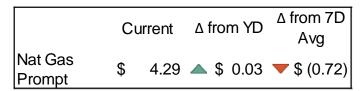


2 December 2021



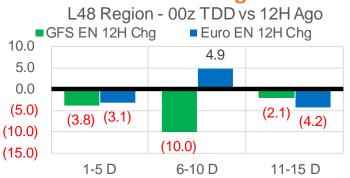
	С	urrent	Δ from YD			Δf	Δ from 7D Avg		
WTI Prompt	\$	65.63		\$	0.06	•	\$	(3.6)	

	_	urrent	Λf	ro	m VD	Δ from 7D			
Current	urreni	ΔΙ	10	טו ווו	Avg				
Brent Prompt	\$	68.96		\$	0.09	- \$	(4.4)		

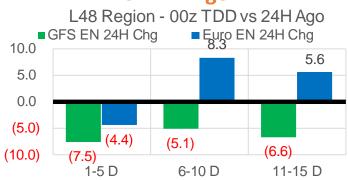
Page Menu

Short-term Weather Model Outlooks Lower 48 Component Models Regional S/D Models Storage Projection Weather Model Storage Projection Supply - Demand Trends Nat Gas Options Volume and Open Interest Nat Gas Futures Open Interest **Price Summary**

Vs. 12H Ago



Vs. 24H Ago



	Current	Δ from YD	Δ from 7D Avg
US Dry Production	95.4	- 0.70	▼ -1.66

	Current	Δ from YD	Δ from 7D Avg		Current	Δ from YD	Δ from 7D Avg
JS Dry Production	95.4	- 0.70	▼ -1.66	US Power Burns	28.1	- 0.58	▼ -0.42

	Current	Δ from YD	Δ from 7D Avg		
US ResComm	24.3	▼ -5.23	▼ -9.96		

	Current	Δ from YD	Δ from 7D Avg
Canadian Imports	4.6	▼ -0.73	▼ -1.04

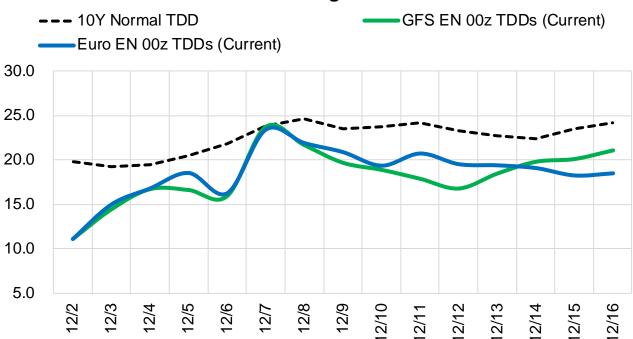
	Current	Δ from YD	Δ from 7D Avg		
Net LNG Exports	10.7	- 0.54	▼ -1.31		

Current		Δ from YD	Δ from 7D Avg		
Mexican Exports	6.5	▼ -0.10	a 0.22		

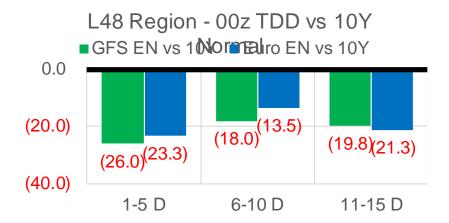


Short-term Weather Model Outlooks (00z)

