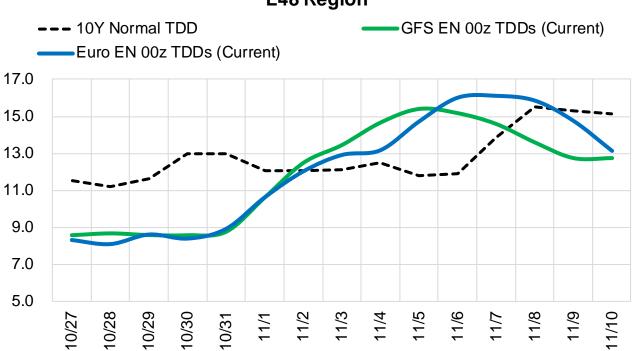


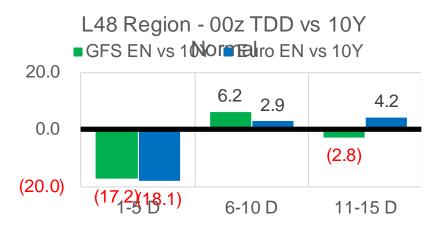


Short-term Weather Model Outlooks (00z)



L48 Region

Vs. 10Y Normal



Source: WSI, Bloomberg

Market Report

27 October 2021

Daily Balances

	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	DoD	vs.7D
Lower 48 Dry Production	92.2	92.2	92.4	93.0	94.0	93.9	93.5	-0.4	0.6
Canadian Imports	5.6	5.7	5.7	5.7	5.7	5.5	5.3	▼ -0.3	T -0.4
L48 Power	31.0	30.0	27.2	27.9	29.8	29.8	29.1	▼ -0.7	▼ -0.2
L48 Residential & Commercial	13.2	16.3	17.8	17.0	15.8	18.9	18.3	- 0.6	1 .9
L48 Industrial	17.8	18.0	18.4	18.6	18.8	19.2	19.5	A 0.2	1.0
L48 Lease and Plant Fuel	5.0	5.0	5.0	5.1	5.1	5.1	5.1	▼ -0.1	▼ 0.0
L48 Pipeline Distribution	2.4	2.5	2.4	2.4	2.4	2.6	2.5	▼ -0.1	A 0.1
L48 Regional Gas Consumption	69.3	71.7	70.8	70.9	71.8	75.6	74.5	💌 -1.1	2.8
Net LNG Delivered	10.51	10.24	10.73	10.39	11.18	10.98	10.88	-0.1	0.2
Total Mexican Exports	6.6	6.9	6.2	6.5	7.1	7.2	7.4	0.2	0.6
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	11.3	9.0	10.4	10.8	9.6	5.6	6.0		

Lower 48 Component Models

Daily Model Error

EIA Storage Week Balances

	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	22-Oct	WoW	vs. 4W
Lower 48 Dry Production	92.0	93.0	93.3	92.9	92.6	92.4	▼ -0.2	-0.5
Canadian Imports	5.0	5.2	5.7	5.3	4.9	5.6	0.6	0.3
L48 Power	35.0	33.3	30.3	32.9	31.7	29.0	- 2.7	▼-3.0
L48 Residential & Commercial	7.1	8.1	8.4	8.2	9.5	13.9	4 .3	5 .4
L48 Industrial	20.8	20.6	20.1	21.9	19.7	18.1	🔽 -1.6	- 2.5
L48 Lease and Plant Fuel	5.0	5.1	5.1	5.1	5.0	5.0	▼ 0.0	▼ 0.0
L48 Pipeline Distribution	2.3	2.3	2.1	2.2	2.2	2.3	a 0.1	a 0.1
L48 Regional Gas Consumption	70.3	69.3	66.0	70.2	68.2	68.3	0.1	T-0.1
Net LNG Exports	10.2	9.9	10.3	9.9	10.7	10.8	0.1	0.6
Total Mexican Exports	6.6	6.8	6.7	6.5	6.6	6.6	▼ -0.1	T -0.1
Implied Daily Storage Activity	9.9	12.2	16.0	11.6	12.0	12.3	0.3	
EIA Reported Daily Storage Activity	10.9	12.6	16.9	11.6	13.1			
Daily Model Error	-1.0	-0.4	-0.9	0.0	-1.1			

