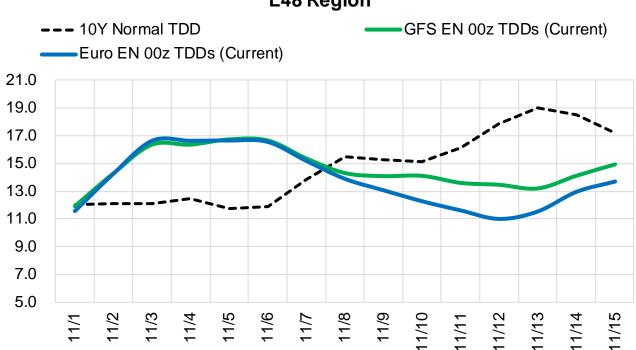


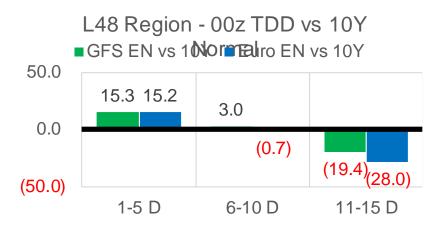


Short-term Weather Model Outlooks (00z)



L48 Region

Vs. 10Y Normal



Source: WSI, Bloomberg

Market Report

1 November 2021

Daily Balances

	26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	1-Nov	DoD	vs.7D
Lower 48 Dry Production	94.5	94.9	94.8	94.8	94.7	94.2	91.7	-2.6	▼ -3.0
Canadian Imports	5.6	5.7	5.2	5.5	5.6	5.4	5.0	-0.4	T -0.4
L48 Power	29.8	29.3	28.6	27.5	26.3	26.4	27.6	1.2	▼ -0.4
L48 Residential & Commercial	19.2	19.3	18.1	18.0	18.1	18.9	23.2	4 .3	4.6
L48 Industrial	19.9	19.8	19.5	19.3	19.1	19.1	19.5	a 0.4	0.0
L48 Lease and Plant Fuel	5.1	5.2	5.2	5.2	5.2	5.1	4.9	- 0.2	▼ -0.2
L48 Pipeline Distribution	2.6	2.6	2.5	2.4	2.4	2.4	2.7	A 0.3	a 0.2
L48 Regional Gas Consumption	76.5	76.1	73.8	72.4	71.1	71.9	77.9	6.0	4.3
Net LNG Delivered	10.97	10.86	11.11	11.74	10.90	10.37	11.07	0.7	0.1
Total Mexican Exports	7.2	7.2	7.2	6.6	6.6	6.6	5.4	▼-1.2	▼ -1.5
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	5.3	6.3	7.8	9.5	11.8	10.7	2.3		

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	▲ 1.1	0.7
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	19.0	19.5	0.5	— -0.9
L48 Lease and Plant Fuel	5.1	5.1	5.1	5.1	5.1	5.1	a 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	73.8	4.6	5.1
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	11.8	8.1	-3.7	
EIA Reported Daily Storage Activity	12.6	16.9	11.6	13.1	12.4			
Daily Model Error	-0.4	-0.9	0.0	-0.9	-0.6			

Monthly Balances

	2Yr Ago	LY					MTD		
	Nov-19	Nov-20	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	МоМ	vs. LY
Lower 48 Dry Production	96.2	91.1	93.2	93.6	94.1	93.0	93.2	0.2	2.1
Canadian Imports	4.5	4.6	4.9	5.2	5.1	5.1	5.5	0.4	0.9
L48 Power	27.5	25.7	35.9	39.4	40.0	33.1	31.3	T -1.8	5.6
L48 Residential & Commercial	32.8	24.4	8.8	8.1	7.8	7.7	9.6	1.9	▼-14.8
L48 Industrial	24.9	22.5	20.5	21.2	21.7	20.8	21.7	A 0.9	V -0.8
L48 Lease and Plant Fuel	5.2	5.0	5.0	5.1	5.1	5.1	5.1	▼ 0.0	a 0.1
L48 Pipeline Distribution	3.0	2.7	2.4	2.5	2.6	2.2	2.2	▼ -0.1	- 0.5
L48 Regional Gas Consumption	93.5	80.2	72.7	76.3	77.3	68.9	69.8	0.9	▼-10.4
Net LNG Exports	7.2	10.1	10.2	10.8	10.5	10.3	10.1	▼ -0.3	▼ 0.0
Total Mexican Exports	5.2	6.1	7.4	7.1	6.9	6.7	6.6	▼ -0.1	0.6
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	-5.1	-0.7	7.8	4.6	4.5	12.1	12.2		

