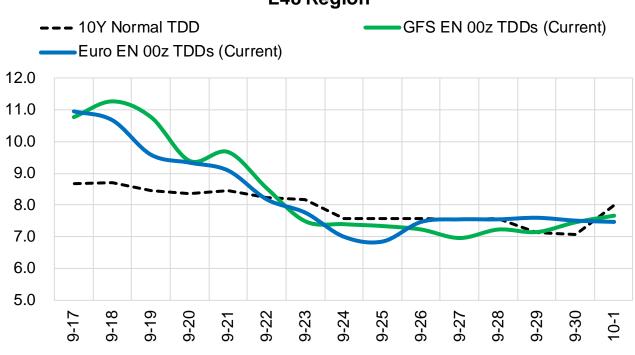




Short-term Weather Model Outlooks (00z)



L48 Region

Vs. 10Y Normal



Source: WSI, Bloomberg

ENERGY

17 September 2021

Daily Balances

	11-Sep	12-Sep	13-Sep	14-Sep	15-Sep	16-Sep	17-Sep	DoD	vs.7D
Lower 48 Dry Production	92.3	92.1	92.6	91.5	91.4	91.0	89.7	▼ -1.2	▼ -2.1
Canadian Imports	5.1	5.3	5.4	5.3	5.1	4.8	4.7	▼ 0.0	T -0.4
L48 Power	32.3	34.4	36.9	37.2	36.0	34.5	34.1	- 0.4	▼-1.1
L48 Residential & Commercial	6.8	7.0	7.5	7.5	7.3	7.5	7.2	- 0.3	▼ 0.0
L48 Industrial	20.6	20.7	21.1	21.1	21.2	21.1	20.9	- 0.2	▼ 0.0
L48 Lease and Plant Fuel	5.1	5.1	5.1	5.0	5.0	5.0	4.9	T -0.1	▼ -0.1
L48 Pipeline Distribution	2.0	2.1	2.3	2.3	2.2	2.1	2.1	▼ 0.0	▼ -0.1
L48 Regional Gas Consumption	66.7	69.3	72.7	73.2	71.7	70.3	69.3	T-1.0	T -1.3
Net LNG Delivered	10.88	11.31	11.19	9.33	8.90	9.04	9.77	0.7	T -0.3
Total Mexican Exports	6.4	6.3	6.6	7.0	6.9	6.6	6.8	0.2	0.1
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	13.4	10.5	7.4	7.3	9.0	9.8	8.6		

Lower 48 Component Models

Daily Model Error

EIA Storage Week Balances

	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	WoW	vs. 4W
Lower 48 Dry Production	92.4	92.4	93.0	90.9	91.4	91.8	0.4	▼-0.1
Canadian Imports	5.2	5.0	5.3	5.0	4.8	5.1	0.3	0.1
L48 Power	41.1	39.7	41.9	38.1	33.7	34.9	1.2	▼-3.4
L48 Residential & Commercial	7.8	7.6	7.8	7.5	7.0	7.3	a 0.2	V -0.2
L48 Industrial	19.3	20.9	21.0	19.0	20.0	20.9	A 0.9	0.7
L48 Lease and Plant Fuel	5.1	5.1	5.1	5.0	5.0	5.1	▲ 0.0	▼ 0.0
L48 Pipeline Distribution	2.4	2.3	2.4	2.2	2.1	2.1	0.1	T -0.1
L48 Regional Gas Consumption	75.6	75.6	78.2	71.7	67.9	70.3	2.4	▼-3.1
Net LNG Exports	9.9	10.9	10.6	10.5	11.0	10.2	▼ -0.7	-0.5
Total Mexican Exports	6.8	6.8	6.8	7.0	6.7	6.6	T -0.1	▼-0.2
Implied Daily Storage Activity EIA Reported Daily Storage Activity	5.2 6.6	4.2 4.1	2.8 2.9	6.7 7.4	10.6 11.9	9.8	-0.8	
Daily Model Error	-1.3	0.1	-0.1	-0.7	-1.2			

