

Market Report

20 December 2021

	Cı	ırrent	Δ fro	m YD		m 7D vg
Nat Gas Prompt	\$	3.80	\$	0.11	\$	0.06

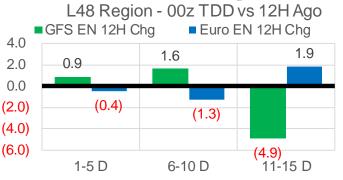
	С	urrent	Δ from YD		m 7D vg
WTI Prompt	\$	67.43	\$ (3.43)	▼\$	(3.7)

	_	urront	Δ from YD	∆ fro	m 7D
Curre	urreni		A	vg	
Brent	\$	70 29	\$ (3.23)	- \$	(3.6)
Prompt	Ψ	70.20	Ψ (0.20)	Ψ	(0.0)

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Price Summary

Vs. 12H Ago



Vs. 24H Ago

L48 Region - 00z TDD vs 24H Ago GFS EN 24H Chg ■ Euro EN 24H Chg 5.0 1.7 0.9 0.0 (0.6)(5.0)(3.8) (3.0)(10.0)(9.6)(15.0)1-5 D 6-10 D 11-15 D

	Current		Δ from 7D Avg
US Dry Production	96.2	a 0.16	▼ -0.18

	Current	Δ from YD	Δ from 7D Avg
US ResComm	43.6	a 0.47	1 0.05

	Current	Δ from YD	Δ from 7D Avg		
Net LNG Exports	13.0	- 0.07	1.00		

	Current	Δ from YD	Δ from 7D Avg		
US Power Burns	29.6	▲ 0.07	0.97		

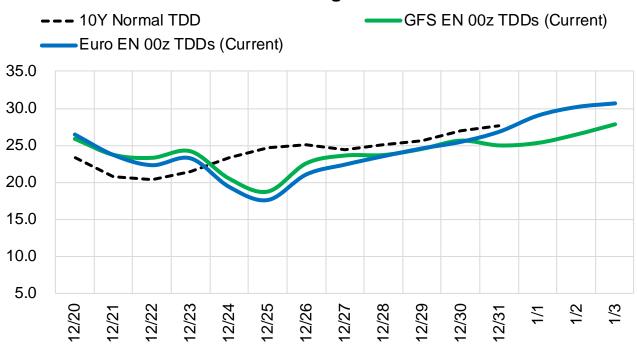
	Current	Δ from YD	Δ from 7D Avg		
Canadian Imports	5.0	▼ -0.24	0.41		

	Current	Δ from YD	Δ from 7D Avg
Mexican Exports	6.0	a 0.06	▼ -0.16

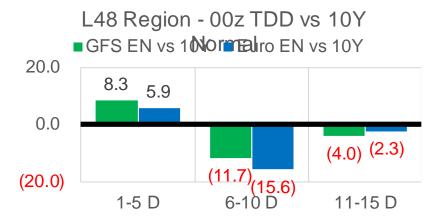


Short-term Weather Model Outlooks (00z)

L48 Region



Vs. 10Y Normal



Source: WSI, Bloomberg



Market Report

Lower 48 Component Models

Daily Balances

	14-Dec	15-Dec	16-Dec	17-Dec	18-Dec	19-Dec	20-Dec	DoD	vs. 7D
Lower 48 Dry Production	96.2	96.6	96.4	96.3	96.4	96.1	96.2	0.2	▼ -0.1
Canadian Imports	4.9	4.3	3.8	4.1	5.1	5.3	5.0	▼-0.2	0.5
L48 Power	29.5	28.4	27.6	27.6	27.8	29.5	29.6	0.1	1.2
L48 Residential & Commercial	32.7	27.6	27.7	32.7	36.1	43.2	43.6	0.5	10.3
L48 Industrial	24.5	23.6	23.7	24.2	24.2	24.5	24.3	▼-0.2	0.2
L48 Lease and Plant Fuel	5.2	5.2	5.2	5.2	5.2	5.2	5.2	▼ 0.0	▼ 0.0
L48 Pipeline Distribution	3.1	2.8	2.8	3.0	3.2	3.6	3.7	0.0	a 0.6
L48 Regional Gas Consumption	95.0	87.6	86.9	92.7	96.6	106.0	106.4	0.4	▲12.3
Net LNG Delivered	11.29	11.41	12.09	11.76	12.64	13.09	13.01	▼-0.1	1.0
Total Mexican Exports	6.2	6.3	6.2	6.2	6.2	6.0	6.0	0.1	▼ -0.2
Implied Daily Storage Activity EIA Reported Daily Storage Activity Daily Model Error	-11.4	-4.5	-5.0	-10.2	-14.0	-23.8	-24.2		