Source: Bloomberg, analytix.ai

Daily Average Generation Data

Nuclear Generation Daily Average - GWh (NRC)

ENERGY

	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	DoD	vs.7D
NRC Nuclear Daily Output	72.2	71.8	70.6	70.7	71.5	71.1	71.1	0.0	-0.2
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	32.7	33.1	34.2	34.1	33.4	33.7	33.7	0.0	0.2
NRC % Nuclear Cap Utilization	73.4	73.0	71.8	71.9	72.7	72.3	72.3	0.0	-0.2

Wind Generation Daily Average - MWh (EIA)

	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	DoD	vs.7D
CALI Wind	2898	3363	2314	739	739	485	1946	1461	190
TEXAS Wind	11586	8865	20948	20185	18446	13630	7276	-6355	-8334
US Wind	40246	46570	69731	64064	63086	54877	37047	-17830	-19382

Generation Daily Average - MWh (EIA)

	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	DoD	vs.7D
US Wind	40246	46570	69731	64064	63086	54877	37047	-17830	-19382
US Solar	8834	8262	9987	10413	9171	10654	11274	619	1720
US Petroleum	2376	2387	2264	3356	3204	3306	3114	-192	299
US Other	9780	9549	9137	8754	9161	8869	8201	-668	-1008
US Coal	64834	77849	72418	74196	72900	73786	73747	-39	1083
US Nuke	72432	74786	74184	74646	74714	74753	74619	-134	367
US Hydro	21013	25512	23945	23450	24683	23778	23546	-232	-185
US Gas	137633	171522	153515	148975	145901	146491	141569	-4922	-9104

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	43720	49859	6139	-1.1
					-6201.4			
					-12%			

Generation Weekly Average - MWh (EIA)

								Wow
	24-Sep	1-Oct	8-Oct	15-Oct	22-Oct	29-Oct	WoW	Bcf/d
								Impact
US Wind	43250	43478	20468	49922	43720	49859	6139	-1.1
US Solar	12185	12957	11295	10530	12209	9848	-2361	0.4
US Petroleum	2594	2712	3901	3224	3092	2815	-278	0.0
US Other	9121	8709	10972	12221	12109	10024	-2085	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	23540	435	-0.1
US Gas	175354	153813	176848	162707	150057	152169	2112	-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	Jul-21	Aug-21	Sep-21	Oct-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
NRC Nuclear Daily Output	79.7	76.3	90.1	91.5	87.2	84.8	74.8	-2.4	-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	25.2	28.6	14.8	13.4	17.7	20.1	30.0	2.4	1.4
NRC % Nuclear Cap Utilization	81.0	77.5	91.6	93.0	88.7	86.2	76.1	-2.4	-1.4

Wind Generation Monthly Average - MWh (EIA)

	2Yr Ago	LY				MTD				
	Same 30 days	Same 30 days	Jul-21	Aug-21	Sep-21	Oct-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY	
CALI Wind	1283	1339	2338	2442	2020	295	1843	-1725	504	
TEXAS Wind	9096	9738	7217	9901	9400	3603	11850	-5797	2112	
US Wind	37585	39446	29217	35830	40222	13567	42900	-26655	3454	

Generation Monthly Average - MWh (EIA)

