.30	1006	12	2021	Р	2.00	16834
12	2021	P	4.35	1001	2	2022	Р	3.50	15716
1	2022	C	5.00	999	12	2022	С	5.00	15682
3	2022	C	8.00	982	3	2022	С	4.00	15631
7	2022	č	6.00	975	4	2022	P C	2.50	15564
1	2022	P	5.00	973	4	2022	P	5.00	14967
3	2022	P	3.75	903	1	2022 2022	P C	4.00 4.00	14533
1	2022	C	7.00	889	12	2022	c	4.00 7.50	14433 14384
12	2021	P	3.90	884	3	2021	c	7.50	14384
12	2021	P	4.75	878	3	2022	c	6.00	13955
4	2022	C	5.00	802	5	2022	c	3.00	13733
4	2022	c	4.00	800	1	2022	c	8.00	13674
5	2022	C	5.00	800	12	2022	c	6.50	13606
6	2022	C	5.00	800	1	2022	c	10.00	13515
7	2022	č	5.00	800	3	2022	P	5.00	13498
8	2022	č	5.00	800	12	2022	c	15.00	13494
9	2022	C	5.00	800	6	2021	c	3.00	13438
10	2022	c	5.00	800	1	2022	P	3.25	13288
12	2021	P	4.15	798	12	2022	c	4.50	13267
3	2022	C	5.00	786	12	2022	c	5.25	13263
1	2022	č	10.00	783	2	2022	č	6	13261.75
-					_		Source	e: 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	Hub Futures Cont	ract Equiva			
	Current	Prior	Daily Change		Current	Prior	Daily Change		
DEC 21	107415	116543	-9128	DEC 21	92111	92850	-739		
JAN 22	238747	232453	6294	JAN 22	87605	87665	-60		
FEB 22	77499	78148	-649	FEB 22	69675	70367	-692		
MAR 22	155635	157774	-2139	MAR 22	79644	79599	45		
APR 22	115794	116175	-381	APR 22	78236	78099	137		
MAY 22	133993	132958	1035	MAY 22	72161	71863	298		
JUN 22	43798	43981	-183	JUN 22	54607	55347	-740		
JUL 22	41090	40149	941	JUL 22	57525	57520	5		
AUG 22	31151	31030	121	AUG 22	55677	56279	-602		
SEP 22	36521	36257	264	SEP 22	56549	57105	-556		
OCT 22	87419	86854	565	OCT 22	62404	62814	-410		
NOV 22	35453	35638	-185	NOV 22	48374	49260	-886		
DEC 22	27604	27538	66	DEC 22	50867	51859	-992		
JAN 23	31921	31698	223	JAN 23	40381	40509	-128		
FEB 23	11285	11351	-66	FEB 23	33440	33462	-21		
MAR 23	21792	20362	1430	MAR 23	36566	36363	203		
APR 23	16691	15984	707	APR 23	37610	37496	114		
MAY 23	10443	9955	488	MAY 23	35552	35431	121		
JUN 23	8593	8022	571	JUN 23	31649	31599	49		
JUL 23	5702	5557	145	JUL 23	31648	31644	4		
AUG 23	4274	4220	54	AUG 23	32724	32622	102		
SEP 23	5781	5566	215	SEP 23	30833	30828	4		
OCT 23	10740	10353	387	OCT 23	34551	34401	150		
NOV 23	5058	4620	438	NOV 23	34085	34032	53		
DEC 23	8096	8049	47	DEC 23	31588	31549	39		
JAN 24	4732	4768	-36	JAN 24	19669	19574	95		
FEB 24	1443	1443	0	FEB 24	15097	15036	61		
MAR 24	8603	8606	-3	MAR 24	19913	19881	33		
APR 24	5347	5312	35	APR 24	14279	14265	14		
MAY 24	1832	1832	0	MAY 24	14918	14919	-2		