Monthly Balances

-	2Yr Ago	LY					MTD		
	Oct-19	Oct-20	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	МоМ	vs. LY
Lower 48 Dry Production	95.1	88.3	93.3	93.3	92.5	92.3	92.7	0.4	4.4
Canadian Imports	4.6	4.3	4.9	5.2	5.1	5.1	5.3	0.2	▲ 1.1
L48 Power	30.3	30.8	35.9	39.4	40.2	33.1	30.7	▼ -2.4	- 0.1
L48 Residential & Commercial	15.3	15.3	8.8	8.1	7.7	7.6	12.0	4 .4	▼-3.2
L48 Industrial	23.5	22.6	20.5	20.9	20.4	20.2	19.6	▼ -0.5	- 2.9
L48 Lease and Plant Fuel	5.1	4.8	5.0	5.1	5.0	5.0	5.1	0 .0	a 0.2
L48 Pipeline Distribution	2.4	2.5	2.4	2.5	2.5	2.2	2.3	▲ 0.0	V -0.2
L48 Regional Gas Consumption	76.6	75.9	72.7	76.0	75.8	68.2	69.7	1.5	▼ -6.2
Net LNG Exports	6.7	8.0	10.2	10.8	10.5	10.3	10.5	0.2	2.5
Total Mexican Exports	5.4	6.0	7.4	7.1	6.9	6.7	6.6	▼ -0.1	0.6
Implied Daily Storage Activity EIA Reported Daily Storage Activity	11.1	2.7	7.8	4.6	4.5	12.2	11.2		
EIA Reported Daily Storage Activity Daily Model Error									

Source: Bloomberg, analytix.ai

Daily Average Generation Data

Nuclear Generation Daily Average - GWh (NRC)

ENERGY

	19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	DoD	vs. 7D
NRC Nuclear Daily Output	72.2	72.3	72.8	72.3	71.9	72.2	71.8	-0.4	-0.5
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	32.6	32.1	32.6	33.0	32.7	33.1	0.4	0.5
NRC % Nuclear Cap Utilization	73.4	73.5	74.0	73.5	73.1	73.4	73.0	-0.4	-0.5

Wind Generation Daily Average - MWh (EIA)

	19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	DoD	vs.7D
CALI Wind	634	433	463	2340	3802	2898	2898	0	1137
TEXAS Wind	17663	8536	5406	10682	17522	11586	11586	0	-313
US Wind	62853	47019	33409	29824	50237	52907	52907	0	6865

Generation Daily Average - MWh (EIA)

	19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	DoD	vs. 7D
US Wind	62853	47019	33409	29824	50237	52907	52907	0	6865
US Solar	11629	11497	10532	10089	11119	8875	8875	0	-1749
US Petroleum	2721	3224	3517	3671	2447	2378	2378	0	-615
US Other	12049	11965	12459	12494	10854	9804	9804	0	-1800
US Coal	69523	74625	76239	80711	73618	69512	69512	0	-4526
US Nuke	73036	73384	73401	72921	74256	74410	74410	0	842
US Hydro	24530	24736	25802	24485	22524	21468	21468	0	-2456
US Gas	141215	157017	171153	169194	138250	142384	142384	0	-10818

See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

Storage Week Average Generation Data

Nuclear Generation Weekly Average - GWh (NRC)

	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	22-Oct	WoW	WoW Bcf/d Impact
NRC Nuclear Daily Output	86.7	85.9	85.1	82.1	76.5	73.6	-2.9	0.5
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	0.0	
NRC Nuclear Outage	18.2	19.0	19.8	22.7	28.3	31.2	2.9	
NRC % Nuclear Cap Utilization	0.1	0.1	0.1	0.1	0.1	0.1	0.0	

Wind Generation Weekly Average - MWh (EIA)