L48 Region



Vs. 10Y Normal



Source: WSI, Bloomberg



Lower 48 Component Models

Daily Balances

	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	1-Dec	2-Dec	DoD	vs. 7D
Lower 48 Dry Production	97.5	97.7	97.7	97.5	95.6	96.1	95.4	▼ -0.7	▼-1.6
Canadian Imports	5.7	5.7	5.8	5.9	5.8	5.3	4.6	▼ -0.7	▼-1.1
L48 Power	28.1	27.5	28.3	30.0	30.3	28.6	28.1	▼-0.6	▼-0.7
L48 Residential & Commercial	38.0	36.1	34.7	35.7	32.9	29.5	24.3	▼-5.2	▼- 10.2
L48 Industrial	23.0	22.9	22.9	23.0	22.8	22.4	22.2	▼-0.3	- 0.7
L48 Lease and Plant Fuel	5.3	5.3	5.3	5.3	5.2	5.2	5.2	▼-0.1	▼ -0.1
L48 Pipeline Distribution	3.5	3.4	3.4	3.5	3.4	2.9	2.6	▼-0.3	- 0.7
L48 Regional Gas Consumption	97.9	95.2	94.6	97.5	94.5	88.7	82.2	▼-6.4	▼-12.5
Net LNG Delivered	12.47	12.37	12.36	11.73	11.54	11.22	10.68	▼ -0.5	▼-1.3
Total Mexican Exports	6.0	6.2	5.9	6.4	6.9	6.6	6.5	▼ -0.1	▲ 0.2
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	-13.2	-10.3	-9.4	-12.3	-11.6	-5.1	0.5		

EIA Storage Week Balances

	22-Oct	29-Oct	5-Nov	12-Nov	19-Nov	26-Nov	WoW	vs. 4W
Lower 48 Dry Production	93.4	94.5	95.0	95.8	95.1	96.2	1.1	1.1
Canadian Imports	5.6	5.6	5.5	5.1	4.9	5.5	0.7	0.3
L48 Power	28.9	29.0	29.6	27.5	27.8	29.2	1.5	a 0.8
L48 Residential & Commercial	14.2	18.0	24.3	23.6	28.0	33.3	5.3	9.8
L48 Industrial	19.2	19.6	21.2	21.3	23.0	22.2	▼ -0.9	0.9
L48 Lease and Plant Fuel	5.1	5.1	5.2	5.2	5.2	5.2	0.1	0.1
L48 Pipeline Distribution	2.3	2.5	2.9	2.7	3.0	3.3	0.4	0.6
L48 Regional Gas Consumption	69.7	74.2	83.1	80.3	87.0	93.2	6.3	▲12.1
Net LNG Exports	10.8	10.8	10.9	11.2	11.1	11.7	0.6	0.7
Total Mexican Exports	6.6	6.9	6.1	6.2	6.1	6.0	▼ 0.0	▼-0.3
Implied Daily Storage Activity	12.0	8.2	0.4	3.2	-4.2	-9.3	-5.1	
EIA Reported Daily Storage Activity	12.4	9.0	1.0	3.7	-3.0			
Daily Model Error	-0.4	-0.8	-0.6	-0.5	-1.2			

Monthly Balances									
	2Yr Ago	LY					MTD		
	Dec-19	Dec-20	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	MoM	vs. LY
Lower 48 Dry Production	95.9	91.6	94.0	93.4	93.9	95.8	96.1	0.2	4.5
Canadian Imports	4.5	5.8	5.1	5.1	5.4	5.3	5.3	▲ 0.0	▼ -0.5
L48 Power	29.3	28.0	40.1	33.0	30.2	28.7	28.6	▼-0.1	0.7
L48 Residential & Commercial	39.1	40.3	7.9	8.7	13.2	29.5	29.5	▼ 0.0	▼- 10.8
L48 Industrial	24.6	23.4	21.5	20.3	20.3	22.3	22.4	0.2	▼ -1.0
L48 Lease and Plant Fuel	5.2	5.0	5.1	5.1	5.1	5.2	5.2	▼ 0.0	0.2
L48 Pipeline Distribution	3.4	3.4	2.6	2.3	2.3	3.1	2.9	▼ -0.2	- 0.5
L48 Regional Gas Consumption	101.6	100.0	77.2	69.4	71.2	88.8	88.7	▼ -0.2	▼-11.4
Net LNG Exports	7.8	11.0	10.5	10.3	10.6	11.4	11.2	▼-0.2	▲ 0.2
Total Mexican Exports	4.9	5.8	6.9	6.7	6.6	6.1	6.6	0.5	▲ 0.8
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	-13.8	-19.5	4.6	12.1	10.9	-5.2	-5.1		



Daily Average Generation Data

Nuclear Generation Daily Average - GWh (NRC)

	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	DoD	vs. 7D
NRC Nuclear Daily Output	87.9	87.9	88.3	88.3	88.3	88.5	87.8	-0.6	-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	16.9	16.9	16.6	16.6	16.6	16.4	17.0	0.6	0.4
NRC % Nuclear Cap Utilization	89.4	89.4	89.7	89.7	89.7	90.0	89.3	-0.6	-0.4

