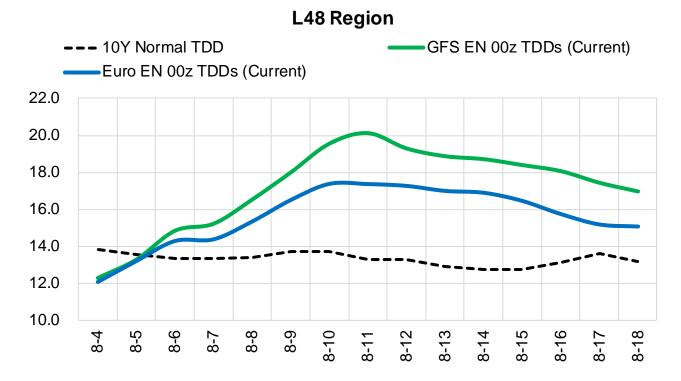
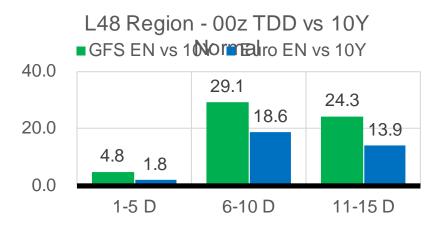




## Short-term Weather Model Outlooks (00z)



## Vs. 10Y Normal



Source: WSI, Bloomberg

# **Market Report**

### **Daily Balances**

	29-Jul	30-Jul	31-Jul	1-Aug	2-Aug	3-Aug	4-Aug	DoD	vs.7D
Lower 48 Dry Production	92.2	93.0	92.2	91.8	91.7	91.4	89.9	<b>-1.5</b>	▼ -2.2
Canadian Imports	5.7	5.3	5.2	5.0	5.1	5.2	4.8	<b>-0.4</b>	<b>T</b> -0.4
L48 Power	42.8	40.9	38.9	37.5	38.4	37.2	37.2	▼ 0.0	▼ -2.1
L48 Residential & Commercial	8.6	8.2	7.7	7.6	8.0	8.1	7.9	▼ -0.1	▼ -0.1
L48 Industrial	20.9	20.6	20.5	20.2	20.3	20.2	20.3	<b>0</b> .0	<b>V</b> -0.2
L48 Lease and Plant Fuel	5.1	5.1	5.1	5.1	5.1	5.1	5.0	▼ -0.1	▼ -0.1
L48 Pipeline Distribution	2.4	2.3	2.2	2.2	2.2	2.2	2.2	▼ 0.0	<b>T</b> -0.1
L48 Regional Gas Consumption	79.8	77.1	74.4	72.6	73.9	72.7	72.5	<b>T-0.2</b>	<b>-2.6</b>
Net LNG Delivered	10.86	10.97	10.86	10.58	10.28	10.49	10.34	<b>-0.1</b>	<b>▼</b> -0.3
Total Mexican Exports	7.2	7.1	6.6	6.3	6.8	7.1	7.2	<b>0.1</b>	<b>0.4</b>
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	0.0	3.0	5.4	7.3	5.8	6.2	4.6		

