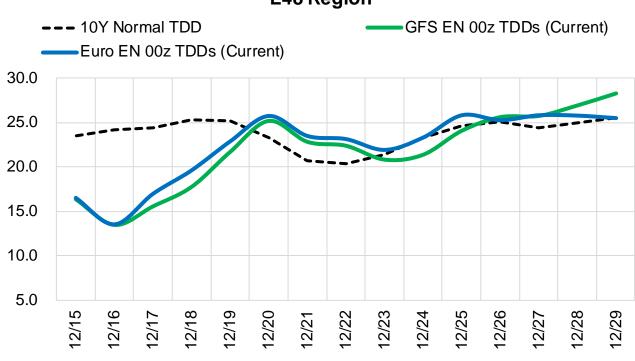


∆ from YD Current ∆ from YD Current Avg Avg US Drv **US Power** 28.0 95.5 -0.61 -1.06 **-**1.10 -1.19 Production Burns ∆ from 7D ∆ from 7D ∆ from YD Current ∆ from YD Current Avg Avg US Canadian 28.0 -4.36-6.92 3.9 -0.85 **V** -1.11 ResComm Imports ∆ from 7D Δ from 7D ∆ from YD ∆ from YD Current Current Avg Avg Net LNG Mexican 10.6 -0.65-1.31 6.1 -0.12 -0.06 Exports Exports

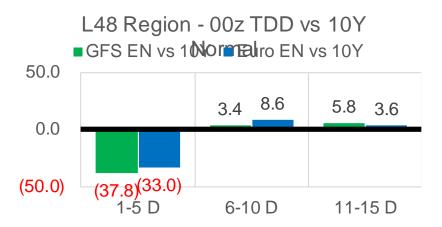


Short-term Weather Model Outlooks (00z)



L48 Region

Vs. 10Y Normal



Source: WSI, Bloomberg

15 December 2021

Daily Balances

	9-Dec	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	15-Dec	DoD	vs. 7D
Lower 48 Dry Production	97.1	97.1	96.2	96.5	96.0	96.1	95.5	-0.6	▼ -1.0
Canadian Imports	5.5	4.7	4.6	4.8	4.9	4.7	3.9	-0.9	▼ -1.0
L48 Power	30.6	28.1	27.1	27.7	29.9	29.1	28.0	▼-1.1	▼ -0.7
L48 Residential & Commercial	37.5	31.5	30.1	36.4	34.6	32.3	28.0	▼-4.4	T -5.8
L48 Industrial	24.1	23.3	23.2	23.6	23.6	23.3	22.6	- 0.6	V -0.9
L48 Lease and Plant Fuel	5.3	5.3	5.2	5.2	5.2	5.2	5.2	▼ 0.0	T -0.1
L48 Pipeline Distribution	3.4	3.0	2.9	3.2	3.2	3.1	2.8	T -0.3	T -0.3
L48 Regional Gas Consumption	100.9	91.2	88.5	96.1	96.6	93.0	86.6	▼ -6.4	T -7.8
Net LNG Delivered	11.69	11.82	12.24	12.44	11.82	11.29	10.64	-0.7	▼ -1.2
Total Mexican Exports	6.5	6.2	6.0	5.8	5.5	6.2	6.1	-0.1	▲ 0.0
Implied Daily Storage Activity EIA Reported Daily Storage Activity	-16.6	-7.5	-5.9	-13.1	-13.0	-9.6	-3.9		