EIA Storage Week Balances

	12-Nov	19-Nov	26-Nov	3-Dec	10-Dec	17-Dec	WoW	vs. 4W
Lower 48 Dry Production	95.9	95.1	96.2	96.9	96.8	96.6	▼-0.2	0.3
Canadian Imports	5.1	4.9	5.5	5.6	5.3	4.6	▼ -0.7	▼-0.8
L48 Power	27.5	27.8	29.2	28.8	29.1	28.4	▼-0.7	▼-0.3
L48 Residential & Commercial	23.6	28.0	33.3	33.2	35.6	31.6	▼ -4.0	▼ -0.9
L48 Industrial	21.4	23.1	22.4	22.5	23.8	24.2	0.4	1.2
L48 Lease and Plant Fuel	5.2	5.2	5.2	5.3	5.3	5.2	▼ 0.0	0.0
L48 Pipeline Distribution	2.7	3.0	3.3	3.3	3.2	3.0	▼ -0.2	▼ -0.2
L48 Regional Gas Consumption	80.3	87.0	93.5	93.1	96.9	92.4	▼ -4.5	▼-0.3
Net LNG Exports	11.2	11.1	11.7	11.8	12.0	11.9	▼ -0.2	0.2
Total Mexican Exports	6.2	6.0	6.0	6.4	6.4	6.1	▼ -0.3	▼-0.1
Implied Daily Storage Activity	3.2	-4.2	-9.6	-8.8	-13.3	-9.3	4.0	
EIA Reported Daily Storage Activity	3.7	-3.0	-8.4	-8.4	-12.6			
Daily Model Error	-0.5	-1.2	-1.1	-0.4	-0.7			

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	93.5	94.0	95.9	96.5	0.7	5.0
Canadian Imports	4.5	5.8	5.1	5.1	5.4	5.3	4.9	▼-0.4	▼-0.9
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	29.6	33.5	3.9	▼-6.8
L48 Industrial	24.6	23.4	21.5	20.3	20.3	22.3	23.8	1.5	0.4
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	▼-0.3
L48 Regional Gas Consumption	101.6	100.0	77.2	69.4	71.3	88.9	94.3	5.3	▼ -5.7
Net LNG Exports	7.8	11.0	10.5	10.3	10.6	11.4	12.0	0.6	1.0
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	-11.1		



Daily Average Generation Data

Nuclear Generation Daily Average - GWh (NRC)

	12-Dec	13-Dec	14-Dec	15-Dec	16-Dec	17-Dec	18-Dec	DoD	vs. 7D
NRC Nuclear Daily Output	88.6	90.4	91.5	92.0	92.0	92.4	92.4	0.0	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	16.3	14.5	13.4	12.9	12.9	12.5	12.5	0.0	-1.3
NRC % Nuclear Cap Utilization	90.1	91.9	93.0	93.5	93.5	93.9	93.9	0.0	1.3

Wind Generation Daily Average - MWh (EIA)

	12-Dec	13-Dec	14-Dec	15-Dec	16-Dec	17-Dec	18-Dec	DoD	vs. 7D
CALI Wind	1183	2594	3065	1464	1855	737	706	-31	-1110
TEXAS Wind	16870	14446	17778	21984	10166	13399	17351	3952	1577
US Wind	76589	56970	69334	78485	58030	45089	52087	6998	-11996