Lower 48 Component Models

Daily Model Error

### **EIA Storage Week Balances**

	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	WoW	vs. 4W
Lower 48 Dry Production	93.2	92.2	91.7	92.3	92.4	92.5	<b>0.1</b>	<b>0.3</b>
Canadian Imports	4.6	5.1	5.1	5.2	4.9	5.5	<b>0.6</b>	<b>0.5</b>
L48 Power	34.4	39.8	37.2	38.7	39.7	42.2	<b>2</b> .4	<b>3</b> .3
L48 Residential & Commercial	8.8	8.6	8.2	8.4	8.4	8.3	▼ -0.1	<b>T</b> -0.1
L48 Industrial	19.5	21.1	19.3	19.5	19.7	20.4	<b>0.7</b>	<b>a</b> 0.5
L48 Lease and Plant Fuel	5.2	5.1	5.1	5.1	5.1	5.1	<b>0.0</b>	▲ 0.0
L48 Pipeline Distribution	2.1	2.4	2.1	2.2	2.3	2.4	<b>0.1</b>	<b>0.1</b>
L48 Regional Gas Consumption	70.0	76.9	71.9	73.9	75.2	78.4	<b>3.2</b>	<b>3.9</b>
Net LNG Exports	10.3	11.2	11.0	10.8	10.5	10.8	<b>0.3</b>	▼-0.1
Total Mexican Exports	7.6	7.2	7.1	7.1	7.1	7.0	▼ -0.1	▼-0.1
Implied Daily Storage Activity	9.9	2.0	6.8	5.6	4.4	1.8	-2.6	
EIA Reported Daily Storage Activity	10.9	2.3	7.9	7.0	5.1			
Daily Model Error	-0.9	-0.2	-1.1	-1.4	-0.7			

#### **Monthly Balances**

	2Yr Ago	LY					MTD		
	Aug-19	Aug-20	Apr-21	May-21	Jun-21	Jul-21	Aug-21	MoM	vs. LY
Lower 48 Dry Production	94.6	89.5	92.2	92.7	92.8	92.2	91.2	<b>▼</b> -1.0	<b>1.7</b>
Canadian Imports	4.4	4.9	4.6	4.5	4.8	5.2	5.1	<b>-0.1</b>	<b>0.2</b>
L48 Power	41.0	40.9	24.9	26.7	35.3	39.4	37.6	<b>-</b> 1.9	▼-3.3
L48 Residential & Commercial	7.8	7.7	19.5	13.2	8.8	8.3	7.9	<b>T</b> -0.4	<b>a</b> 0.2
L48 Industrial	23.5	21.8	21.2	20.3	20.7	19.8	20.3	<b>A</b> 0.5	<b>T</b> -1.5
L48 Lease and Plant Fuel	5.2	5.0	5.1	5.1	5.1	5.1	5.0	▼ -0.1	<b>A</b> 0.1
L48 Pipeline Distribution	2.4	2.4	2.3	2.1	2.2	2.3	2.2	<b>T</b> -0.1	<b>V</b> -0.1
L48 Regional Gas Consumption	79.8	77.6	73.0	67.2	72.1	74.9	73.0	▼ -2.0	▼ -4.7
Net LNG Exports	5.2	4.0	11.5	10.8	10.2	10.8	10.4	▼ -0.4	<b>6.4</b>
Total Mexican Exports	5.3	6.0	6.7	6.8	7.4	7.1	6.9	▼ -0.2	<b>0.9</b>
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	8.8	6.7	5.7	12.4	8.0	4.5	6.0		

Source: Bloomberg, analytix.ai

# **Daily** Average Generation Data

### Nuclear Generation Daily Average - GWh (NRC)

ENERGY

	28-Jul	29-Jul	30-Jul	31-Jul	1-Aug	2-Aug	3-Aug	DoD	vs. 7D
NRC Nuclear Daily Output	90.0	89.8	90.3	90.3	90.3	90.8	91.6	0.8	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	14.9	15.0	14.5	14.5	14.5	14.1	13.3	-0.8	-1.3
NRC % Nuclear Cap Utilization	91.5	91.4	91.8	91.8	91.8	92.3	93.1	0.8	1.3

#### Wind Generation Daily Average - MWh (EIA)

	28-Jul	29-Jul	30-Jul	31-Jul	1-Aug	2-Aug	3-Aug	DoD	vs. 7D
CALI Wind	1754	2254	1644	1891	2316	1884	1884	0	-74
TEXAS Wind	5594	2991	4585	7192	8517	5495	5495	0	-234
US Wind	28958	27887	24098	27864	29391	15275	15275	0	-10304