Lower 48 Component Models

Daily Model Error

EIA Storage Week Balances

	5-Nov	12-Nov	19-Nov	26-Nov	3-Dec	10-Dec	WoW	vs. 4W
Lower 48 Dry Production	95.1	95.9	95.1	96.2	96.9	96.8	-0.1	0.8
Canadian Imports	5.5	5.1	4.9	5.5	5.6	5.3	▼ -0.3	▲ 0.0
L48 Power	29.6	27.5	27.8	29.2	28.8	29.1	a 0.3	▲ 0.8
L48 Residential & Commercial	24.3	23.6	28.0	33.3	33.3	35.6	2 .3	6 .1
L48 Industrial	21.2	21.4	23.1	22.4	22.5	24.2	1 .7	1.8
L48 Lease and Plant Fuel	5.2	5.2	5.2	5.2	5.3	5.3	▼ 0.0	▲ 0.0
L48 Pipeline Distribution	2.9	2.7	3.0	3.3	3.3	3.2	▼ 0.0	a 0.2
L48 Regional Gas Consumption	83.2	80.3	87.0	93.5	93.1	97.4	4.3	8.9
Net LNG Exports	10.9	11.2	11.1	11.7	11.8	12.0	0.2	0.6
Total Mexican Exports	6.1	6.2	6.0	6.0	6.4	6.4	▲ 0.0	0.3
Implied Daily Storage Activity	0.4	3.2	-4.2	-9.6	-8.8	-13.8	-5.0	
EIA Reported Daily Storage Activity Daily Model Error	1.0 -0.6	3.7 -0.5	-3.0 -1.2	-8.4 -1.1	-8.4 -0.4			

Monthly Balances

	2Yr Ago	LY					MTD		
	Dec-19	Dec-20	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	МоМ	vs. LY
Lower 48 Dry Production	95.9	91.6	94.0	93.4	94.0	95.9	96.5	0.7	5.0
Canadian Imports	4.5	5.8	5.1	5.1	5.4	5.3	5.1	-0.2	▼ -0.7
L48 Power	29.3	28.0	40.1	33.0	30.2	28.8	28.8	▲ 0.0	a 0.8
L48 Residential & Commercial	39.1	40.3	7.9	8.7	13.2	29.6	33.5	A 3.9	T -6.8
L48 Industrial	24.6	23.4	21.5	20.3	20.3	22.3	23.6	1.3	a 0.2
L48 Lease and Plant Fuel	5.2	5.0	5.1	5.1	5.1	5.2	5.2	0.0	0.3
L48 Pipeline Distribution	3.4	3.4	2.6	2.3	2.3	3.1	3.1	▼ 0.0	V -0.3
L48 Regional Gas Consumption	101.6	100.0	77.2	69.4	71.3	88.9	94.2	5.2	🔽 -5.9
Net LNG Exports	7.8	11.0	10.5	10.3	10.6	11.4	11.9	0.5	0.9
Total Mexican Exports	4.9	5.8	6.9	6.7	6.6	6.1	6.3	0.2	0.5
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	-13.8	-19.5	4.6	12.1	10.9	-5.3	-10.7		

Source: Bloomberg, analytix.ai

Daily Average Generation Data

Nuclear Generation Daily Average - GWh (NRC)

ENERGY

	7-Dec	8-Dec	9-Dec	10-Dec	11-Dec	12-Dec	13-Dec	DoD	vs. 7D
NRC Nuclear Daily Output	87.2	88.5	89.0	88.0	87.7	88.6	90.4	1.8	2.2
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	17.7	16.4	15.9	16.9	17.1	16.3	14.5	-1.8	-2.2
NRC % Nuclear Cap Utilization	88.7	90.0	90.5	89.4	89.2	90.1	91.9	1.8	2.3

Wind Generation Daily Average - MWh (EIA)

	7-Dec	8-Dec	9-Dec	10-Dec	11-Dec	12-Dec	13-Dec	DoD	vs.7D
CALI Wind	995	1471	3273	1265	534	1183	2594	1412	1141
TEXAS Wind	8370	8254	16815	19964	12023	16870	14446	-2424	730
US Wind	38188	42390	65750	70856	67833	76589	56970	-19618	-3298

Generation Daily Average - MWh (EIA)

	7-Dec	8-Dec	9-Dec	10-Dec	11-Dec	12-Dec	13-Dec	DoD	vs.7D
US Wind	38188	42390	65750	70856	67833	76589	56970	-19618	-3298
US Solar	5869	6881	7643	6956	8739	9182	7089	-2094	-456
US Petroleum	4893	4572	3225	2990	2413	2208	3294	1086	-89
US Other	8427	8575	8500	8450	8108	8077	8675	598	319
US Coal	91926	90261	86635	76804	71574	71272	85166	13894	3754
US Nuke	92882	93999	93844	92063	92253	93982	95984	2003	2814
US Hydro	30508	31018	31880	31008	28254	28378	31994	3616	1820
US Gas	184713	181068	168159	155367	134624	134090	164277	30187	4606

See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

Storage Week Average Generation Data

Nuclear Generation Weekly Average - GWh (NRC)