Wind Generation Daily Average - MWh (EIA)

	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	DoD	vs. 7D
CALI Wind	2018	941	510	311	352	269	464	195	-270
TEXAS Wind	18308	15491	9894	7715	7082	10349	12257	1908	784
US Wind	75184	57376	51380	49431	41807	49371	45438	-3933	-8654

Generation Daily Average - MWh (EIA)

	24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	DoD	vs. 7D
US Wind	75184	57376	51380	49431	41807	49371	45438	-3933	-8654
US Solar	8932	9064	8990	8838	9041	10543	10215	-328	980
US Petroleum	2767	3240	3286	2877	3539	3235	3964	729	807
US Other	8411	8116	7857	8021	8217	8477	8942	465	758
US Coal	81607	76895	78898	79778	82163	86281	86973	692	6037
US Nuke	93020	93343	93496	93494	93399	93235	92512	-722	-819
US Hydro	29468	26783	25252	26457	24082	27776	28457	682	1821
US Gas	145416	126717	138247	145421	143908	164413	167722	3309	23702

See National Wind and Nuclear daily charts



Storage Week Average Generation Data

Nuc	lear (Generati	on V	Neek	ly 🏻	Averaç	je -	GW h	(NRC))
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	22-Oct	29-Oct	5-Nov	12-Nov	19- N ov	26-Nov	WoW	WoW Bcf/d Impact
NRC Nuclear Daily Output	73.6	71.6	72.2	79.8	83.9	86.1	2.2	-0.4
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	0.0	
NRC Nuclear Outage	31.2	33.3	32.7	25.1	21.0	18.8	-2.2	
NRC % Nuclear Cap Utilization	0.1	0.1	0.1	0.1	0.1	0.1	0.0	

Wind Generation Weekly Average - MWh (EIA)

	22-Oct	29-Oct	5-Nov	12-Nov	19- N ov	26-Nov	WoW	WoW Bcf/d Impact
CALI Wind	1270	2314	1669	1805	862	1496	634	-0.1
TEXAS Wind	10729	15462	8472	12032	13655	14691	1035	-0.2
US Wind	43721	49870	32116	51002	58367	56259	-2109	0.4
					7365.0			
					14%			

Generation Weekly Average - MWh (EIA)

	22-Oct	29-Oct	5-Nov	12-Nov	19-Nov	26-Nov	WoW	WoW Bcf/d Impact
US Wind	43721	49870	32116	51002	58367	56259	-2109	0.4
US Solar	12209	10138	9979	10015	10068	8944	-1124	0.2
US Petroleum	3092	2815	3517	2532	2555	3342	788	-0.1
US Other	12109	10196	9288	8205	7849	8364	514	-0.1
US Coal	74017	73355	77392	77955	77808	82301	4493	-0.8
US Nuke	73748	73713	75510	84337	88331	91252	2921	-0.5
US Hydro	23105	23540	25530	25395	26227	27828	1601	-0.3
US Gas	150057	152806	159071	145213	145205	147920	2715	-0.5

See National Wind and Nuclear daily charts



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	85.7	82.7	87.1	75.5	82.7	86.8	83.7	4.1	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	19.2	22.2	17.8	29.4	22.2	18.1	21.2	-4.1	-1.0
NRC % Nuclear Cap Utilization	87.2	84.1	88.6	76.8	84.1	88.3	85.1	4.2	1.0

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	686	1250	1964	1765	1252	464	1156	-788	-94
TEXAS Wind	8590	11016	9213	11565	11869	12257	12210	388	1194
US Wind	36459	46881	39362	40991	49959	45438	51079	-4521	4198

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	36459	46881	39362	40991	49959	45438	51079	▲ 5641.5	4198
US Solar	5177	7148	13345	11044	9583	10215	9652	▼ -563.4	2503
US Petroleum	2443	2395	2517	3238	3046	3964	3061	▼ -903	666
US Other	8069	8758	9021	11099	8396	8942	8373	▼ -568	▼ -385
US Coal	101616	85220	109913	82735	80766	86973	81037	▼ -5937	▼ -4183
US Nuke	93544	86920	90072	76700	87396	92512	88527	▼ -3985	1607
US Hydro	27666	30246	25622	23895	26581	28457	26638	▼ -1820	▼ -3608
US Gas	148899	137342	173565	158238	151105	167722	150993	▼ -8135	13651
US Total	423910	405311	463578	410698	417327	443728	419817	▼-21911	14506