Monthly Balances

	2Yr Ago	LY					MTD		
	Sep-19	Sep-20	May-21	Jun-21	Jul-21	Aug-21	Sep-21	MoM	vs. LY
Lower 48 Dry Production	94.4	89.1	93.1	93.4	92.4	92.2	91.4	-0.8	2.3
Canadian Imports	4.7	3.8	4.5	4.8	5.2	5.1	4.9	-0.2	▲ 1.1
L48 Power	36.3	34.4	26.8	35.9	39.6	40.2	34.2	-6.0	- 0.2
L48 Residential & Commercial	8.2	8.8	12.8	8.9	8.6	7.7	7.2	▼ -0.5	T -1.6
L48 Industrial	22.5	20.3	20.8	20.6	19.6	20.1	20.3	a 0.2	▼ -0.1
L48 Lease and Plant Fuel	5.1	4.9	5.1	5.1	5.1	5.1	5.0	▼ -0.1	a 0.1
L48 Pipeline Distribution	2.2	2.2	2.1	2.2	2.3	2.3	2.1	T -0.2	V -0.1
L48 Regional Gas Consumption	74.5	70.6	67.6	72.7	75.1	75.4	68.9	▼ -6.6	T-1.8
Net LNG Exports	6.2	5.9	10.8	10.2	10.8	10.5	10.5	▲ 0.0	4.5
Total Mexican Exports	5.3	6.1	6.8	7.4	7.0	6.9	6.7	▼ -0.2	0.6
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	13.2	10.2	12.4	8.0	4.6	4.5	10.2		

Source: Bloomberg, analytix.ai

Daily Average Generation Data

Nuclear Generation Daily Average - GWh (NRC)

ENERGY

	9-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep	15-Sep	DoD	vs. 7D
NRC Nuclear Daily Output	90.7	90.4	87.6	85.7	85.6	85.4	86.1	0.7	-1.5
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	14.2	14.4	17.3	19.2	19.3	19.4	18.8	-0.7	1.5
NRC % Nuclear Cap Utilization	92.2	92.0	89.1	87.2	87.0	86.9	87.6	0.7	-1.5

Wind Generation Daily Average - MWh (EIA)

	9-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep	15-Sep	DoD	vs.7D
CALI Wind	1489	1933	1582	1639	2254	1735	2601	866	829
TEXAS Wind	6940	13204	12093	10433	10403	8035	4586	-3449	-5599
US Wind	25275	41396	51258	45315	44216	37061	30404	-6657	-10350

Generation Daily Average - MWh (EIA)

	9-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep	15-Sep	DoD	vs.7D
US Wind	25275	41396	51258	45315	44216	37061	30404	-6657	-10350
US Solar	12582	14318	13934	14248	13996	13966	13241	-725	-599
US Petroleum	2705	2206	2189	2594	2632	2765	2644	-121	129
US Other	8840	8435	8554	9059	9416	9448	9590	142	631
US Coal	119809	110958	102156	108214	118241	125803	125026	-777	10829
US Nuke	93366	93090	90305	88978	88224	88013	88913	901	-1416
US Hydro	27999	25969	23680	22701	25737	25724	20657	-5067	-4644
US Gas	195446	171710	155940	170340	198449	196637	194457	-2180	13036

See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

Storage Week Average Generation Data

Nuclear Generation Weekly Average - GWh (NRC)

	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	WoW	WoW Bcf/d Impact
NRC Nuclear Daily Output	91.5	92.4	91.9	90.2	90.3	86.7	-3.6	0.6
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	0.0	
NRC Nuclear Outage	13.3	12.5	12.9	14.7	14.6	18.2	3.6	
NRC % Nuclear Cap Utilization	0.1	0.1	0.1	0.1	0.1	0.1	0.0	

Wind Generation Weekly Average - MWh (EIA)

	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	WoW	WoW Bcf/d Impact
CALI Wind	2507	3210	2052	2247	1236	2050	813	-0.1
TEXAS Wind	16319	7171	12600	7534	7327	9048	1721	-0.3
US Wind	49586	29141	41810	35347	30632	40008	9376	-1.7
					-4715.3			
					-13%			