Market Report



	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	NOV-22
Current Price	\$4.979	\$5.070	\$4.959	\$4.699	\$3.957	\$3.886	\$3.915	\$3.958	\$3.963	\$3.942	\$3.969	\$4.046
Last Week	\$5.542	\$5.640	\$5.522	\$5.206	\$4.066	\$3.955	\$3.989	\$4.030	\$4.033	\$4.013	\$4.042	\$4.125
vs. Last Week	-\$0.563	-\$0.570	-\$0.563	-\$0.507	-\$0.109	-\$0.069	-\$0.074	-\$0.072	-\$0.070	-\$0.071	-\$0.073	-\$0.079
4 Weeks Ago	\$5.505	\$5.663	\$5.761	\$5.656	\$5.324	\$4.015	\$3.891	\$3.925	\$3.965	\$3.972	\$3.955	\$3.986
vs. 4 Weeks Ago	-\$0.526	-\$0.593	-\$0.802	-\$0.957	-\$1.367	-\$0.129	\$0.024	\$0.033	-\$0.002	-\$0.030	\$0.014	\$0.060
Last Year	\$2.949	\$3.073	\$3.041	\$2.959	\$2.833	\$2.820	\$2.864	\$2.917	\$2.931	\$2.919	\$2.953	\$3.019
vs. Last Year	\$2.030	\$1.997	\$1.918	\$1.740	\$1.124	\$1.066	\$1.051	\$1.041	\$1.032	\$1.023	\$1.016	\$1.027

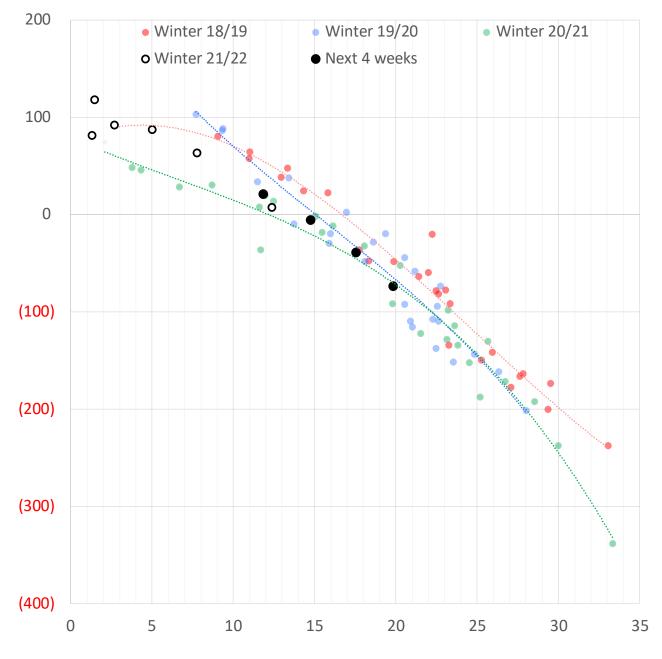
		Cash	Prompt	Cash to
	Units	Settled	Settle	Prompt
AGT Citygate	\$/MMBtu	4.22	14.38	10.16
TETCO M3	\$/MMBtu	3.74	7.64	3.90
FGT Zone 3	\$/MMBtu	3.75	6.00	2.25
Zone 6 NY	\$/MMBtu	3.75	7.86	4.11
Chicago Citygate	\$/MMBtu	4.42	6.19	1.77
Michcon	\$/MMBtu	4.56	5.62	1.06
Columbia TCO Pool	\$/MMBtu	3.78	5.39	1.61
Ventura	\$/MMBtu	4.38	6.56	2.18
Rockies/Opal	\$/MMBtu	4.80	5.91	1.11
El Paso Permian Basin	\$/MMBtu	4.05	6.03	1.98
Socal Citygate	\$/MMBtu	5.60	7.46	1.86
Malin	\$/MMBtu	4.95	6.68	1.73
Houston Ship Channel	\$/MMBtu	4.40	6.15	1.75
Henry Hub Cash	\$/MMBtu	4.56	5.73	1.17
AECO Cash	C\$/GJ	3.57	5.13	1.56
Station2 Cash	C\$/GJ	3.91	7.28	3.37
Dawn Cash	C\$/GJ	4.58	5.79	1.21

Source: CME, Bloomberg



					VS	s. 4 Weeks		
	Units	Current Price	vs.	Last Week		Ago	vs	. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224		0.000		0.000		2.201
NatGas Oct21/Nov21	\$/MMBtu	0.361		0.000		0.612		0.294
NatGas Oct21/Jan22	\$/MMBtu	-0.867		-0.806		-0.880		-1.167
NatGas Apr22/Oct22	\$/MMBtu	0.017		0.074		0.043	▼	-0.012
WTI Crude	\$/Bbl	81.34		0.480		0.900		39.890
Brent Crude	\$/Bbl	82.64		0.650		-0.540		38.840
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18		0.000		0.000		0.000
Heating Oil	cents/Gallon	245.21		1.760		-6.900		120.630
Propane, Mt. Bel	cents/Gallon	1.38		-0.004		-0.059		0.828
Ethane, Mt. Bel	cents/Gallon	0.40		-0.028	▼	-0.036		0.183
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

ENERGY

11 November 2021