See National Wind and Nuclear daily charts



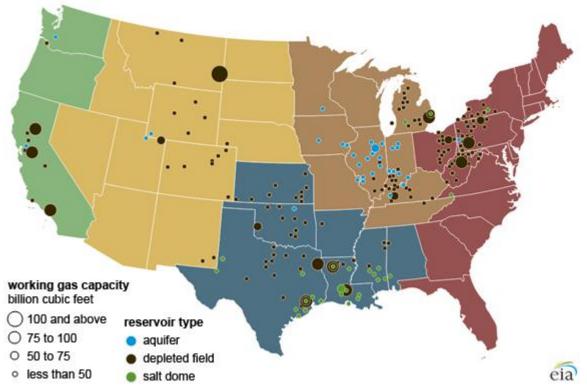
Regional S/D Models Storage Projection

Week Ending 26-Nov

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	-9.6	1.3	-8.3	-58
East	-5.2	1.3	-3.9	-27
Midwest Mountain	-3.2 2.9	0.7 -3.6	-2.5 -0.7	-18 -5
South Central	-4.4	3.0	-1.4	-10
Pacific	0.3	-0.1	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
26-Nov	19	-58
03-Dec	18	-49
10-Dec	19	-65
17-Dec	19	-74

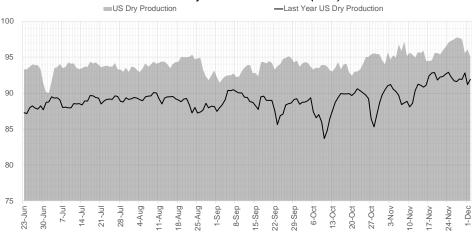
Weather Storage Model - Next 4 Week Forecast



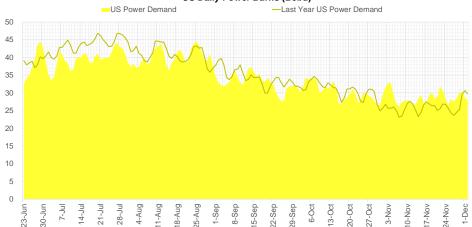


Supply - Demand Trends

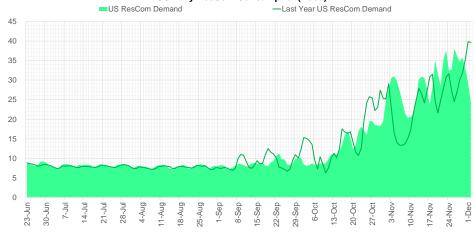
US Dry Natural Gas Production (Bcf/d)



US Daily Power Burns (Bcf/d)



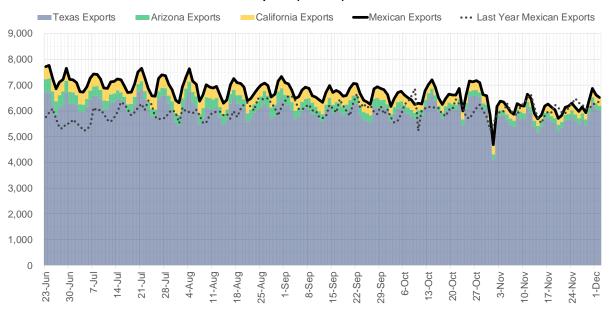
US Daily ResCom Consumption(Bcf/d)



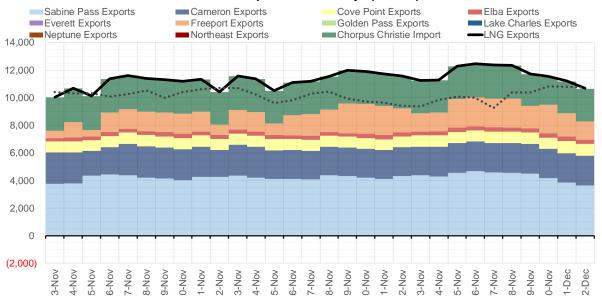
Source: Bloomberg



Mexican Exports (MMcf/d)