Generation Daily Average - MWh (EIA)

	12-Dec	13-Dec	14-Dec	15-Dec	16-Dec	17-Dec	18-Dec	DoD	vs.7D
US Wind	76589	56970	69334	78485	58030	45089	52087	6998	-11996
US Solar	9182	7086	6027	7000	7454	9875	6636	-3239	-1135
US Petroleum	2208	3295	2743	2390	2866	3282	3459	177	662
US Other	8088	8679	8340	8228	8418	7751	8044	293	-206
US Coal	71292	85267	82873	72448	77505	82044	80640	-1404	2068
US Nuke	93982	95984	96938	97022	96882	97494	97176	-318	792
US Hydro	28391	31996	30616	30416	30912	32421	31419	-1002	627
US Gas	134115	164277	152034	145006	151893	157195	141646	-15549	-9108

See National Wind and Nuclear daily charts



Storage Week Average Generation Data

	Nuclear	Generation	Weekly	Average -	GWh	(NRC)
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	12-Nov	19 -N ov	26-Nov	3-Dec	10-Dec	17-Dec	WoW	WoW Bcf/d Impact
NRC Nuclear Daily Output	79.8	83.9	86.1	87.8	88.0	90.0	2.1	-0.4
NRC Nuclear Max Capacity	104.9	104.9	104.9	104.9	104.9	104.9	0.0	
NRC Nuclear Outage	25.1	21.0	18.8	17.1	16.9	14.9	-2.1	
NRC % Nuclear Cap Utilization	0.1	0.1	0.1	0.1	0.1	0.1	0.0	

Wind Generation Weekly Average - MWh (EIA)

	12-Nov	19-Nov	26-Nov	3-Dec	10-Dec	17-Dec	WoW	WoW Bcf/d Impact
CALI Wind	1805	862	1496	363	1263	1709	445	-0.1
TEXAS Wind	12032	13655	14691	8733	12216	16176	3960	-0.7
US Wind	51002	58367	56260	47210	51470	68300	16830	-3.0
					4259.7 9%			

Generation Weekly Average - MWh (EIA)

	12-Nov	19 -N ov	26-Nov	3-Dec	10-Dec	17-Dec	WoW	WoW Bcf/d Impact
US Wind	51002	58367	56260	47210	51470	68300	16830	-3.0
US Solar	10015	10068	9086	9918	7402	7314	-88	0.0
US Petroleum	2532	2555	3342	3166	3441	2701	-740	0.1
US Other	8205	7849	8442	8483	8435	8398	-37	0.0
US Coal	77955	77863	82301	82287	82743	76960	-5783	1.0
US Nuke	84337	88331	91252	92816	92983	95055	2072	-0.4
US Hydro	25422	26216	27837	26777	29626	30235	610	-0.1
US Gas	145215	145263	148208	155286	159459	148336	-11123	2.0

See National Wind and Nuclear daily charts



Monthly Average Generation Data

Nuclear Generation Monthl	y Average -	GWh (NI	RC)						
	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	91.8	87.9	87.1	75.5	82.7	89.4	88.8	6.7	0.9
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	13.1	17.0	17.8	29.4	22.2	15.4	16.0	-6.7	-0.9
NRC % Nuclear Cap Utilization	93.3	89.4	88.6	76.8	84.1	90.9	90.3	6.8	0.9

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	1000	1103	1964	1765	1252	1215	1127	-38	24
TEXAS Wind	8814	9747	9213	11565	11869	13901	13245	2033	3498
US Wind	38371	39551	39362	43142	49974	56637	55186	6664	15634