	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	22-Oct	WoW	WoW Bcf/d Impact
CALI Wind	2083	1936	2467	1099	2400	1270	-1130	0.2
TEXAS Wind	9541	9780	10364	4890	15396	10729	-4667	0.8
US Wind	42378	43250	43478	20468	49917	43702	-6216	1.1
					29449.5			
					144%			

Generation Weekly Average - MWh (EIA)

								VVOVV
	17-Sep	24-Sep	1-Oct	8-Oct	15-Oct	22-Oct	WoW	Bcf/d
								Impact
US Wind	42378	43250	43478	20468	49917	43702	-6216	1.1
US Solar	14057	12185	12957	11295	10530	11909	1379	-0.2
US Petroleum	2470	2594	2712	3901	3224	3092	-132	0.0
US Other	9273	9121	8709	10972	12221	11963	-259	0.0
US Coal	115066	109062	94792	100713	89001	72077	-16924	3.0
US Nuke	89490	88789	88402	83696	77046	73748	-3297	0.6
US Hydro	24138	25340	25370	24518	24701	23107	-1593	0.3
US Gas	182116	175354	153813	176848	162483	148896	-13587	2.4

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.



Monthly Average Generation Data

Nuclear Generation Monthly Average - GWh (NRC)

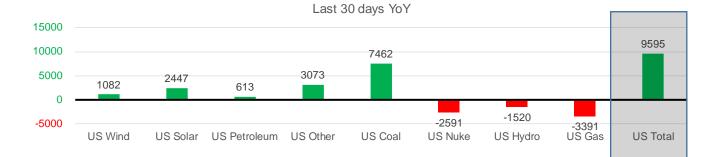
	2Yr Ago	LY				MTD			
	Same 30 days	Same 30 days	Jul-21	Aug-21	Sep-21	Oct-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
NRC Nuclear Daily Output	80.3	77.6	90.1	91.5	87.2	76.1	77.0	-11.1	-0.6
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	104.9	0.0	0.0
NRC Nuclear Outage	24.6	27.3	14.8	13.4	17.7	28.7	27.9	11.1	0.6
NRC % Nuclear Cap Utilization	81.6	78.9	91.6	93.0	88.7	77.4	78.3	-11.2	-0.6

Wind Generation Monthly Average - MWh (EIA)

	2Yr Ago	LY				MTD	MTD				
	Same 30 S days	ame 30 days	Jul-21	Aug-21	Sep-21	Oct-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY		
CALI Wind	1498	1404	2338	2442	2020	1893	1935	-127	531		
TEXAS Wind	9745	9927	7217	9901	9400	10802	10838	1402	911		
US Wind	38890	39357	29217	35830	40222	40381	40438	160	1082		

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	38890	39357	29217	35830	40222	40381	40438	5 7.1	1082
US Solar	8055	8589	14140	13787	13379	10846	11036	4 190.5	2447
US Petroleum	3763	2631	4233	4484	2452	3228	3244	1 7	613
US Other	8595	8143	9326	9928	9008	11432	11216	V -215	3073
US Coal	88137	78100	137228	137655	110037	83886	85562	1676	~ 7462
US Nuke	86528	80912	92911	94062	90146	77268	78321	1053	T -2591
US Hydro	22928	25340	29941	28532	25661	23673	23820	1 47	T -1520
US Gas	157944	163419	207823	210824	173536	159058	160028	2925	💌 -3391
US Total	415072	406316	524834	534937	464627	412328	415911	5792	4 9595



See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

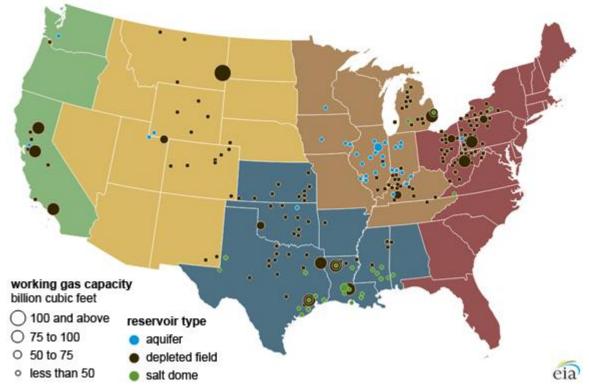


Regional S/D Models Storage Projection

Week Ending	22-Oct			
	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	12.0	1.0	13.0	91
East	3.3	0.3	3.6	25
Midwest	3.4	-0.4	3.0	21
Mountain	3.4	-3.0	0.4	3
South Central	1.0	4.4	5.4	38
Pacific	0.9	-0.4	0.6	4