	5-Nov	12-Nov	19-Nov	26-Nov	3-Dec	10-Dec	WoW	WoW Bcf/d Impact
NRC Nuclear Daily Output	72.2	79.8	83.9	86.1	87.8	88.0	0.2	0.0
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	0.0	
NRC Nuclear Outage	32.7	25.1	21.0	18.8	17.1	16.9	-0.2	
NRC % Nuclear Cap Utilization	0.1	0.1	0.1	0.1	0.1	0.1	0.0	

Wind Generation Weekly Average - MWh (EIA)

	5-Nov	12-Nov	19-Nov	26-Nov	3-Dec	10-Dec	WoW	WoW Bcf/d Impact
CALI Wind	1669	1805	862	1496	363	1263	901	-0.2
TEXAS Wind	8472	12032	13655	14691	8733	12216	3483	-0.6
US Wind	35306	51002	58367	56260	47212	51469	4257	-0.8
					-9047.9			
					-16%			I

Generation Weekly Average - MWh (EIA)

								VVOVV
	5-Nov	12-Nov	19-Nov	26-Nov	3-Dec	10-Dec	WoW	Bcf/d
								Impact
US Wind	35306	51002	58367	56260	47212	51469	4257	-0.8
US Solar	9994	10015	10068	9086	9918	7928	-1989	0.4
US Petroleum	3517	2532	2555	3342	3166	3441	274	0.0
US Other	9302	8205	7849	8442	8483	8350	-132	0.0
US Coal	80024	77955	77863	82301	82273	82606	332	-0.1
US Nuke	76091	84337	88331	91252	92816	92927	111	0.0
US Hydro	25818	25422	26206	27837	26777	29614	2838	-0.5
US Gas	160442	145215	145263	148208	155282	159060	3778	-0.7
								-

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)

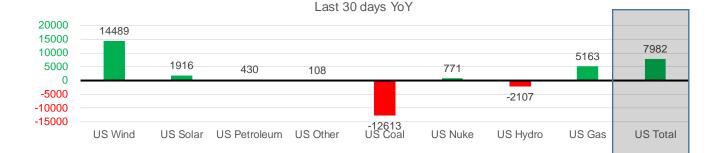
	2Yr Ago	LY				MTD			
	Same 30 days	Same 30 days	Sep-21	Oct-21	Nov-21	Dec-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
NRC Nuclear Daily Output	90.1	86.8	87.1	75.5	82.7	88.4	87.5	5.7	0.6
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	104.9	0.0	0.0
NRC Nuclear Outage	14.8	18.0	17.8	29.4	22.2	16.4	17.4	-5.7	-0.6
NRC % Nuclear Cap Utilization	91.6	88.3	88.6	76.8	84.1	89.9	89.0	5.8	0.6

Wind Generation Monthly Average - MWh (EIA)

	2Yr Ago	LY				MTD			
	Same 30 days	Same 30 days	Sep-21	Oct-21	Nov-21	Dec-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
CALI Wind	1057	1191	1964	1765	1252	1349	1210	97	19
TEXAS Wind	9110	10205	9213	11565	11869	12769	13162	901	2957
US Wind	37978	41219	39362	43142	49974	55965	55708	5991	14489

Generation Monthly Average - MWh (EIA)

	2Yr Ago	LY				MTD			
	Same 30 days	Same 30 days	Sep-21	Oct-21	Nov-21	Dec-21	Last 30 days	MoM (MTD vs LY)	Last 30 days YoY
US Wind	37978	41219	39362	43142	49974	55965	55708	-257.2	A 14489
US Solar	4494	6841	13345	11059	9690	8082	8757	674.2	🔺 1916
US Petroleum	2393	2722	2517	3239	3045	3123	3152	2 8	430
US Other	7938	8268	9021	11109	8435	8423	8377	- 46	108
US Coal	96775	93828	109915	84433	80848	80965	81215	250	T -12613
US Nuke	97219	91669	90072	77089	87404	93346	92441	-905	A 771
US Hydro	28209	30625	25622	24078	26590	29746	28518	▼ -1228	v -2107
US Gas	150924	147707	173566	159045	151462	156713	152870	💌 -1485	4 5163
US Total	426025	423291	463578	413350	417923	436403	431272	▼ -2712	~ 7982