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



Source: Bloomberg



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

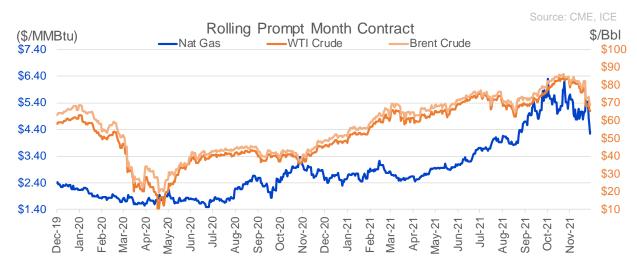
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL		CONTRACT MONTH		DIT/CALL	BIT/CALL STRIKE
1	2022	С	5.00	7158		3	3 2022	3 2022 C	3 2022 C 10.00
1	2022	Р	4.00	5136		1	1 2022	1 2022 P	1 2022 P 4.00
3	2022	С	6.00	4995		3	3 2022	3 2022 C	3 2022 C 8.00
1	2022	C	6.00	4674		1	1 2022	1 2022 P	1 2022 P 2.75
1	2022	Ċ	5.50	3698		3	3 2022	3 2022 C	3 2022 C 5.00
2	2022	Ċ	5.00	3608		1	1 2022	1 2022 P	1 2022 P 3.00
2	2022	Č	5.50	3140		1	1 2022	1 2022 C	1 2022 C 6.00
12	2022	Č	5.00	3000		1	1 2022		
1	2022	P	4.25	2904		4			
3		C				1			
	2022		7.00	2675		3			
1	2022	С	4.50	2666		1			
1	2022	С	4.75	2649					
5	2022	С	5.00	2550		3			
12	2022	С	6.00	2500		2			
3	2022	С	5.50	2237		12			
2	2022	С	8.00	2116		4			
1	2022	P	3.00	1944		1	1 2022	1 2022 C	1 2022 C 10.00
1	2022	C	6.50	1932		3	3 2022	3 2022 P	3 2022 P 4.00
2	2022	Č	4.50	1890		3	3 2022	3 2022 P	3 2022 P 3.50
		P				2	2 2022	2 2022 P	2 2022 P 3.50
1	2022		3.75	1790		3			
1	2022	Р	4.50	1640		3			
11	2022	С	6.00	1500		4			
11	2022	С	8.00	1500		2			
11	2022	Р	4.00	1500		2			
1	2022	С	7.00	1497		1			
1	2022	С	10.00	1482					
3	2022	Р	3.50	1467		1			
1	2022	Р	4.15	1402		5			
3	2022	Ċ	4.50	1375		3			
2		C				6	6 2022		
	2022		7.50	1367		3	3 2022	3 2022 P	3 2022 P 5.00
3	2022	P	3.00	1346		6	6 2022	6 2022 C	6 2022 C 3.00
2	2022	Р	3.75	1328		12	12 2022	12 2022 C	12 2022 C 4.50
2	2022	С	6.50	1312		12			
2	2022	Р	3.50	1258	2		2022		
3	2022	С	6.50	1204	7		2022		
2	2022	С	5.25	1162	8		2022		
1	2022	Р	3.50	1128	9		2022		
3	2022	Ċ	5.00	1104	3		2022		
10	2022	Č	6.00	1100	2		2022		
3	2022	Č	10.00	1052					
3	2022	C			10		022		
			4.75	1030	1)22		
4	2022	Р	2.75	1000	5		022		
4	2022	Р	2.90	1000	5		2022	2022 P	2022 P 3.00
3	2023	С	4.00	1000	4		2022	2022 P	2022 P 3.00
4	2022	С	5.00	969	1		2022		
1	2022	C	4.80	906	1		2022		
3	2022	P	3.25	898	3		2022		
2	2022	r P	3.00	894	1		2022		
_		P	3.00 4.00	894 809	1 5		2022		
2	2022								