*Adjustment Factor is calcuated based on historical regional deltas

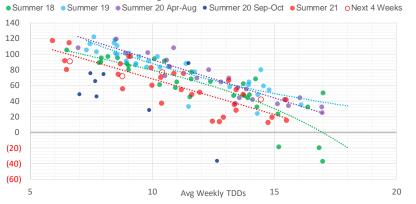
U.S. underground natural gas storage facilities by type (July 2015)



Weather Model Storage Projection

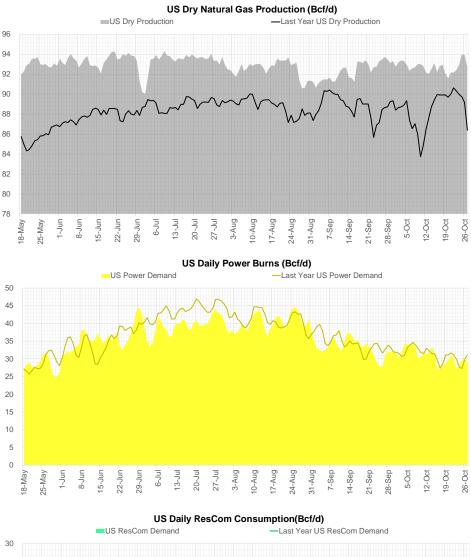
Next report and beyond		
Week Ending	GWDDs	Week Storage Projection
22-Oct	6.6	91
29-Oct	8.8	71
05-Nov	10.4	77
12-Nov	14.5	42