	2Yr Ago	LY				MTD			
	Same 30 days	Same 30 days	Jul-21	Aug-21	Sep-21	Oct-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
US Wind	37585	39446	29217	35830	40222	13567	42900	2 9334.0	a 3454
US Solar	7746	8197	14140	13787	13379	12231	10863	▼-1367.6	2666
US Petroleum	3514	2548	4233	4484	2452	4456	3179	T -1277	631
US Other	8364	8319	9326	9928	9008	9429	11079	1650	2760
US Coal	84491	80921	137228	137655	110037	106201	81822	▼-24379	 901
US Nuke	85916	79615	92911	94062	90146	87850	76104	▼-11746	💌 -3511
US Hydro	23246	25197	29941	28532	25661	24140	23955	T -185	▼ -1242
US Gas	1 5290 4	159152	207823	210824	173536	174365	157476	T -7971	💌 -1676
US Total	404119	403461	524834	534937	464627	432170	409242	▼-45276	5781



See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

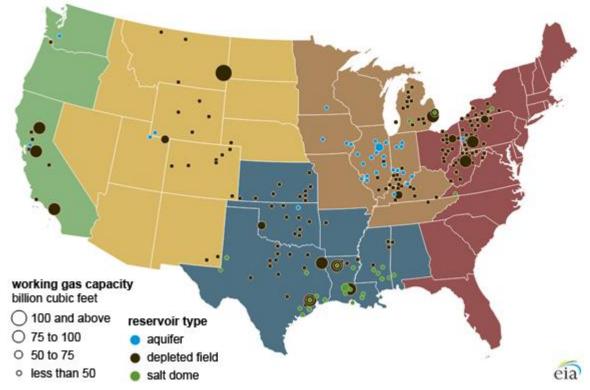


Regional S/D Models Storage Projection

Week Ending	29-Oct			
	Daily Raw	Daily Adjustment	Daily Average Storage Activity	Weekly Adjusted Storage
	Storage	Factor	(Adjusted) *	Activity
L48	7.8	0.9	8.6	60
East	1.9	0.0	1.9	14
Midwest	1.3	0.0	1.3	9
Mountain	3.5	-3.1	0.3	2
South Central	0.6	4.3	4.9	34
Pacific	0.5	-0.3	0.2	1

*Adjustment Factor is calcuated based on historical regional deltas

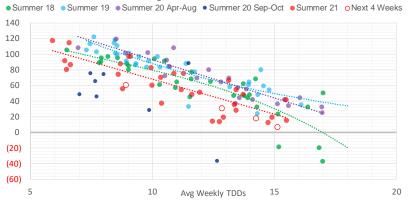
U.S. underground natural gas storage facilities by type (July 2015)



Weather Model Storage Projection

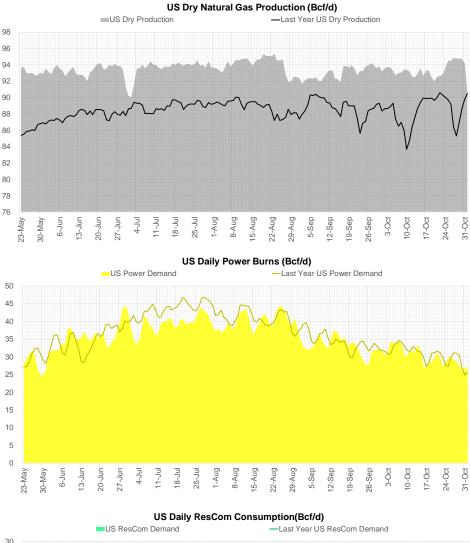
Next report and beyond		
Week Ending	GWDDs	Week Storage Projection
29-Oct	8.9	60
05-Nov	12.9	31
12-Nov	14.3	18
19-Nov	15.1	6