#### Generation Daily Average - MWh (EIA)

	28-Jul	29-Jul	30-Jul	31-Jul	1-Aug	2-Aug	3-Aug	DoD	vs. 7D
US Wind	28958	27887	24098	27864	29391	15275	15275	0	-10304
US Solar	12832	14235	13219	14238	12790	14303	14303	0	700
US Petroleum	5033	4873	4466	3866	3643	4152	4152	0	-187
US Other	9166	8843	9092	8523	8643	8983	8983	0	108
US Coal	153259	153100	147147	136525	129783	135093	135093	0	-7391
US Nuke	92218	92482	92459	92588	92652	93791	93791	0	1093
US Hydro	29971	29769	29734	26512	25239	28163	28163	0	-68
US Gas	238132	238031	233302	196496	183747	201891	201891	0	-13376

# See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

# **Storage Week** Average Generation Data

### Nuclear Generation Weekly Average - GWh (NRC)

	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	WoW	WoW Bcf/d Impact
NRC Nuclear Daily Output	89.9	89.1	89.5	90.7	90.7	89.3	-1.4	0.2
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	0.0	
NRC Nuclear Outage	15.0	15.7	15.4	14.2	14.2	15.6	1.4	
NRC % Nuclear Cap Utilization	0.1	0.1	0.1	0.1	0.1	0.1	0.0	

### Wind Generation Weekly Average - MWh (EIA)

	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	WoW	WoW Bcf/d Impact
CALI Wind	2568	2588	2604	3004	2064	1905	-159	0.0
TEXAS Wind	13415	8326	3739	10817	7162	7913	751	-0.1
US Wind	49248	27216	25698	36365	26445	29733	3289	-0.6

### **Generation Weekly Average - MWh (EIA)**

								WoW
	25-Jun	2-Jul	9-Jul	16-Jul	23-Jul	30-Jul	WoW	Bcf/d
								Impact
US Wind	49248	27216	25698	36365	26445	29733	3289	-0.6
US Solar	14070	14060	14162	14488	14034	13767	-267	0.0
US Petroleum	3331	5142	4035	4282	3892	4729	837	-0.1
US Other	8246	8886	9159	9554	9336	9183	-153	0.0
US Coal	118233	136480	131305	131524	137617	146414	8797	-1.5
US Nuke	93426	92257	92359	93735	93488	92226	-1261	0.2
US Hydro	32186	33024	30127	30420	30191	29204	-987	0.2
US Gas	180182	208732	<b>194610</b>	199730	210468	224094	13627	

# See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai



# Monthly Average Generation Data

#### Nuclear Generation Monthly Average - GWh (NRC)

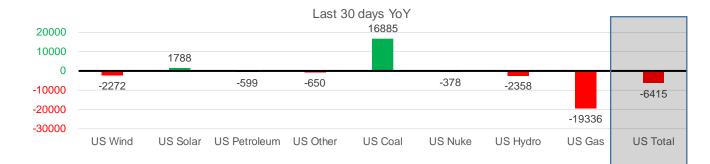
	2Yr Ago	LY				MTD			
	Same 30 days	Same 30 days	May-21	Jun-21	Jul-21	Aug-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
NRC Nuclear Daily Output	94.3	91.2	81.8	88.7	90.0	91.1	90.3	1.0	-1.0
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	104.9	0.0	0.0
NRC Nuclear Outage	10.6	13.6	23.1	16.2	14.9	13.8	14.6	-1.0	1.0
NRC % Nuclear Cap Utilization	95.9	92.8	83.2	90.2	91.5	92.6	91.8	1.1	-1.0

#### Wind Generation Monthly Average - MWh (Genscape)

	2Yr Ago	LY				MTD	TD					
	Same 30 days	Same 30 days	May-21	Jun-21	Jul-21	Aug-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY			
CALI Wind	2403	2670	3402	2913	2338	1992	2299	-347	-372			
TEXAS Wind	7552	8793	12259	9675	7217	6250	7565	-966	-1228			
US Wind	26816	30411	46081	37299	29105	18804	28139	-10301	-2272			