Generation Weekly Average - MWh (EIA)

								VVOVV
	13-Aug	20-Aug	27-Aug	3-Sep	10-Sep	17-Sep	WoW	Bcf/d
								Impact
US Wind	49586	29141	41810	35347	30632	40008	9376	-1.7
US Solar	14383	12828	14536	13423	14312	13849	-463	0.1
US Petroleum	4712	4466	5323	3135	2072	2525	453	-0.1
US Other	10070	10104	10131	9766	8933	9156	223	0.0
US Coal	140524	138055	136177	136318	116993	116489	-504	0.1
US Nuke	94302	95157	94358	92365	93162	89491	-3671	0.7
US Hydro	27035	28988	30621	28173	26944	23589	-3355	0.6
US Gas	208281	212106	215990	205486	181096	183141	2046	-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.



Monthly Average Generation Data

Nuclear Generation Monthly Average - GWh (NRC)

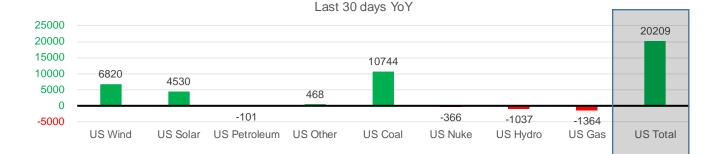
	2Yr Ago	LY				MTD			
	Same 30 days	Same 30 days	Jun-21	Jul-21	Aug-21	Sep-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
NRC Nuclear Daily Output	92.6	90.2	88.7	90.1	91.5	88.5	89.7	-3.0	-0.4
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	104.9	0.0	0.0
NRC Nuclear Outage	12.3	14.7	16.2	14.8	13.4	16.3	15.2	3.0	0.4
NRC % Nuclear Cap Utilization	94.2	91.7	90.2	91.6	93.0	90.0	91.2	-3.0	-0.5

Wind Generation Monthly Average - MWh (EIA)

	2Yr Ago	LY				MTD			
	Same 30 days	Same 30 days	Jun-21	Jul-21	Aug-21	Sep-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
CALI Wind	2335	1552	2881	2338	2442	1891	1946	-551	393
TEXAS Wind	7358	7053	9509	7217	9901	8360	9161	-1541	2108
US Wind	29649	29767	36826	29106	35740	36049	36587	309	6820

Generation Monthly Average - MWh (EIA)

	2Yr Ago	LY				MTD			
	Same 30 days	Same 30 days	Jun-21	Jul-21	Aug-21	Sep-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
US Wind	29649	29767	36826	29106	35740	36049	36587	5 38.3	6820
US Solar	8489	9463	14578	14195	13849	13981	13993	1 1.9	4530
US Petroleum	4423	3415	4155	4233	4484	2321	3314	4 993	T -101
US Other	8477	9071	8208	9327	9929	9071	9539	468	468
US Coal	116546	116085	122034	137228	137655	118184	126829	a 8645	10744
US Nuke	99334	92692	92180	92911	94062	91351	92327	4 976	▼ -366
US Hydro	29013	28307	32565	29941	28531	25392	27271	1879	T -1037
US Gas	202475	198621	189395	207814	210803	182563	197258	A 13511	T -1364
US Total	500313	487422	500271	524889	534996	479828	507631	a 26485	20209