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	38371	39551	39362	43142	49974	56637	55186	▼-1451.7	15634
US Solar	4479	6593	13345	11059	9690	7620	8229	609.7	1637
US Petroleum	2613	2863	2517	3239	3045	3096	3179	83	316
US Other	8564	8274	9021	11109	8435	8347	8391	4 4	117
US Coal	97775	98073	109915	84433	80848	80153	81073	920	▼ -17000
US Nuke	98610	92810	90072	77089	87404	94436	93885	▼ -551	1076
US Hydro	28830	30529	25622	24078	26593	30049	29098	▼ -951	▼ -1432
US Gas	155182	152323	173566	159045	151462	152854	151806	▼ -1297	▼ -517
US Total	434512	431399	463578	413350	417925	433203	430967	▼ -1143	▼ -432



See National Wind and Nuclear daily charts



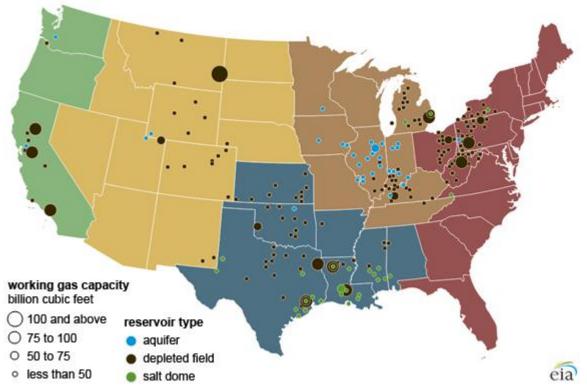
Regional S/D Models Storage Projection

Week Ending 17-Dec

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	-9.5	1.1	-8.4	-59
East	-3.3	2.4	-1.0	-7
Midwest	-3.1	0.1	-3.0	-21
Mountain	1.8	-3.4	-1.5	-11
South Central	-3.9	2.5	-1.4	-10
Pacific	-1.0	-0.5	-1.5	-11

^{*}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-Dec	17	-59
24-Dec	23	-126
31-Dec	23	-128
07-Jan	29	-223

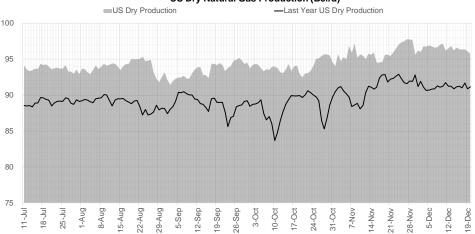
Weather Storage Model - Next 4 Week Forecast



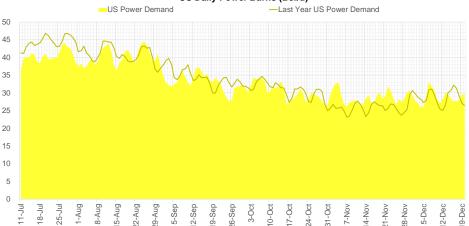


Supply - Demand Trends

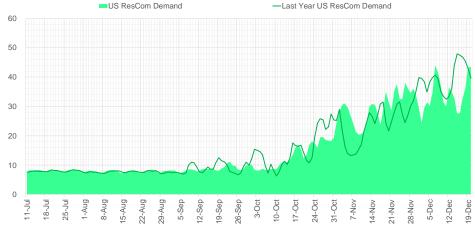
US Dry Natural Gas Production (Bcf/d)



US Daily Power Burns (Bcf/d)



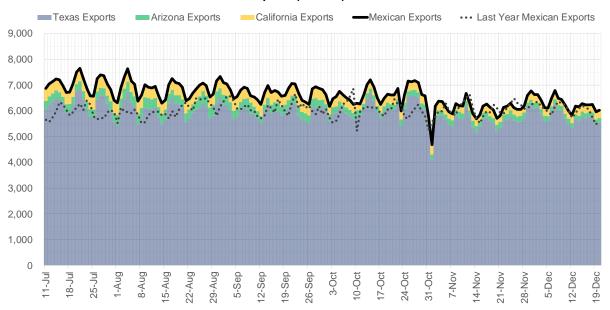
US Daily ResCom Consumption(Bcf/d)