#### Generation Monthly Average - MWh (EIA)

	2Yr Ago	LY				MTD			
	Same 30 days	Same 30 days	May-21	Jun-21	Jul-21	Aug-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
US Wind	26816	30411	46081	37299	29105	18804	28139	<b>9</b> 335.4	▼ -2272
US Solar	9429	12277	14486	14563	14117	13925	14065	<b>1</b> 40.0	<b>1788</b>
US Petroleum	5336	4884	3012	4149	4233	4025	4285	<b>260</b>	<b>-599</b>
US Other	9032	9940	7439	8162	9284	8898	9290	<b>A</b> 391	<b>~</b> -650
US Coal	131211	121542	86422	121348	137227	133766	138428	<b>4662</b>	<b>4 16885</b>
US Nuke	100942	93439	85517	92175	92897	93506	93061	<b>-446</b>	<b>-378</b>
US Hydro	34340	31909	30677	32575	29935	27432	29551	<b>A</b> 2119	<b>v</b> -2358
US Gas	217230	229958	139477	188818	207690	197355	210622	<b>A</b> 16462	<b>T</b> -19336
US Total	535789	534035	413562	499436	524661	498009	527621	<b>A</b> 23589	▼ -6415



## See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

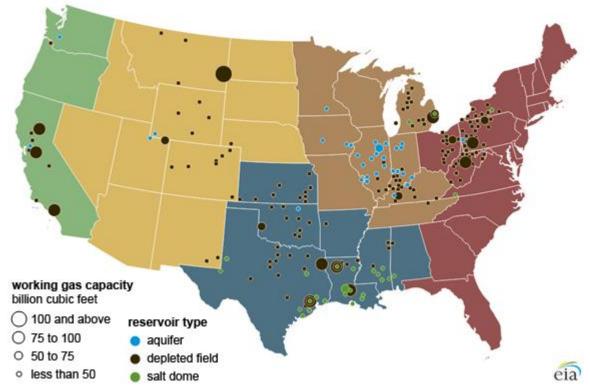


### Regional S/D Models Storage Projection

Week Ending	30-Jul			
			Daily	
			Average	Weekly
		Daily	Storage	Adjusted
	Daily Raw	Adjustment	Activity	Storage
	Storage	Factor	(Adjusted) *	Activity
<u>L</u> 48	1.5	1.2	2.7	19
East	1.7	1.6	3.3	23
Midwest	2.5	-0.6	2.0	14
Mountain	4.5	-4.1	0.4	3
South Central	-6.9	4.4	-2.5	-17
Pacific	-0.3	-0.2	-0.5	-3

\*Adjustment Factor is calcuated based on historical regional deltas

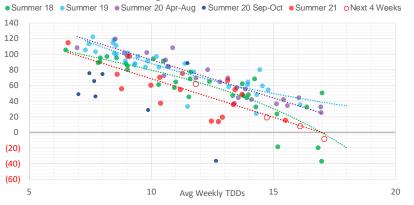
### U.S. underground natural gas storage facilities by type (July 2015)



### Weather Model Storage Projection

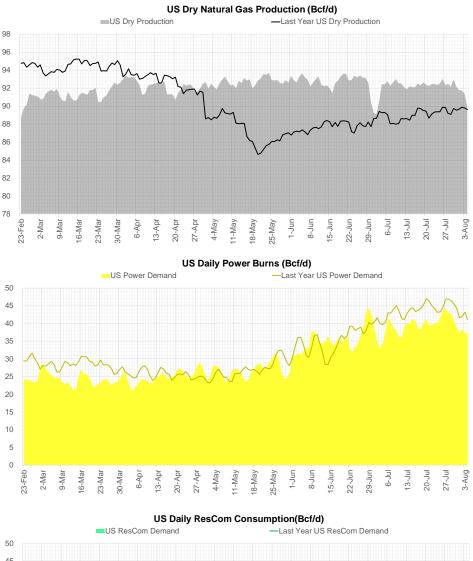
Next report and beyond		
Week Ending	GWDDs	Week Storage Projection
30-Jul	14.7	19
06-Aug	11.8	62
13-Aug	17.1	-8
20-Aug	16.1	8