See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

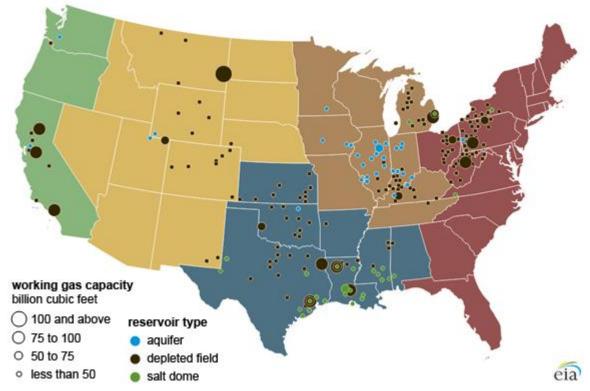


Regional S/D Models Storage Projection

Week Ending	17-Sep			
			Daily	
			Average	Weekly
		Daily	Storage	Adjusted
	Daily Raw	Adjustment	Activity	Storage
	Storage	Factor	(Adjusted) *	Activity
L48	9.5	1.1	10.7	75
East	2.5	1.1	3.6	25
Midwest	5.0	-0.4	4.6	32
Mountain	4.2	-3.5	0.8	5
South Central	-2.6	4.5	1.9	14
Pacific	0.4	-0.5	-0.2	-1

*Adjustment Factor is calcuated based on historical regional deltas

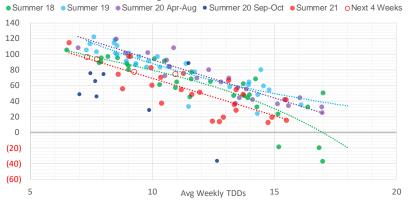
U.S. underground natural gas storage facilities by type (July 2015)



Weather Model Storage Projection

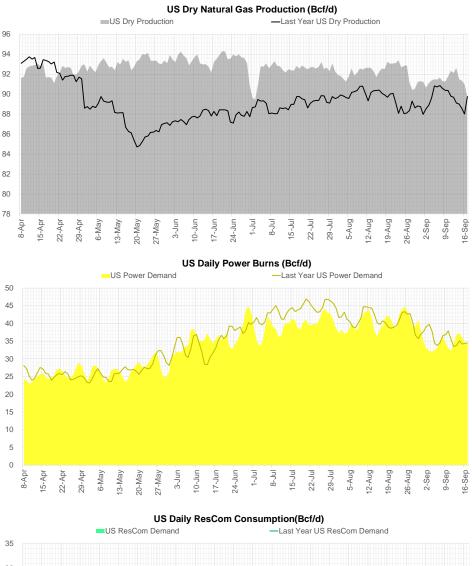
Next report and beyond		
Week Ending	GWDDs	Week Storage Projection
17-Sep	11.0	75
24-Sep	9.3	77
01-Oct	7.3	97
08-Oct	7.7	93

Weather Storage Model - Next 4 Week Forecast



Go to larger image

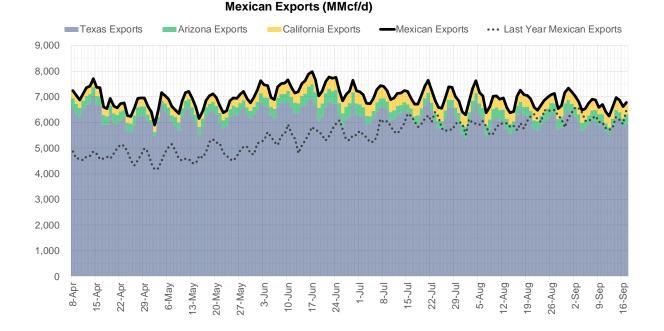


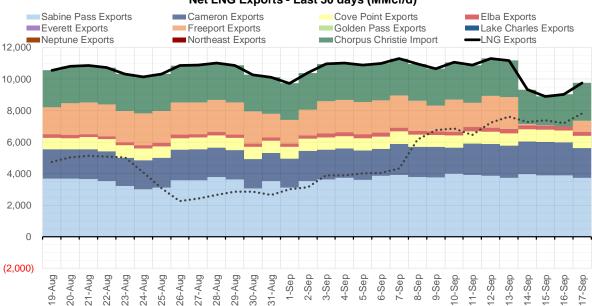


Supply – Demand Trends

30 25 20 15 10 5 0 15-Apr 22-Apr I 0-Jun 17-Jun 24-Jun 5-Aug I2-Aug 19-Aug 26-Aug 2-Sep 9-Sep 8-Apr 29-Apr I3-May 3-Jun 1-Jul 8-Jul 15-Jul 16-Sep 6-May 20-May 27-May 22-Jul 29-Jul