Weather Storage Model - Next 4 Week Forecast



Go to larger image



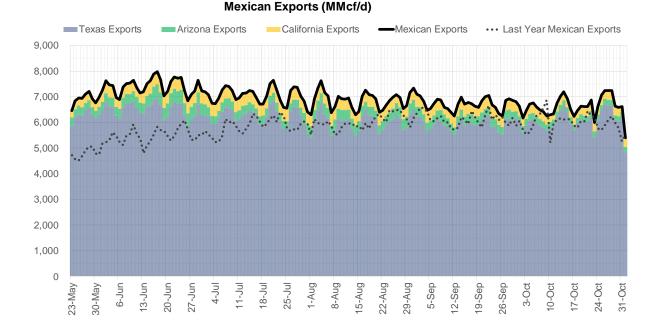


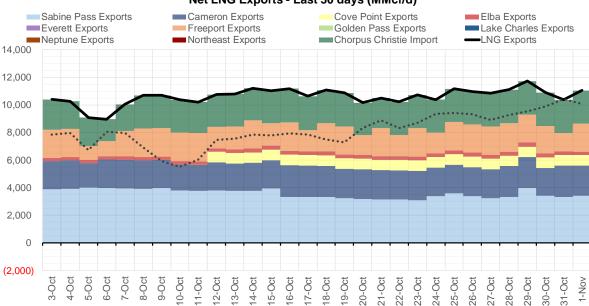
Supply – Demand Trends

30 25 20 15 10 5 0 23-May 30-May 13-Jun 20-Jun 27-Jun 15-Aug 29-Aug 5-Sep 12-Sep 6-Jun 11-Jul 18-Jul 25-Jul I-Aug 8-Aug 19-Sep 26-Sep 10-Oct 17-Oct 24-Oct 31-Oct 4-Jul 22-Aug 3-Oct