See National Wind and Nuclear daily charts

Source: Bloomberg, analytix.ai

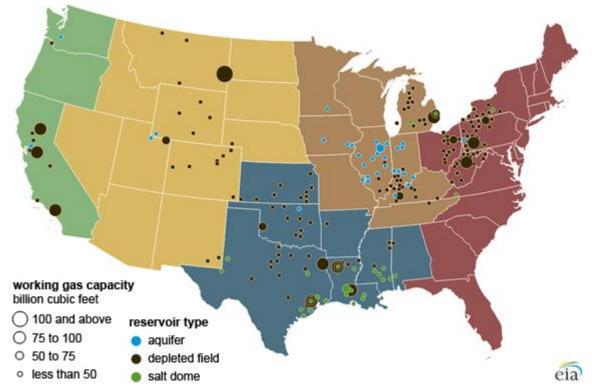


Regional S/D Models Storage Projection

Week Ending	10-Dec			
			Daily	
			Average	Weekly
		Daily	Storage	Adjusted
	Daily Raw	Adjustment	Activity	Storage
	Storage	Factor	(Adjusted) *	Activity
L48	-14.0	1.0	-13.0	-91
L40	-14.0	1.0	-13.0	-91
East	-6.5	1.8	-4.7	-33
Midwest	-5.4	0.2	-5.3	-37
Mountain	2.2	-3.5	-1.2	-9
				-
South Central	-4.4	2.7	-1.6	-11
Pacific	0.0	-0.3	-0.3	-2

*Adjustment Factor is calcuated based on historical regional deltas

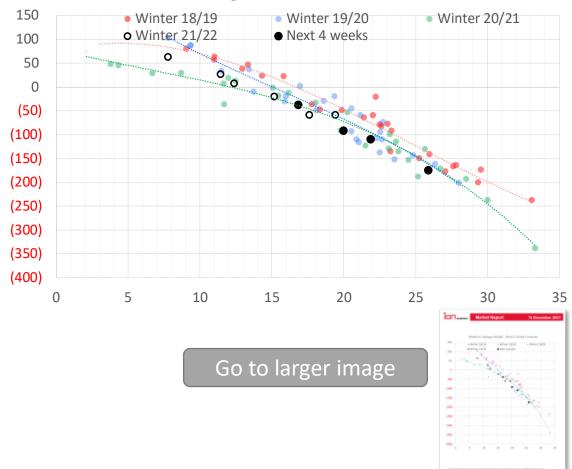
U.S. underground natural gas storage facilities by type (July 2015)

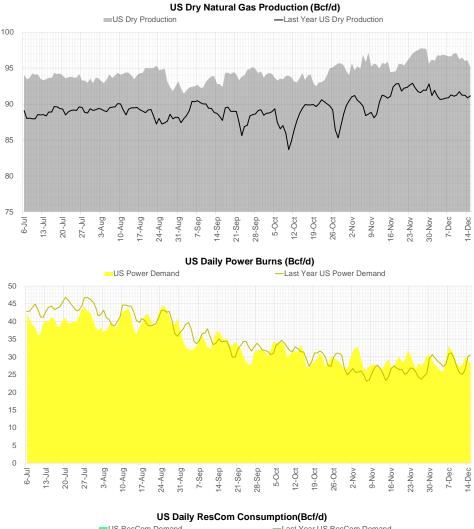


Weather Model Storage Projection

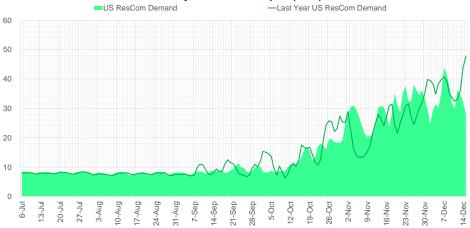
Next report and beyond		
Week Ending	GWDDs	Week Storage Projection
10-Dec	20	-91
17-Dec	17	-37
24-Dec	22	-109
31-Dec	26	-174