Source: Bloomberg





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

Source: Bloomberg

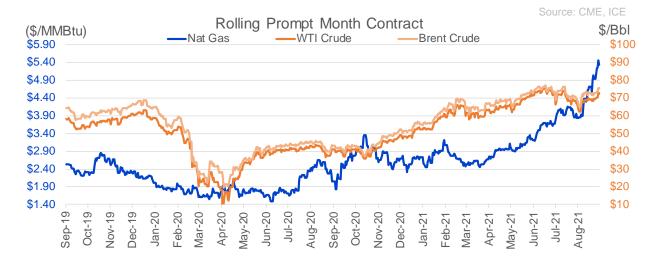


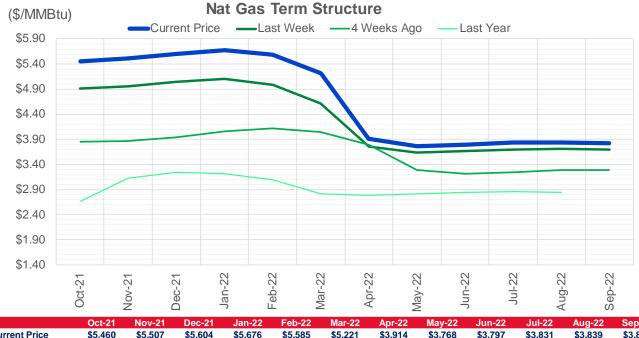
Nat Gas Options Volume and Open Interest CME, ICE and Nasdaq Combined

CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
10	2021	Р	5.00	10125	10	2021	С	5.00	56204
10	2021	Р	4.75	5697	10	2021	Р	3.50	41986
10	2021	С	6.00	5683	12	2021	Р	2.75	41959
3	2022	C	10.00	4921	10	2021	С	4.00	41755
10	2021	С	5.75	3687	10	2021	С	6.00	41200
3	2022	С	8.00	3676	10	2021	С	4.50	40176
11	2021	С	7.00	3471	12	2021	Р	2.50	38542
2	2022	C	10.00	3240	10	2021	С	3.50	32999
10	2021	P	5.25	3172	10	2021	С	4.25	32689
12	2021	С	6.00	2926	10	2021	Р	3.00	31756
10	2021	C	5.50	2874	10	2021	Р	4.00	31005
10	2021	С	6.50	2423	11	2021	Р	3.00	30622
1	2022	P	3.50	2344	10	2021	Р	2.50	29994
12	2021	С	6.50	2195	10	2021	Р	2.00	28650
10	2021	P	4.50	2129	10	2021	С	3.25	28193
11	2021	С	6.00	1884	10	2021	Р	2.75	26887
3	2022	C	6.00	1864	12	2021	Р	3.00	24475
11	2021	C	7.50	1667	3	2022	С	10.00	23324
10	2021	C	6.25	1661	11	2021	С	4.00	23309
10	2021	C	5.00	1649	11	2021	Р	4.00	22733
2	2022	C	10.50	1500	12	2021	С	4.00	22597
10	2021	P	4.85	1491	10	2021	Р	3.75	22363
2	2022	С	12.00	1485	11	2021	Р	3.50	22339
4	2022	C	7.00	1475	12	2021	Р	4.00	21893
10	2021	C	5.25	1467	11	2021	С	7.00	21446
12	2021	C	7.00	1320	10	2021	P	2.25	19784
10	2021	P	4.25	1260	4	2022	С	3.00	19760
1	2022	C	8.00	1255	3	2022	Р	3.50	19675
11	2021	P	5.00	1159	10	2021	P	4.25	19042
1	2022	С	6.50	1056	3	2022	С	5.00	19036
3	2022	C	5.25	1033	11	2021	С	6.00	18954
11	2021	P	4.25	1016	3	2022	С	8.00	18527
10	2021	C	7.00	999	10 2	2021 2022	C P	3.00 3.50	18494 18447
4	2022	P	2.50	975	10	2022	F C	5.50	18148
1	2022	С	10.00	957	10	2021	P	4.50	17956
4	2022	C	9.00	950	10	2021	P	4.50 3.25	17956
3	2022	C	20.00	901	10	2021	F C	5.00	17940
2	2022	C	20.00	850	3	2022	P	2.50	16805
1	2022	P	5.00	846	10	2022	C	3.75	16780
3	2022	С	7.00	792	10	2021	P	3.50	16740
11	2021	P	3.50	783	2	2022	C	5.00	16591
1	2022	P	4.00	783	11	2022	c	5.00	16186
12	2021	C	8.00	782	3	2022	c	4.00	16022
10	2021	C	4.50	769	2	2022	c	4.00	15818
12	2021	c	8.50	765	12	2022	c	6.00	15693
3	2022	c	5.00	759	12	2021	c	4.50	15152
1	2022	c	6.00	756	11	2021	P	3.25	14581
3	2022	c	4.60	750	1	2022	C	4.00	14503
5	2022	c	5.00	750	11	2022	P	25	14486
5		2	2.00				Source	e: CMÉ, 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	alent (10,000 MM	
	Current	Prior	Daily Change		Current	Prior	Daily Change	
OCT 21	110367	130952	-20585	OCT 21	100264	97773	2491	
NOV 21	256619	251229	5390	NOV 21	79662	77823	1839	
DEC 21	90101	91914	-1813	DEC 21	76287	76691	-404	
JAN 22	156201	158943	-2742	JAN 22	94528	92697	1831	
FEB 22	57222	57292	-70	FEB 22	68833	69217	-385	
MAR 22	117940	117923	17	MAR 22	75016	75739	-724	
APR 22	117476	117123	353	APR 22	71464	70285	1179	
MAY 22	116488	116172	316	MAY 22	69815	70086	-272	
JUN 22	39299	40896	-1597	JUN 22	52845	52943	-98	
JUL 22	30667	30434	233	JUL 22	54873	54566	307	
AUG 22	32973	33104	-131	AUG 22	54767	54875	-108	
SEP 22	35279	35704	-425	SEP 22	55049	55155	-106	
OCT 22	87787	88720	-933	OCT 22	61154	61372	-218	
NOV 22	31728	31994	-266	NOV 22	47529	47680	-151	
DEC 22	25712	26066	-354	DEC 22	50872	50989	-117	
JAN 23	22694	22391	303	JAN 23	37222	37267	-45	
FEB 23	8908	8831	77	FEB 23	30441	30445	-4	
MAR 23	12012	11748	264	MAR 23	32677	32621	56	
APR 23	11709	11683	26	APR 23	29335	29344	-10	
MAY 23	7398	7302	96	MAY 23	29574	29571	3	
JUN 23	5562	5563	-1	JUN 23	27516	27514	2	
JUL 23	4050	4050	0	JUL 23	27618	27616	2	
AUG 23	3225	3219	6	AUG 23	27451	27450	1	
SEP 23	4470	4468	2	SEP 23	26760	26760	1	
OCT 23	5781	5772	9	OCT 23	28814	28821	-7	
NOV 23	2094	2094	0	NOV 23	27827	27857	-30	
DEC 23	2024	2023	1	DEC 23	26570	26600	-30	
JAN 24	1312	1312	0	JAN 24	14825	14824	0	
FEB 24	891	891	0	FEB 24	12364	12364	0	
MAR 24	3213	3211	2	MAR 24	16652	16652	0	