Source: Bloomberg







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

Source: Bloomberg

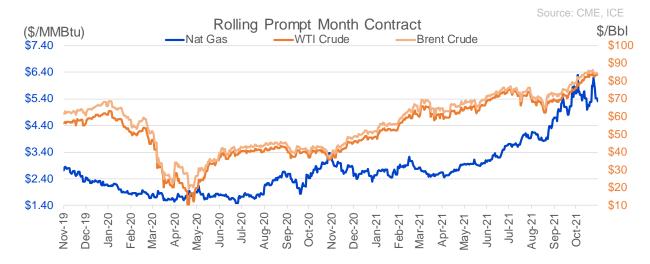


Nat Gas Options Volume and Open Interest CME, ICE and Nasdaq Combined

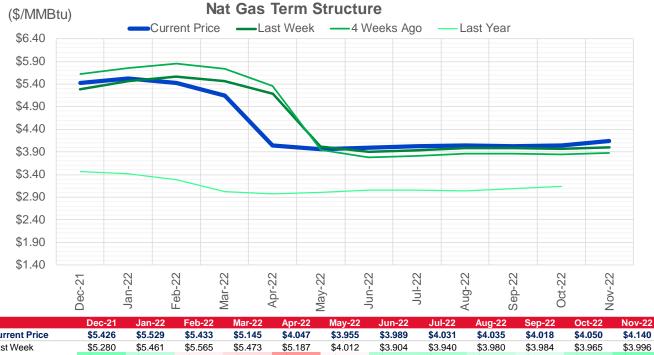
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	TRACT NTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
12	2021	Р	5.00	7970	12	2021	Р	2.75	54603
12	2021	Р	4.00	4127	12	2021	Р	3.00	42228
12	2021	Р	5.50	4037	12	2021	Р	4.00	41987
12	2021	Р	4.90	4019	12	2021	Р	2.50	39421
12	2021	С	6.00	3535	12	2021	Р	3.50	35665
12	2021	Р	5.40	3293	3	2022	С	10.00	30121
12	2021	С	6.50	2941	3	2022	С	8.00	24767
1	2022	C	7.00	2466	1	2022	Р	3.00	23595
1	2022	P	4.00	2351	1	2022	Р	2.75	22906
12	2021	С	7.00	2307	12	2021	С	4.00	22527
1	2022	P	3.50	2088	12	2021	Р	5.00	22263
12	2021	Р	4.25	2075	3	2022	С	5.00	22074
1	2022	C	10.00	1964	1	2022	С	6.00	20595
12	2021	C	10.00	1862	12	2021	С	6.00	20590
3	2022	C	9.00	1845	4	2022	С	3.00	19710
1	2022	C	12.00	1843	1	2022	Р	3.50	19063
12	2021	P	5.25	1727	3	2022	Р	2.50	18386
1	2022	C	8.00	1716	1	2022	С	5.00	18059
1	2022	C	6.00	1606	3	2022	Р	3.50	17974
3	2022	C	8.00	1603	1	2022	Р	4.00	17722
1	2022	C	9.00	1586	12	2021	С	8.00	17571
3	2022	C	12.00	1551	3	2022	Р	4.00	17407
12	2021	P	4.75	1308	2	2022	С	5.00	16834
2	2022	C	8.00	1271	12	2021	Р	2.00	16834
12	2021	P	4.50	1200	12	2021	Р	4.50	16768
1	2022	Р	4.25	1126	12	2021	С	7.00	16358
2	2022	Р	5.00	1050	3	2022	Р	3.00	15633
2	2022	C	6.00	1030	3	2022	С	4.00	15631
1	2022	P	4.50	1011	4	2022	Р	2.50	15489
4	2022	C	4.25	1000	2	2022	P	3.50	15376
5	2022	C	4.00	1000	12	2022	С	5.00	15232
5	2022	P	2.50	1000	1	2022	С	4.00	14393
3	2022	C	6.00	980	2	2022	P	4.00	14362
3	2022	P	4.50	845	4 3	2022 2022	C C	5.00 7.00	14299 13775
2	2022	P	4.30	800	3 5	2022	c	3.00	13775
3	2022	P	3.50	708	ว 1	2022	c	3.00 7.00	
12	2021	C	12.00	660	3	2022	c	7.00 9.00	13727 13641
12	2021	P	5.20	615	2	2022	c	9.00 6.00	13508
12	2021	C	15.00	600	6	2022	c	3.00	13438
4	2022	P	2.75	600	3	2022	P	5.00	13368
12	2021	C	6.25	587	12	2022	C	4.50	13367
1	2022	C	15.00	548	12	2022	c	5.25	13263
1	2022	č	6.10	532	1	2022	c	10.00	13237
4	2022	P	3.50	530	7	2022	c	3.00	13230
3	2022	c	5.00	529	8	2022	c	3.00	13230
12	2021	c	8.50	505	9	2022	c	3.00	13225
3	2022	P	4.00	500	3	2022	c	3.00	13225
6	2022	P	2.50	500	10	2022	c	3.00	13114
3	2022	Ċ	15.00	472	2	2022	C	4	13019
č		2			-		Sourc	e: CME, ICE	