Weather Storage Model - Next 4 Week Forecast



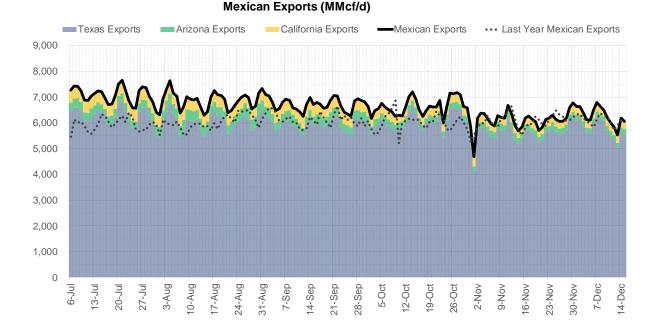


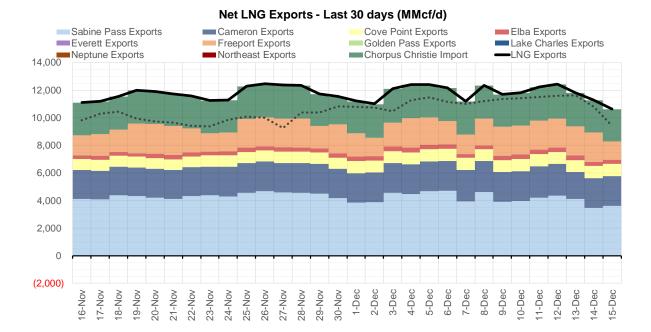
Supply – Demand Trends



Source: Bloomberg







Source: Bloomberg

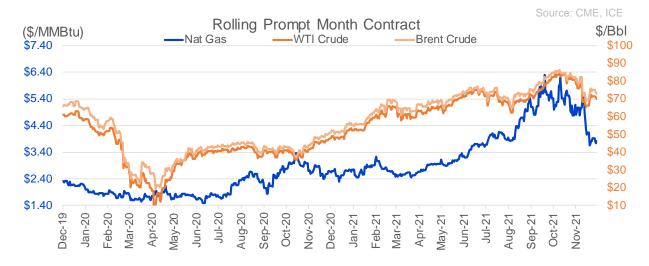


Nat Gas Options Volume and Open Interest CME, ICE and Nasdaq Combined

CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
1	2022	С	4.00	8417	3	2022	С	10.00	36093
1	2022	C	5.00	3898	1	2022	С	4.00	28247
1	2022	C	4.10	3530	1	2022	Р	3.00	27844
1	2022	C	4.20	3483	1	2022	Р	4.00	27247
1	2022	P	3.25	2845	1	2022	С	5.00	25840
1	2022	C	3.75	2469	3	2022	C	8.00	25838
2	2022	c	7.00	2013	3	2022	C	5.00	24428
3	2022	c	10.00	1502	1	2022	P	2.75	23364
4	2022	c	3.50	1400	1	2022	C	6.00	23149
4	2022	c	3.50 4.50	1381	2	2022	C	5.00	22830
1	2022	c	4.50	1288	3	2022	c	6.00	20782
		c			1	2022	P	3.50	20556
2	2022		4.50	1259	12	2022	C	5.00	20297
6	2022	P P	3.50	1200	4	2022	C	5.00	20289
1	2022		3.50	1187	3	2022	P	2.50	20125
8	2022	С	4.00	1100	4	2022	c	3.00	19710
4	2022	С	4.00	1051	1	2022	c	4.50	18560
5	2022	Р	3.50	1050	1	2022	c	10.00	18357
8	2022	С	6.00	1000	3	2022	c	4.00	18298
2	2022	С	5.50	931	1	2022	č	7.00	17696
2	2022	С	5.00	913	2	2022	c	6.00	17563
1	2022	Р	3.00	892	2	2022	P	3.50	17528
2	2022	С	4.25	813	3	2022	P	3.00	17527
2	2022	Р	2.50	801	3	2022	P	4.00	17428
3	2022	С	4.60	801	2	2022	C	4.00	17234
1	2022	С	4.75	782	3	2022	P	3.50	17047
1	2022	Р	3.70	740	1	2022	P	3.25	17019
2	2022	Р	2.75	636	2	2022	P	4.00	15791
2	2022	С	6.00	580	5	2022	C	5.00	15498
1	2022	С	5.25	550	4	2022	P	2.50	15492
2	2022	Р	3.00	530	3	2022	C	7.00	15462
1	2022	Р	3.60	512	6	2022	c	5.00	15392
2	2022	С	8.50	503	2	2022	P	3.00	13929
3	2022	С	4.00	503	2	2022	C	10.00	13928
2	2022	С	5.25	473	5	2022	c	3.00	13733
4	2022	С	5.00	467	2	2022	c	5.50	13562
2	2022	С	3.75	464	3	2022	P	5.00	13506
3	2022	Р	3.00	431	1	2022	C	8.00	13480
1	2022	P	3.10	429	6	2022	c	3.00	13438
1	2022	C	3.90	405	10	2022	P	2.00	13297
3	2022	P	3.50	392	10	2022	F C	2.00 4.50	13297
1	2022	C	4.35	389	7	2022	c	4.50 3.00	13230
2	2022	P	3.50	354	8	2022	c	3.00	13230
7	2022	C	4.50	350	8	2022	c	3.00	13226
3	2022	c	4.30 6.00	342	9 3	2022 2022	c	3.00	13225
2	2022	P	3.75	334	3	2022	c	3.00 5.00	13178
1	2022	C	3.70	330	8 10		c		
2	2022	c	4.00	327	10	2022 2022	C	3.00 5.25	13114
4	2022	P	4.00 2.15	325	5	2022	P	5.25 3.00	13113 13028
4 5	2023	P	2.15	325	5	2022 2022			
5	2023	Г	2.10	320	I	2022	Source	e: CME, ICE	12985.75