	Oct-21	NOV-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22
Current Price	\$5.460	\$5.507	\$5.604	\$5.676	\$5.585	\$5.221	\$3.914	\$3.768	\$3.797	\$3.831	\$3.839	\$3.825
Last Week	\$4.914	\$4.962	\$5.046	\$5.103	\$4.985	\$4.609	\$3.761	\$3.641	\$3.667	\$3.698	\$3.706	\$3.691
vs. Last Week	\$0.546	\$0.545	\$0.558	\$0.573	\$0.600	\$0.612	\$0.153	\$0.127	\$0.130	\$0.133	\$0.133	\$0.134
4 Weeks Ago	\$3.852	\$3.866	\$3.939	\$4.057	\$4.120	\$4.045	\$3.800	\$3.287	\$3.220	\$3.250	\$3.284	\$3.292
vs. 4 Weeks Ago	\$1.608	\$1.641	\$1.665	\$1.619	\$1.465	\$1.176	\$0.114	\$0.481	\$0.577	\$0.581	\$0.555	\$0.533
Last Year	\$2.267	\$2.664	\$3.120	\$3.249	\$3.210	\$3.097	\$2.814	\$2.779	\$2.808	\$2.846	\$2.857	\$2.846
vs. Last Year	\$3.193	\$2.843	\$2.484	\$2.427	\$2.375	\$2.124	\$1.100	\$0.989	\$0.989	\$0.985	\$0.982	\$0.979

		Cash	Prompt	Cash to
	Units	Settled	Settle	Prompt
AGT Citygate	\$/MMBtu	5.17	4.60	-0.57
TETCO M3	\$/MMBtu	5.09	3.67	-1.42
FGT Zone 3	\$/MMBtu	5.11	5.12	0.01
Zone 6 NY	\$/MMBtu	5.11	3.55	-1.56
Chicago Citygate	\$/MMBtu	5.24	4.85	-0.39
Michcon	\$/MMBtu	5.18	4.76	-0.42
Columbia TCO Pool	\$/MMBtu	5.05	3.85	-1.20
Ventura	\$/MMBtu	4.68	4.81	0.13
Rockies/Opal	\$/MMBtu	5.70	4.78	-0.92
El Paso Permian Basin	\$/MMBtu	5.05	4.74	-0.31
Socal Citygate	\$/MMBtu	7.96	5.93	-2.03
Malin	\$/MMBtu	5.61	5.29	-0.32
Houston Ship Channel	\$/MMBtu	5.27	5.10	-0.17
Henry Hub Cash	\$/MMBtu	5.46	4.84	-0.62
AECO Cash	C\$/GJ	3.90	3.35	-0.55
Station2 Cash	C\$/GJ	3.74	5.33	1.59
Dawn Cash	C\$/GJ	5.20	4.76	-0.44

Source: CME, Bloomberg

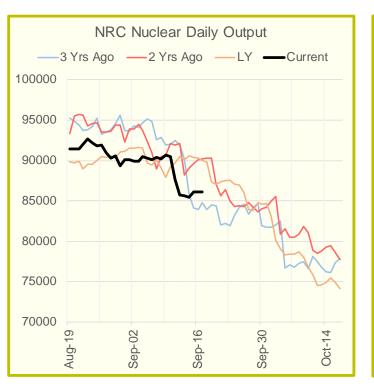


				vs. 4 Weeks	
	Units	Current Price	vs. Last We	ek Ago	vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	1.718	a 0.304	1 .491	1 .692
NatGas Oct21/Nov21	\$/MMBtu	0.047	a 0.006	-0.018	-0.007
NatGas Oct21/Jan22	\$/MMBtu	0.229	a 0.044	-0.008	- 0.063
NatGas Apr22/Oct22	\$/MMBtu	-0.046	-0.005	-0.063	-0.072
WTI Crude	\$/Bbl	72.61	4 .470	a 8.920	a 31.640
Brent Crude	\$/Bbl	75.67	4 .220	9.220	a 32.370
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	a 0.000	a 0.000	a 0.000
Heating Oil	cents/Gallon	221.10	9.730	4 .200	1 05.120
Propane, Mt. Bel	cents/Gallon	1.27	a 0.071	a 0.160	a 0.775
Ethane, Mt. Bel	cents/Gallon	0.39	a 0.020	a 0.058	a 0.194
Coal, PRB	\$/MTon	12.30	0.000	0.000	a 0.000
Coal, PRB	\$/MMBtu	0.70			
Coal, ILB	\$/MTon	31.05	a 0.000	a 0.000	▲ 0.000
Coal, ILB	\$/MMBtu	1.32			



Weather Storage Model - Next 4 Week Forecast

17 September 2021



ENERGY