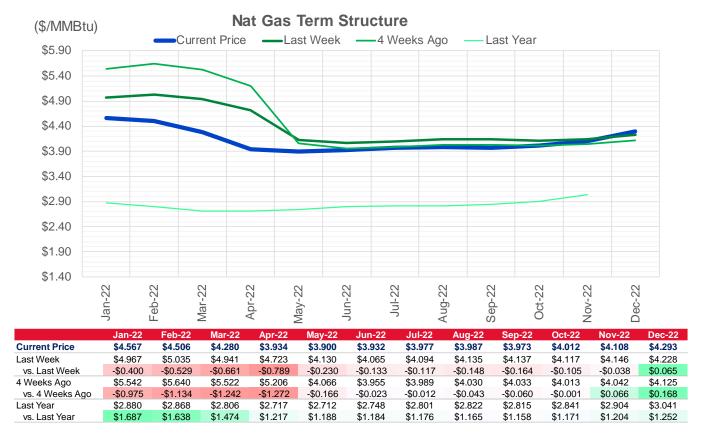
Nat Gas Futures Open Interest

CME, 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	249227	252185	-2958	JAN 22	102932	103852	-920	
FEB 22	84200	83054	1146	FEB 22	71134	71374	-240	
MAR 22	168179	168020	159	MAR 22	83361	79992	3369	
APR 22	119606	120291	-685	APR 22	76401	76545	-143	
MAY 22	132429	133950	-1521	MAY 22	71941	72325	-384	
JUN 22	47920	47454	466	JUN 22	53796	54683	-887	
JUL 22	42819	43260	-441	JUL 22	56172	56543	-371	
AUG 22	34087	33904	183	AUG 22	54908	55285	-377	
SEP 22	39189	38806	383	SEP 22	56020	56521	-501	
OCT 22	84623	85725	-1102	OCT 22	62768	62813	-45	
NOV 22	34378	34050	328	NOV 22	48187	48986	-799	
DEC 22	27526	27101	425	DEC 22	51167	51818	-652	
JAN 23	43649	42939	710	JAN 23	42620	41640	981	
FEB 23	11910	12071	-161	FEB 23	33960	33724	236	
MAR 23	26890	26632	258	MAR 23	38412	38144	268	
APR 23	18556	18785	-229	APR 23	39325	39304	21	
MAY 23	12252	12102	150	MAY 23	35123	34994	128	
JUN 23	9530	9534	-4	JUN 23	31664	31615	49	
JUL 23	7110	7196	-86	JUL 23	31395	31298	97	
AUG 23	4861	4867	-6	AUG 23	32467	32370	97	
SEP 23	6764	6796	-32	SEP 23	30704	30648	56	
OCT 23	11038	10885	153	OCT 23	34817	34516	302	
NOV 23	5929	5743	186	NOV 23	33785	33726	60	
DEC 23	8368	8423	-55	DEC 23	31234	31172	61	
JAN 24	4894	4871	23	JAN 24	21387	21362	25	
FEB 24	1462	1460	2	FEB 24	15550	15493	57	
MAR 24	8906	8897	9	MAR 24	20738	20629	109	
APR 24	4668	4871	-203	APR 24	14748	14526	222	
MAY 24	2050	2050	0	MAY 24	15630	15287	344	
JUN 24	927	927	0	JUN 24	16053	16015	38	







		Cash	Prompt	Cash to
	Units	Settled	Settle	Prompt
AGT Citygate	\$/MMBtu	4.73	11.88	7.15
TETCO M3	\$/MMBtu	3.85	6.77	2.92
FGT Zone 3	\$/MMBtu	3.86	5.18	1.32
Zone 6 NY	\$/MMBtu	3.86	7.30	3.44
Chicago Citygate	\$/MMBtu	3.94	5.20	1.26
Michcon	\$/MMBtu	4.00	4.86	0.86
Columbia TCO Pool	\$/MMBtu	3.73	4.56	0.83
Ventura	\$/MMBtu	3.86	5.41	1.55
Rockies/Opal	\$/MMBtu	3.91	5.07	1.16
El Paso Permian Basin	\$/MMBtu	3.73	4.89	1.16
Socal Citygate	\$/MMBtu	4.55	6.33	1.78
Malin	\$/MMBtu	3.91	5.95	2.04
Houston Ship Channel	\$/MMBtu	4.00	5.15	1.15
Henry Hub Cash	\$/MMBtu	4.27	4.90	0.63
AECO Cash	C\$/GJ	2.90	4.08	1.18
Station2 Cash	C\$/GJ	2.88	7.06	4.18
Dawn Cash	C\$/GJ	4.24	4.87	0.63