Nat Gas Futures Open Interest CME, and ICE Combined

Civile, and ICE Combined								
CME Henry H	Hub Futures (1			ICE Henry I	Hub Futures Cont	ract Equiva		
	Current	Prior	Daily Change		Current	Prior	Daily Change	
DEC 21	155046	162136	-7090	DEC 21	91279	91279	0	
JAN 22	211177	213809	-2632	JAN 22	89941	89941	0	
FEB 22	76871	75941	930	FEB 22	69994	69994	0	
MAR 22	155421	154825	596	MAR 22	76804	76804	0	
APR 22	112109	112966	-857	APR 22	79192	79192	0	
MAY 22	125111	125478	-367	MAY 22	71187	71187	0	
JUN 22	41233	42090	-857	JUN 22	55359	55359	0	
JUL 22	37345	38054	-709	JUL 22	57653	57653	0	
AUG 22	29399	29413	-14	AUG 22	56280	56280	0	
SEP 22	33783	34137	-354	SEP 22	57049	57049	0	
OCT 22	85471	85355	116	OCT 22	61920	61920	0	
NOV 22	34717	34778	-61	NOV 22	49005	49005	0	
DEC 22	26347	25755	592	DEC 22	51954	51954	0	
JAN 23	30225	30124	101	JAN 23	39732	39732	0	
FEB 23	10788	10720	68	FEB 23	32579	32579	0	
MAR 23	17984	18085	-101	MAR 23	35017	35017	0	
APR 23	15717	15608	109	APR 23	35584	35584	0	
MAY 23	9241	9092	149	MAY 23	34664	34664	0	
JUN 23	7172	7114	58	JUN 23	30853	30853	0	
JUL 23	4869	4864	5	JUL 23	31054	31054	0	
AUG 23	4026	4025	1	AUG 23	32011	32011	0	
SEP 23	5028	5031	-3	SEP 23	30002	30002	0	
OCT 23	6489	6469	20	OCT 23	33911	33911	0	
NOV 23	3783	3729	54	NOV 23	32687	32687	0	
DEC 23	4326	4319	7	DEC 23	27963	27963	0	
JAN 24	1885	1880	5	JAN 24	18267	18267	0	
FEB 24	1141	1141	0	FEB 24	14019	14019	0	
MAR 24	4670	4667	3	MAR 24	18844	18844	0	
APR 24	3524	3521	3	APR 24	13124	13124	0	
MAY 24	1828	1824	4	MAY 24	13806	13806	0	



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

		Cash	Prompt	Cash to
	Units	Settled	Settle	Prompt
AGT Citygate	\$/MMBtu	5.35	7.63	2.28
TETCO M3	\$/MMBtu	4.40	4.96	0.56
FGT Zone 3	\$/MMBtu	4.33	5.47	1.14
Zone 6 NY	\$/MMBtu	4.33	4.98	0.65
Chicago Citygate	\$/MMBtu	5.16	5.24	0.08
Michcon	\$/MMBtu	5.19	5.07	-0.13
Columbia TCO Pool	\$/MMBtu	4.54	4.72	0.18
Ventura	\$/MMBtu	5.18	5.38	0.20
Rockies/Opal	\$/MMBtu	5.20	5.03	-0.17
El Paso Permian Basin	\$/MMBtu	4.79	5.02	0.23
Socal Citygate	\$/MMBtu	6.52	5.81	-0.71
Malin	\$/MMBtu	5.45	5.62	0.17
Houston Ship Channel	\$/MMBtu	5.17	5.21	0.04
Henry Hub Cash	\$/MMBtu	5.42	5.11	-0.31
AECO Cash	C\$/GJ	4.81	4.40	-0.41
Station2 Cash	C\$/GJ	4.66	5.97	1.31
Dawn Cash	C\$/GJ	5.18	5.13	-0.05

Source: CME, Bloomberg



				vs. 4 Weeks	
	Units	Current Price	vs. Last Week	Ago	vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224	a 0.000	0.000	2 .191
NatGas Oct21/Nov21	\$/MMBtu	0.361	a 0.922	0.583	a 0.303
NatGas Oct21/Jan22	\$/MMBtu	-0.312	-0.036	-0.324	-0.606
NatGas Apr22/Oct22	\$/MMBtu	0.003	a 0.019	a 0.063	-0.015
WTICrude	\$/Bbl	83.57	-0.190	7.690	4 7.780
Brent Crude	\$/Bbl	84.38	- 1.150	5 .100	4 6.920
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	0.000	0.000	▲ 0.000
Heating Oil	cents/Gallon	249.64	- 4.250	11.370	4 141.510
Propane, Mt. Bel	cents/Gallon	1.45	-0.007	-0.043	a 0.925
Ethane, Mt. Bel	cents/Gallon	0.43	a 0.004	a 0.009	a 0.219
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

1 November 2021