#### Weather Storage Model - Next 4 Week Forecast

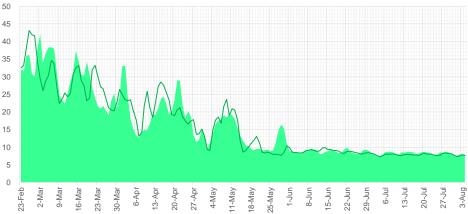


# Go to larger image



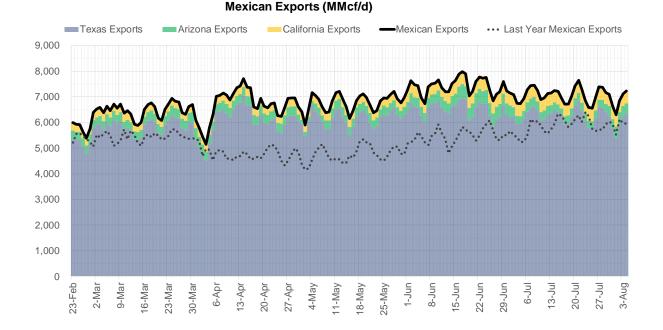


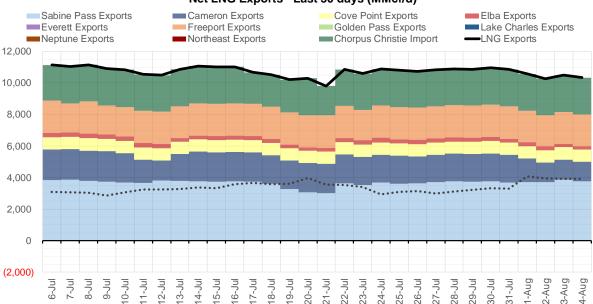
Supply – Demand Trends



Source: Bloomberg







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

Source: Bloomberg

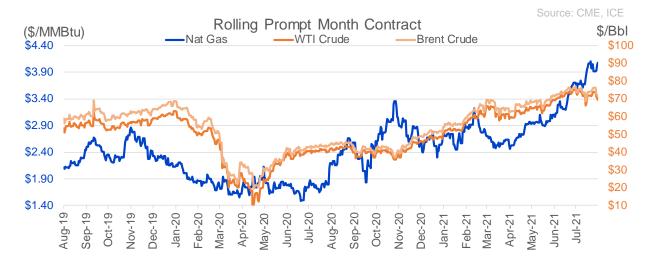


### Nat Gas Options Volume and Open Interest CME, ICE and Nasdaq Combined

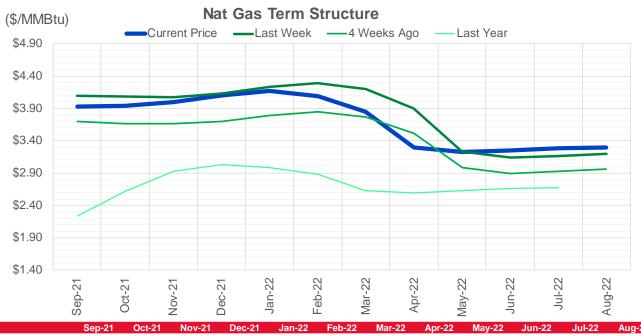
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
12	2021	Р	2.75	18400	 10	2021	С	4.50	41942
12	2021	Р	3.00	9684	10	2021	С	4.00	41593
9	2021	C	4.50	9260	12	2021	Р	2.75	39492
12	2021	P	2.50	9000	10	2021	С	5.00	34349
9	2021	С	4.25	5697	10	2021	С	3.50	33004
10	2021	C	4.50	4875	10	2021	Р	2.50	30039
9	2021	С	5.00	4101	9	2021	С	4.00	29615
9	2021	P	3.50	3875	12	2021	Р	2.50	28808
9	2021	С	4.75	2985	10	2021	С	3.25	28230
9	2021	Р	3.25	2906	10	2021	Р	2.00	26497
9	2021	Р	3.75	2885	10	2021	Р	2.75	25913
9	2021	С	4.00	2684	10	2021	Р	3.50	24613
9	2021	P	3.80	2655	12	2021	Р	3.00	24379
10	2021	Р	3.00	2636	10	2021	Р	3.00	24211
9	2021	Р	3.45	2615	9	2021	Р	2.50	23376
9	2021	Р	3.00	2408	9	2021	С	3.50	22907
9	2021	С	5.50	2208	9	2021	Р	3.00	22203
10	2021	P	3.50	2125	11	2021	С	4.00	22170