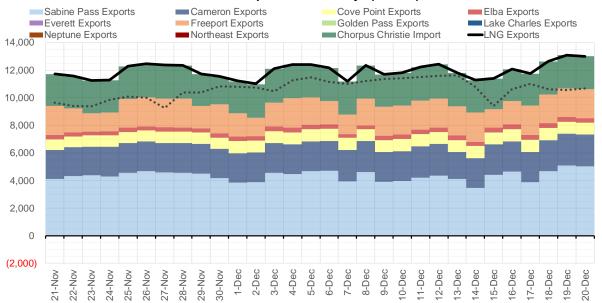
Source: Bloomberg



Mexican Exports (MMcf/d)







Source: Bloomberg



Nat Gas Options Volume and Open Interest CME and ICE Combined

	CONTRACT	PUT/CALL	STRIKE	CUMULATI	VE	VE CONTRACT MONTH			
MONTH	YEAR			VOL					
1	2022	С	4.50	9056		3			
1	2022	С	4.00	4845		1			
1	2022	С	4.25	4537		1	1 2022		
1	2022	Р	3.50	2932		1	1 2022	1 2022 P	1 2022 P 4.00
1	2022	Р	3.25	2829		3	3 2022	3 2022 C	3 2022 C 8.00
3	2022	С	4.00	2404		3	3 2022		
1	2022	P	3.75	2119		1	1 2022	1 2022 C	1 2022 C 5.00
1	2022	P	2.75	1510		1	1 2022	1 2022 P	1 2022 P 2.75
1	2022	P	3.40	1327		1	1 2022	1 2022 C	1 2022 C 6.00
1	2022	C	5.00	1234		2			
		P			1		2022		
1	2022		3.80	1188	3		2022		
1	2022	P	4.00	1022	12		2022		
1	2022	C	3.75	1018	3		2022		
2	2022	С	4.50	968	4		2022		
1	2022	С	4.10	851	4		022		
2	2022	С	4.00	723					
1	2022	С	6.70	701	3	2022		С	
2	2022	С	6.00	684	1	2022		С	
1	2022	С	6.90	600	1	2022		С	
10	2022	Р	3.00	600	1	2022		Р	
2	2022	C	5.00	586	1	2022		С	
1	2022	Ċ	4.20	572	3	2022		Р	
2	2022	Č	7.00	569	2	2022		С	C 4.00
1	2022	P		555	3	2022		Р	P 3.00
			3.60		2	2022		Р	P 3.50
3	2022	С	4.50	542	2	2022		С	C 6.00
4	2022	С	6.00	508	3	2022		Р	P 3.50
1	2022	С	6.80	500	3	2022		С	C 7.00
4	2022	Р	2.50	500	2	2022		P	
5	2022	С	6.00	500	5	2022		C	
5	2022	Р	2.50	500	4	2022		P	
6	2022	Р	2.50	500	10	2022		C	
7	2022	Р	2.50	500	6	2022		Č	
8	2022	Р	2.50	500	10	2022		C	
9	2022	P	2.50	500		2022		P	
10	2022	P	2.50	500	2				
1	2022	Р	3.00	465	2	2022		С	
1	2022	C	7.00	402	2	2022		С	
1		C	7.00 5.50		5	2022		C	
	2022			348	3	2022		Р	
2	2022	С	3.75	346	1	2022		С	
1	2022	С	3.80	325	6	2022		С	
1	2022	С	4.60	303	10	2022		Р	
7	2022	С	5.50	300	12	2022		С	C 4.50
1	2022	Р	3.55	299	7	2022		С	C 3.00
2	2022	Р	3.00	299	8	2022		C	
3	2022	Р	3.00	279	9	2022		Č	
1	2022	P	3.65	272	3	2022		Č	
2	2022	Р	3.75	266	8	2022		Č	
1	2022	P	3.30	258	10	2022		C	
2	2022	P	3.50	255	12				
	2022	Ρ	3.50	∠33	12	2022		C	1. 2.2