Nat Gas Futures Open Interest CME, and ICE Combined

Civie, and ICE Combined									
CME Henry Hub Futures (10,000 MMBtu) ICE Henry Hub Futures Contract Equivalent (10,000 MM									
	Current	Prior	Daily Change		Current	Prior	Daily Change		
JAN 22	93298	105205	-11907	JAN 22	93486	96870	-3384		
FEB 22	101302	98856	2446	FEB 22	75718	74689	1029		
MAR 22	240022	233018	7004	MAR 22	89731	89479	252		
APR 22	84805	88827	-4022	APR 22	71959	72248	-289		
MAY 22	114057	115090	-1033	MAY 22	70909	71202	-293		
JUN 22	50525	49189	1336	JUN 22	53854	54074	-220		
JUL 22	40312	40021	291	JUL 22	58268	58092	176		
AUG 22	32363	32348	15	AUG 22	55040	55388	-348		
SEP 22	46192	47170	-978	SEP 22	56259	56313	-54		
OCT 22	75475	75359	116	OCT 22	63904	63955	-52		
NOV 22	35016	34686	330	NOV 22	50330	50145	185		
DEC 22	32751	33011	-260	DEC 22	58328	58483	-155		
JAN 23	40764	41410	-646	JAN 23	46137	45989	149		
FEB 23	11815	11660	155	FEB 23	35693	35759	-66		
MAR 23	26936	26312	624	MAR 23	40469	40437	32		
APR 23	19690	19144	546	APR 23	40907	41124	-218		
MAY 23	13276	13182	94	MAY 23	35725	35781	-56		
JUN 23	9939	9855	84	JUN 23	32148	32248	-100		
JUL 23	7469	7528	-59	JUL 23	31598	31659	-61		
AUG 23	4673	4715	-42	AUG 23	32581	32613	-32		
SEP 23	7304	7445	-141	SEP 23	31109	31205	-97		
OCT 23	11426	11468	-42	OCT 23	35530	35682	-153		
NOV 23	5991	5962	29	NOV 23	34917	35005	-88		
DEC 23	8850	8862	-12	DEC 23	32334	32399	-66		
JAN 24	6949	6951	-2	JAN 24	23455	22735	721		
FEB 24	1469	1469	0	FEB 24	16247	16085	162		
MAR 24	9167	9067	100	MAR 24	22167	21990	178		
APR 24	4447	4422	25	APR 24	15553	15476	77		
MAY 24	2057	2057	0	MAY 24	15982	15933	49		
JUN 24	928	928	0	JUN 24	16319	16301	18		