Weather Storage Model - Next 4 Week Forecast

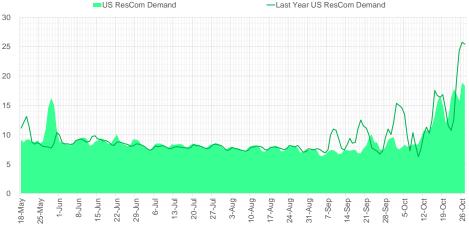


Go to larger image



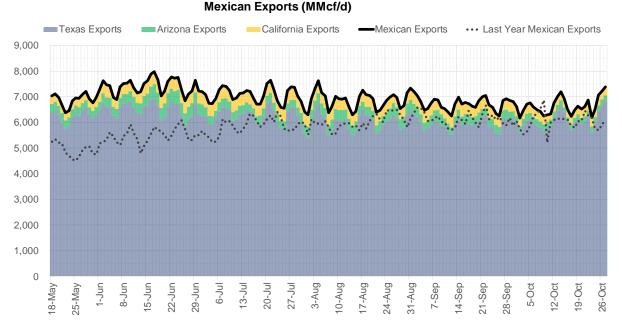


Supply – Demand Trends

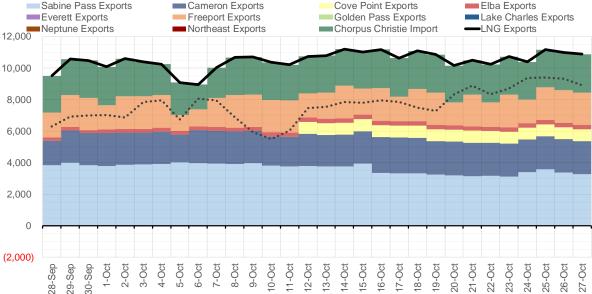


Source: Bloomberg









Source: Bloomberg

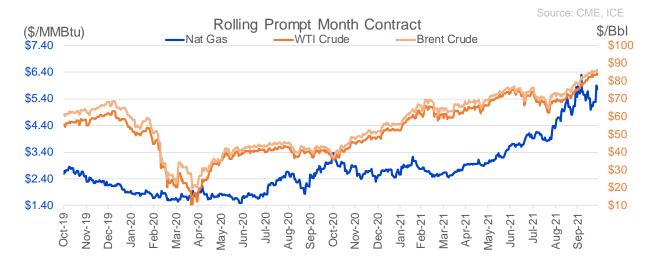


Nat Gas Options Volume and Open Interest CME, ICE and Nasdaq Combined

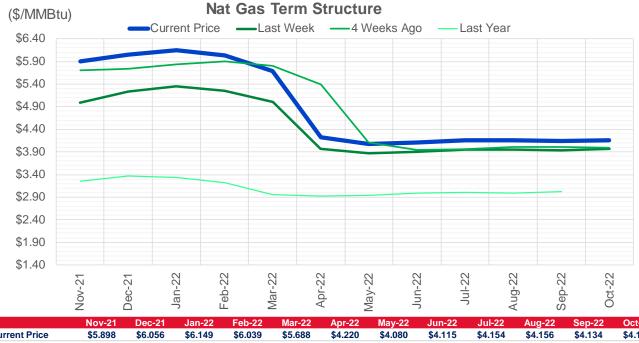
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	С	ONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
12	2021	Р	5.00	7592		12	2021	Р	2.75	54603
1	2022	Р	3.00	5351		12	2021	Р	3.00	42319
11	2021	C	6.00	4187		12	2021	Р	4.00	42264
12	2021	C	6.00	4161		12	2021	Р	2.50	39421
3	2022	P	3.00	3850		12	2021	Р	3.50	33659
12	2021	Р	4.50	3152		11	2021	Р	3.00	30166
1	2022	P	2.75	3000		3	2022	С	10.00	29578
12	2021	C	7.00	2785		11	2021	Р	4.50	27215
12	2021	P	4.00	2411		11	2021	Р	4.00	26912
12	2021	C	9.00	2360		11	2021	Р	5.00	26827
2	2022	P	3.00	2350		11	2021	С	6.00	25461
12	2021	C	7.50	2288		3	2022	С	8.00	25101
12	2021	C	8.00	2029		11	2021	С	7.00	24941
1	2022	C	7.25	2001		1	2022	Р	2.75	22906
1	2022	C	6.25	2000		12	2021	С	4.00	22527
10	2022	P	3.00	2000		3	2022	С	5.00	22368
1	2022	C	3.00	1800		1	2022	Р	3.00	21846
2	2022	C	3.00	1800		1	2022	С	6.00	20570
3	2022	c	3.00	1800		11	2021	Р	3.50	20148
4	2022	C	3.00	1800		11	2021	С	4.00	20140
4	2022	P	3.00	1800		4	2022	С	3.00	19710
5	2022	C	3.00	1800		1	2022	Р	3.50	19666
5	2022	P	3.00	1800		12	2021	С	6.00	18834
6	2022	C	3.00	1800		3	2022	Р	2.50	18386
6	2022	P	3.00	1800		3	2022	Р	3.50	18253
7	2022	C	3.00	1800		1	2022	С	5.00	17710
7	2022	P	3.00	1800		12	2021	Р	5.00	17429
8	2022	C	3.00	1800		11	2021	С	5.00	17234
8	2022	P	3.00	1800		3	2022	Р	4.00	16882
9	2022	C	3.00	1800		12	2021	P	2.00	16879
9	2022	P	3.00	1800		2	2022	С	5.00	16814
10	2022	C	3.00	1800		1	2022	Р	4.00	16419
11	2022	C	3.00	1800		12	2021	P	4.50	16307
11	2022	P	3.00	1800		3 12	2022 2021	C C	4.00 8.00	15631
12	2022	C	3.00	1800			2021	P		15518
12	2022	P	3.00	1800		4 12	2022 2021	P C	2.50 7.00	15489
12	2021	P	3.75	1796		2	2021	P	7.00 3.50	15473 15375
12	2021	P	3.50	1727		2 12	2022	F C	5.00	15182
12	2021	P	5.50	1707		12	2022	P	4.75	15065
12	2021	P	4.25	1673		11	2021	F C	4.75 5.50	14901
12	2021	C	6.10	1542		11	2021	c	4.50	14898
12	2021	P	4.75	1479		11	2021	P	4.50 2.50	14696
1	2022	C	9.00	1362		11	2021	C	3.75	14478
11	2021	P	5.50	1350		1	2021	c	4.00	14478
3	2022	P	3.50	1194		11	2022	P	3.25	14311
12	2021	C	6.50	1184		2	2021	P	4.00	14307
12	2021	c	10.00	1144		4	2022	C	4.00 5.00	14279
3	2022	c	15.00	1044		2	2022	c	6.00	13700
3	2022	c	9.00	1025		3	2022	č	7	13645.5
č		2	2.00			v		Source	e: CME, ICE	