10	2021	Р	3.25	2045	12	2021	С	4.00	21990
12	2021	С	5.50	2014	9	2021	С	5.00	21723
10	2021	С	5.00	1934	9	2021	P	2.00	20427
9	2021	С	4.15	1885	10	2021	Р	2.25	19900
10	2021	C	4.25	1845	4	2022	С	3.00	19610
9	2021	Р	3.60	1606	9	2021	P	3.50	19032
9	2021	С	5.25	1428	9	2021	С	3.25	18994
10	2021	С	4.15	1307	9	2021	P	3.25	18899
3	2022	С	5.00	1300	10	2021	С	3.00	18501
10	2021	C	4.35	1253	11	2021	P C	3.00	18138
10	2021	C	4.75	1158	9	2021	C	4.50	17737
10	2021	С	4.00	1095	10	2021	c	6.00	17386
12	2021	С	5.00	1089	9 10	2021 2021	c	4.25 3.75	17059 16850
9	2021	P	3.35	1079	9	2021	c	3.75 4.75	16570
3	2022	Р	3.50	1032	9 3	2021	c	4.75 5.00	16478
9	2021	Р	2.90	1001	9	2022	P	2.75	15816
10	2021	Р	3.75	997	9 11	2021	Г С	5.00	15306
2	2022	С	10.00	980	1	2021	c	5.00	15209
9	2021	Р	4.00	966	11	2022	c	3.75	15089
4	2023	С	3.00	950	1	2022	c	4.00	14707
5	2023	C	3.00	950	2	2022	c	5.00	14632
6	2023	С	3.00	950	3	2022	c	3.00	14448
7	2023	С	3.00	950	12	2022	P	2.00	13889
8	2023	С	3.00	950	9	2021	P	2.60	13814
9	2023	c	3.00	950	9	2021	P	1.90	13773
10	2023	C	3.00	950	3	2022	P	2.50	13759
10	2021	P	3.70	933	11	2022	P	2.50	13647
12	2021	P	3.50	931	2	2022	C	4.00	13504
3	2022	C	4.25	900	3	2022	č	4.00	13309
11	2021	P	4.00	796	5	2022	c	3.00	13050
12	2021	C	4.25	784	9	2021	P	2 25	12790
					2		Source	: CME, ICE	