Last Year

vs. Last Year

\$2.682

\$1.112

\$2.678

\$1.083

Market Report

\$2.662

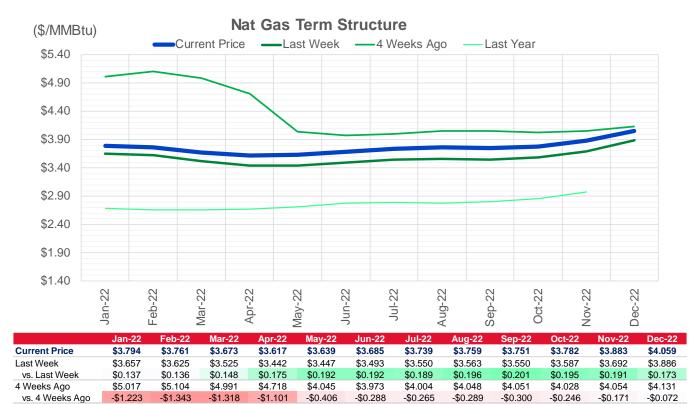
\$0.955

\$2.673

\$0.966

\$2.660

\$1.013



		Cash	Prompt	Cash to
	Units	Settled	Settle	Prompt
AGT Citygate	\$/MMBtu	3.76	16.78	13.02
TETCO M3	\$/MMBtu	2.95	6.19	3.24
FGT Zone 3	\$/MMBtu	3.48	3.82	0.35
Zone 6 NY	\$/MMBtu	3.48	7.46	3.98
Chicago Citygate	\$/MMBtu	3.40	4.02	0.62
Michcon	\$/MMBtu	3.47	3.49	0.02
Columbia TCO Pool	\$/MMBtu	2.90	3.30	0.40
Ventura	\$/MMBtu	3.35	4.60	1.25
Rockies/Opal	\$/MMBtu	5.21	3.91	-1.30
El Paso Permian Basin	\$/MMBtu	3.29	3.80	0.51
Socal Citygate	\$/MMBtu	8.47	5.27	-3.20
Malin	\$/MMBtu	5.20	4.54	-0.66
Houston Ship Channel	\$/MMBtu	3.40	4.00	0.60
Henry Hub Cash	\$/MMBtu	3.64	3.61	-0.03
AECO Cash	C\$/GJ	3.17	2.55	-0.62
Station2 Cash	C\$/GJ	3.06	5.09	2.03
Dawn Cash	C\$/GJ	3.54	3.64	0.10

\$2.716

\$0.969

\$2.770

\$0.969

\$2.791

\$0.968

\$2.782

\$0.969

\$2.802

\$0.980

\$2.858

\$1.025

\$2.980

\$1.079

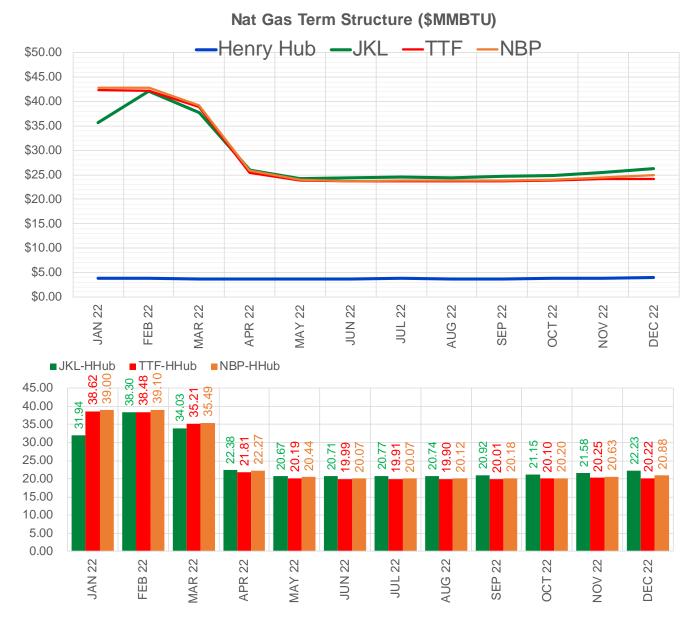
Source: CME, Bloomberg



					V	s. 4 Weeks		
	Units	Current Price	vs.	Last Week		Ago	vs	. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224		0.000		0.000		2.192
NatGas Oct21/Nov21	\$/MMBtu	0.361		0.000		0.000		0.306
NatGas Oct21/Jan22	\$/MMBtu	-2.094		0.039	▼	-1.523	▼	-2.364
NatGas Apr22/Oct22	\$/MMBtu	0.152		0.004		0.155		0.127
WTI Crude	\$/Bbl	70.73		-1.320	▼	-10.030		23.110
Brent Crude	\$/Bbl	73.70		-1.740	▼	-8.730		22.940
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18		0.000		0.000		0.000
Heating Oil	cents/Gallon	221.84		-0.620	▼	-21.250		75.400
Propane, Mt. Bel	cents/Gallon	1.03		0.025	▼	-0.266		0.435
Ethane, Mt. Bel	cents/Gallon	0.33		-0.010	▼	-0.083		0.130
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						