Nat Gas Futures Open Interest CME, and ICE Combined

Civile, and ICE Combined									
CME Henry H	CME Henry Hub Futures (10,000 MMBtu) ICE Henry Hub Futures Contract Equivalent (10,000 M								
	Current	Prior	Daily Change		Current	Prior	Daily Change		
NOV 21	3040	15266	-12226	NOV 21	81498	83404	-1907		
DEC 21	176482	176544	-62	DEC 21	90931	92181	-1250		
JAN 22	225559	231052	-5493	JAN 22	94323	94080	243		
FEB 22	74953	74358	595	FEB 22	69436	69543	-108		
MAR 22	153580	154762	-1182	MAR 22	76944	76546	398		
APR 22	114017	114372	-355	APR 22	78441	76642	1799		
MAY 22	120106	118405	1701	MAY 22	71507	71249	258		
JUN 22	40182	41306	-1124	JUN 22	55377	55059	318		
JUL 22	38411	38407	4	JUL 22	57590	57392	198		
AUG 22	29704	29815	-111	AUG 22	56119	55741	378		
SEP 22	33516	32974	542	SEP 22	57069	56812	256		
OCT 22	84164	82955	1209	OCT 22	62434	62157	277		
NOV 22	34897	34801	96	NOV 22	48913	49020	-107		
DEC 22	25619	25905	-286	DEC 22	52133	52240	-107		
JAN 23	29860	29983	-123	JAN 23	39573	39388	185		
FEB 23	10824	10782	42	FEB 23	32534	32413	122		
MAR 23	17142	17228	-86	MAR 23	34987	34705	282		
APR 23	15354	15854	-500	APR 23	35300	35180	120		
MAY 23	9026	9032	-6	MAY 23	34428	34351	77		
JUN 23	7130	7128	2	JUN 23	30695	30553	142		
JUL 23	4795	4799	-4	JUL 23	30920	30765	155		
AUG 23	4029	3897	132	AUG 23	31850	31726	124		
SEP 23	4899	4735	164	SEP 23	29919	29776	143		
OCT 23	6108	5943	165	OCT 23	33739	33493	247		
NOV 23	3453	3362	91	NOV 23	32883	32269	614		
DEC 23	4260	4169	91	DEC 23	28226	28242	-16		
JAN 24	1715	1404	311	JAN 24	18172	16483	1689		
FEB 24	1171	1171	0	FEB 24	13943	13873	70		
MAR 24	4655	4649	6	MAR 24	18612	18551	60		
APR 24	3502	3502	0	APR 24	13123	13053	70		