### Nat Gas Futures Open Interest CME, and ICE Combined

Civil, and ICE Combined									
CME Henry H	Hub Futures (1)	0,000 MMBt		ICE Henry	Hub Futures Cont	ract Equiva			
-	Current	Prior	Daily Change		Current	Prior	Daily Change		
SEP 21	319995	322761	-2766	SEP 21	94378	94718	-340		
OCT 21	168326	157707	10619	OCT 21	105469	107344	-1875		
NOV 21	127557	126270	1287	NOV 21	71744	72603	-859		
DEC 21	72297	72169	128	DEC 21	74262	73924	338		
JAN 22	126562	125672	890	JAN 22	77717	78033	-316		
FEB 22	53785	52249	1536	FEB 22	69708	69133	575		
MAR 22	103982	102649	1333	MAR 22	70570	69314	1256		
APR 22	106568	105580	988	APR 22	68462	67537	926		
MAY 22	87696	87502	194	MAY 22	67330	66919	411		
JUN 22	30678	30321	357	JUN 22	56725	56224	500		
JUL 22	25315	23978	1337	JUL 22	55985	55611	374		
AUG 22	25073	24323	750	AUG 22	57471	56940	532		
SEP 22	24970	24333	637	SEP 22	57194	56693	500		
OCT 22	60043	59615	428	OCT 22	62281	61461	820		
NOV 22	25094	25677	-583	NOV 22	49099	48769	330		
DEC 22	22713	22592	121	DEC 22	51236	50985	251		
JAN 23	16264	16473	-209	JAN 23	31041	30977	64		
FEB 23	5600	5483	117	FEB 23	26667	26629	38		
MAR 23	7749	7743	6	MAR 23	28369	28328	42		
APR 23	9744	9601	143	APR 23	23264	23190	74		
MAY 23	5538	5518	20	MAY 23	24400	24174	226		
JUN 23	2371	2329	42	JUN 23	22619	22399	220		
JUL 23	2748	2657	91	JUL 23	22745	22619	126		
AUG 23	1844	1831	13	AUG 23	22563	22577	-14		
SEP 23	2024	2010	14	SEP 23	22121	21998	123		
OCT 23	2764	2735	29	OCT 23	23935	24584	-650		
NOV 23	1274	1260	14	NOV 23	23338	23336	2		
DEC 23	1763	1750	13	DEC 23	21704	21868	-165		
JAN 24	993	993	0	JAN 24	12869	12891	-23		
FEB 24	870	870	0	FEB 24	11297	11138	160		



# **Market Report**



	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22
Current Price	\$3.935	\$3.938	\$3.998	\$4.101	\$4.170	\$4.091	\$3.854	\$3.301	\$3.223	\$3.253	\$3.289	\$3.296
Last Week	\$4.102	\$4.082	\$4.076	\$4.137	\$4.234	\$4.293	\$4.202	\$3.896	\$3.234	\$3.138	\$3.165	\$3.200
vs. Last Week	-\$0.167	-\$0.144	-\$0.078	-\$0.036	-\$0.064	-\$0.202	-\$0.348	-\$0.595	-\$0.011	\$0.115	\$0.124	\$0.096
4 Weeks Ago	\$3.700	\$3.668	\$3.659	\$3.705	\$3.792	\$3.854	\$3.770	\$3.510	\$2.987	\$2.897	\$2.924	\$2.959
vs. 4 Weeks Ago	\$0.235	\$0.270	\$0.339	\$0.396	\$0.378	\$0.237	\$0.084	-\$0.209	\$0.236	\$0.356	\$0.365	\$0.337
Last Year	\$2.101	\$2.239	\$2.612	\$2.923	\$3.025	\$2.988	\$2.880	\$2.624	\$2.588	\$2.623	\$2.666	\$2.675
vs. Last Year	\$1.834	\$1.699	\$1.386	\$1.178	\$1.145	\$1.103	\$0.974	\$0.677	\$0.635	\$0.630	\$0.623	\$0.621