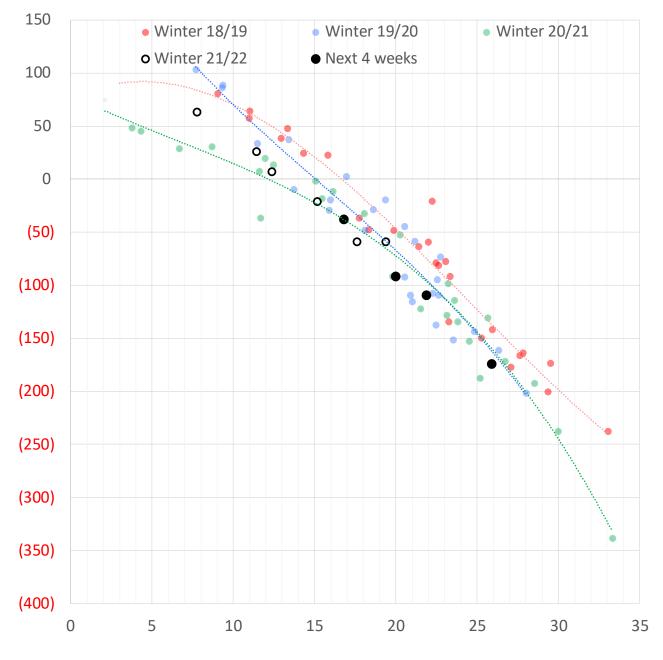


15 December 2021

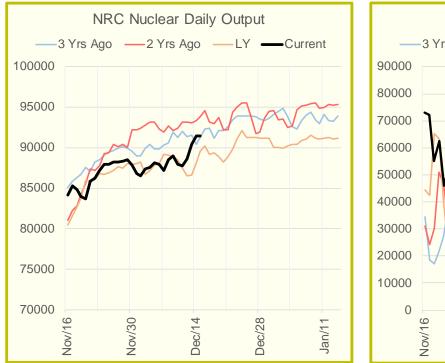


	JAN 22	FEB 22	MAR 22	APR 22	MAY 22	JUN 22	JUL 22	AUG 22	SEP 22	OCT 22	NOV 22	DEC 22
Henry Hub	\$3.829	\$3.788	\$3.689	\$3.609	\$3.621	\$3.655	\$3.730	\$3.716	\$3.725	\$3.760	\$3.833	\$3.999
JKL	\$35.765	\$42.085	\$37.720	\$25.985	\$24.295	\$24.360	\$24.500	\$24.460	\$24.645	\$24.905	\$25.410	\$26.225
JKL-HHub	\$31.936	\$38.297	\$34.031	\$22.376	\$20.674	\$20.705	\$20.770	\$20.744	\$20.920	\$21.145	\$21.577	\$22.226
TTF	\$42.450	\$42.264	\$38.899	\$25.418	\$23.815	\$23.646	\$23.635	\$23.618	\$23.734	\$23.857	\$24.083	\$24.215
TTF-HHub	\$38.621	\$38.476	\$35.210	\$21.809	\$20.194	\$19.991	\$19.905	\$19.902	\$20.009	\$20.097	\$20.250	\$20.216
NBP	\$42.824	\$42.889	\$39.177	\$25.874	\$24.059	\$23.723	\$23.797	\$23.831	\$23.903	\$23.957	\$24.459	\$24.876
NBP-HHub	\$38.995	\$39.101	\$35.488	\$22.265	\$20.438	\$20.068	\$20.067	\$20.115	\$20.178	\$20.197	\$20.626	\$20.877

Weather Storage Model - Next 4 Week Forecast



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ENERGY