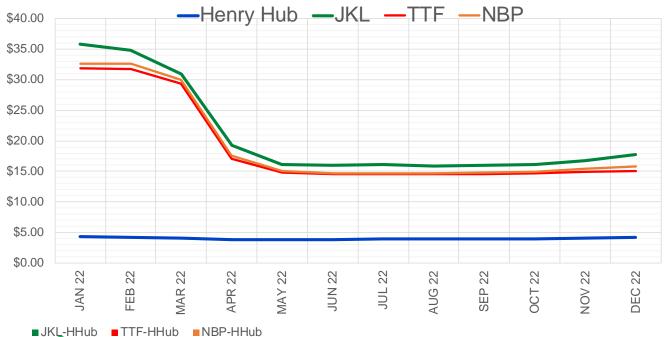
Source: CME, Bloomberg

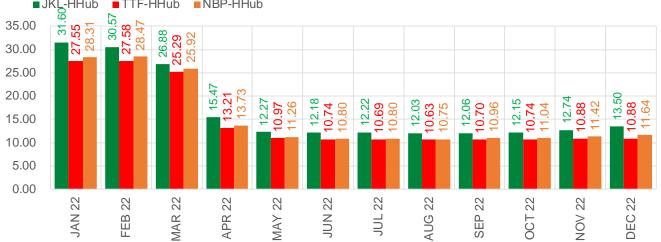


				vs. 4 Weeks	
	Units	Current Price	vs. Last Week		vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	2.224	0.000	0.000	2.184
NatGas Oct21/Nov21	\$/MMBtu	0.361	0.000	0.000	0.293
NatGas Oct21/Jan22	\$/MMBtu	-1.583	- 0.856	▼ -1.522	▼ -1.891
NatGas Apr22/Oct22	\$/MMBtu	0.089	0.060	0.146	0.040
WTI Crude	\$/Bbl	65.57	▼ -12.820	- 15.290	2 0.290
Brent Crude	\$/Bbl	68.87	-13.380	▼ -13.120	2 0.620
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	0.000	0.000	0.000
Heating Oil	cents/Gallon	207.71	- 30.590	- 35.740	1 71.090
Propane, Mt. Bel	cents/Gallon	1.00	- 0.275	- 0.390	0.420
Ethane, Mt. Bel	cents/Gallon	0.35	- 0.051	- 0.079	0.157
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			

2 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	\$4.288	\$4.215	\$4.044	\$3.813	\$3.810	\$3.818	\$3.865	\$3.878	\$3.883	\$3.907	\$4.009	\$4.195
JKL	\$35.885	\$34.780	\$30.925	\$19.280	\$16.080	\$16.000	\$16.080	\$15.905	\$15.945	\$16.060	\$16.750	\$17.690
JKL-HHub	\$31.597	\$30.565	\$26.881	\$15.467	\$12.270	\$12.182	\$12.215	\$12.027	\$12.062	\$12.153	\$12.741	\$13.495
TTF	\$31.840	\$31.796	\$29.338	\$17.018	\$14.781	\$14.560	\$14.557	\$14.509	\$14.581	\$14.651	\$14.888	\$15.070
TTF-HHub	\$27.552	\$27.581	\$25.294	\$13.205	\$10.971	\$10.742	\$10.692	\$10.631	\$10.698	\$10.744	\$10.879	\$10.875
NBP	\$32.593	\$32.681	\$29.959	\$17.539	\$15.070	\$14.620	\$14.660	\$14.631	\$14.847	\$14.942	\$15.432	\$15.838
NBP-HHub	\$28.305	\$28.466	\$25.915	\$13.726	\$11.260	\$10.802	\$10.795	\$10.753	\$10.964	\$11.035	\$11.423	\$11.643



Weather Storage Model - Next 4 Week Forecast