Market Report



Current Price	\$5.898	\$6.056	\$6.149	\$6.039	\$5.688	\$4.220	\$4.080	\$4.115	\$4.154	\$4.156	\$4.134	\$4.163
Last Week	\$4.989	\$5.236	\$5.346	\$5.261	\$5.000	\$3.965	\$3.871	\$3.910	\$3.954	\$3.957	\$3.939	\$3.971
vs. Last Week	\$0.909	\$0.820	\$0.803	\$0.778	\$0.688	\$0.255	\$0.209	\$0.205	\$0.200	\$0.199	\$0.195	\$0.192
4 Weeks Ago	\$5.706	\$5.731	\$5.839	\$5.910	\$5.798	\$5.385	\$4.107	\$3.938	\$3.967	\$4.007	\$4.010	\$3.990
vs. 4 Weeks Ago	\$0.192	\$0.325	\$0.310	\$0.129	-\$0.110	-\$1.165	-\$0.027	\$0.177	\$0.187	\$0.149	\$0.124	\$0.173
Last Year	\$3.024	\$3.253	\$3.371	\$3.329	\$3.213	\$2.954	\$2.916	\$2.947	\$2.988	\$2.999	\$2.987	\$3.021
vs. Last Year	\$2.874	\$2.803	\$2.778	\$2.710	\$2.475	\$1.266	\$1.164	\$1.168	\$1.166	\$1.157	\$1.147	\$1.142

		Cash	Prompt	Cash to
	Units	Settled	Settle	Prompt
AGT Citygate	\$/MMBtu	5.97	7.33	1.36
TETCO M3	\$/MMBtu	5.53	4.62	-0.91
FGT Zone 3	\$/MMBtu	5.52	5.22	-0.30
Zone 6 NY	\$/MMBtu	5.52	4.88	-0.64
Chicago Citygate	\$/MMBtu	5.56	4.95	-0.61
Michcon	\$/MMBtu	5.52	4.82	-0.70
Columbia TCO Pool	\$/MMBtu	5.29	4.47	-0.82
Ventura	\$/MMBtu	4.82	5.15	0.33
Rockies/Opal	\$/MMBtu	5.75	4.71	-1.04
El Paso Permian Basin	\$/MMBtu	5.00	4.76	-0.24
Socal Citygate	\$/MMBtu	6.52	5.49	-1.03
Malin	\$/MMBtu	5.63	5.31	-0.32
Houston Ship Channel	\$/MMBtu	5.51	4.94	-0.57
Henry Hub Cash	\$/MMBtu	5.59	4.85	-0.75
AECO Cash	C\$/GJ	4.33	3.87	-0.46
Station2 Cash	C\$/GJ	1.66	5.83	4.17
Dawn Cash	C\$/GJ	5.53	4.87	-0.66

Source: CME, Bloomberg



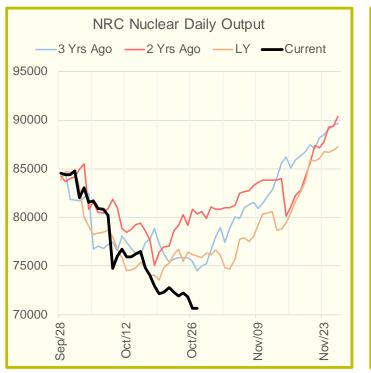
				vs. 4 Weeks	
	Units	Current Price	vs. Last Week	Ago	vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224	a 0.000	a 0.000	2 .194
NatGas Oct21/Nov21	\$/MMBtu	0.041	a 0.794	a 0.002	-0.021
NatGas Oct21/Jan22	\$/MMBtu	0.252	a 0.628	a 0.035	-0.047
NatGas Apr22/Oct22	\$/MMBtu	-0.048	-0.043	a 0.057	-0.075
WTI Crude	\$/Bbl	84.65	1 .690	9.360	45.080
Brent Crude	\$/Bbl	86.40	1 .320	A 7.310	4 5.200
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	0.000	0.000	0.000
Heating Oil	cents/Gallon	257.73	1.660	28.830	1 41.960
Propane, Mt. Bel	cents/Gallon	1.45	-0.026	a 0.160	a 0.929
Ethane, Mt. Bel	cents/Gallon	0.44	a 0.004	a 0.045	a 0.220
Coal, PRB	\$/MTon	12.30	0.000	0.000	0.000
Coal, PRB	\$/MMBtu	0.70			
Coal, ILB	\$/MTon	31.05	a 0.000	0.000	0.000
Coal, ILB	\$/MMBtu	1.32			



Weather Storage Model - Next 4 Week Forecast

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ENERGY