		Cash	Prompt	Cash to
	Units	Settled	Settle	Prompt
AGT Citygate	\$/MMBtu	2.88	3.42	0.54
TETCO M3	\$/MMBtu	3.68	3.21	-0.47
FGT Zone 3	\$/MMBtu	3.64	4.05	0.41
Zone 6 NY	\$/MMBtu	3.64	3.22	-0.42
Chicago Citygate	\$/MMBtu	3.81	3.81	0.00
Michcon	\$/MMBtu	3.75	3.76	0.01
Columbia TCO Pool	\$/MMBtu	3.57	3.16	-0.41
Ventura	\$/MMBtu	3.79	3.74	-0.05
Rockies/Opal	\$/MMBtu	3.87	3.67	-0.20
El Paso Permian Basin	\$/MMBtu	3.84	3.74	-0.10
Socal Citygate	\$/MMBtu	8.05	5.52	-2.53
Malin	\$/MMBtu	4.08	4.18	0.10
Houston Ship Channel	\$/MMBtu	3.93	3.96	0.03
Henry Hub Cash	\$/MMBtu	3.98	3.69	-0.29
AECO Cash	C\$/GJ	2.78	2.75	-0.03
Station2 Cash	C\$/GJ	2.66	3.95	1.29
Dawn Cash	C\$/GJ	3.76	3.78	0.02

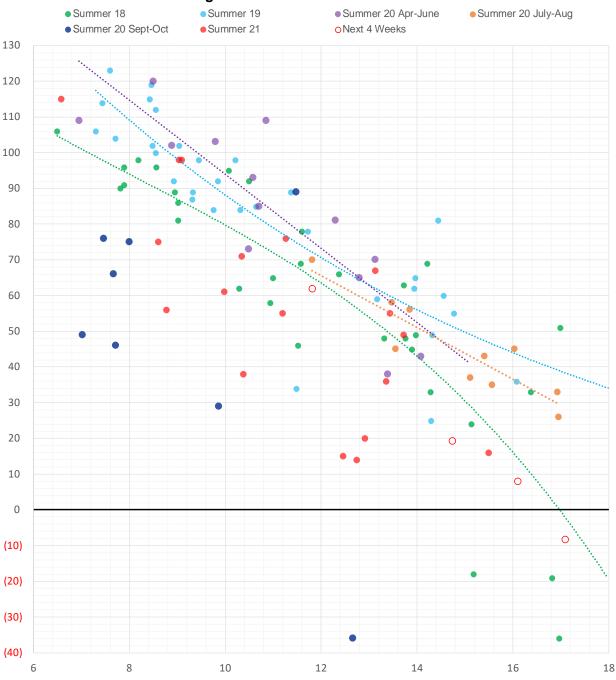
Source: CME, Bloomberg

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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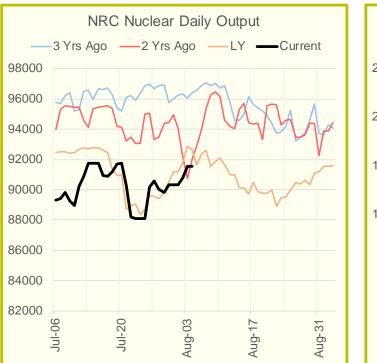
					vs	. 4 Weeks		
	Units	<b>Current Price</b>	vs.	Last Week		Ago	vs	. Last Year
NatGas Jul21/Oct21	\$/MMBtu	0.415		0.093		0.429		0.403
NatGas Oct21/Nov21	\$/MMBtu	0.057		-0.006		0.005		0.013
NatGas Oct21/Jan22	\$/MMBtu	0.224		0.005		0.019	$\mathbf{}$	-0.047
NatGas Apr22/Oct22	\$/MMBtu	-0.011		0.000		-0.002	$\bullet$	-0.068
WTI Crude	\$/Bbl	70.56		-1.090		-2.810		28.860
Brent Crude	\$/Bbl	72.41		-2.070		-2.120		27.980
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18		0.000		0.000		0.000
Heating Oil	cents/Gallon	212.64		-1.750		2.150		86.800
Propane, Mt. Bel	cents/Gallon	1.09		0.001		-0.023		0.591
Ethane, Mt. Bel	cents/Gallon	0.33		0.019		0.028		0.112
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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