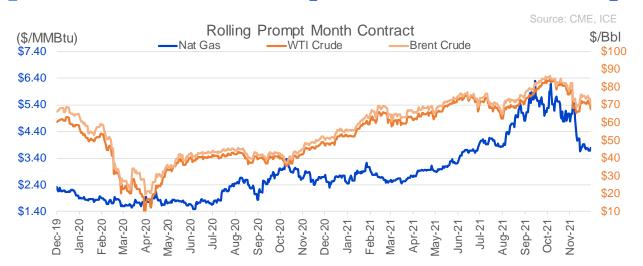
Friday's ICE data not available today



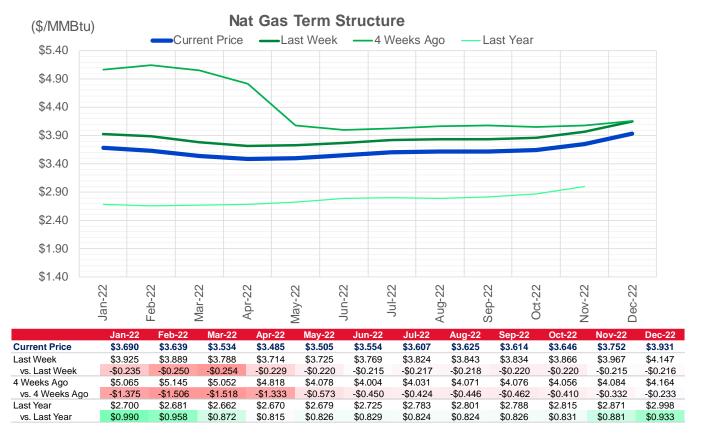
Nat Gas Futures Open Interest CME and ICE data

Friday's ICE data not available today

CME Henry Hub Futures (10,000 MMBtu) ICE Henry Hub Futures Contract Equivalent (10,000 MM										
CME Henry I				ICE Henry I						
	Current	Prior	Daily Change		Current	Prior	Daily Change			
JAN 22	68117	75486	-7369	JAN 22	88505	93109	-4604			
FEB 22	118820	113596	5224	FEB 22	76765	75904	860			
MAR 22	247732	247108	624	MAR 22	91290	89843	1447			
APR 22	86400	87047	-647	APR 22	71797	71882	-86			
MAY 22	114472	113521	951	MAY 22	70473	70959	-487			
JUN 22	52293	52282	11	JUN 22	54715	54757	-42			
JUL 22	42008	42234	-226	JUL 22	58744	58492	252			
AUG 22	32588	32633	-45	AUG 22	55287	55190	97			
SEP 22	45566	45672	-106	SEP 22	56332	56380	-48			
OCT 22	74942	74991	-49	OCT 22	63994	64213	-219			
NOV 22	34935	34865	70	NOV 22	50750	50400	350			
DEC 22	33567	33358	209	DEC 22	59015	58422	593			
JAN 23	38460	38999	-539	JAN 23	46626	46049	577			
FEB 23	12005	11642	363	FEB 23	35990	35758	232			
MAR 23	26422	26184	238	MAR 23	40671	40424	247			
APR 23	19758	19381	377	APR 23	39975	40929	-954			
MAY 23	12990	13058	-68	MAY 23	35803	35780	23			
JUN 23	10078	10005	73	JUN 23	32232	32171	61			
JUL 23	7498	7458	40	JUL 23	31699	31637	62			
AUG 23	4738	4733	5	AUG 23	32712	32635	78			
SEP 23	7280	7279	1	SEP 23	31182	31128	54			
OCT 23	11839	11753	86	OCT 23	35689	35538	151			
NOV 23	6076	6090	-14	NOV 23	35060	35008	52			
DEC 23	8802	8806	-4	DEC 23	32335	32297	38			
JAN 24	6918	6929	-11	JAN 24	23485	23463	22			
FEB 24	1593	1577	16	FEB 24	16357	16358	-1			
MAR 24	9185	9185	0	MAR 24	22253	22208	46			
APR 24	4438	4438	0	APR 24	15585	15579	6			
MAY 24	2058	2058	0	MAY 24	16023	16009	13			
JUN 24	929	929	0	JUN 24	16414	16362	52			







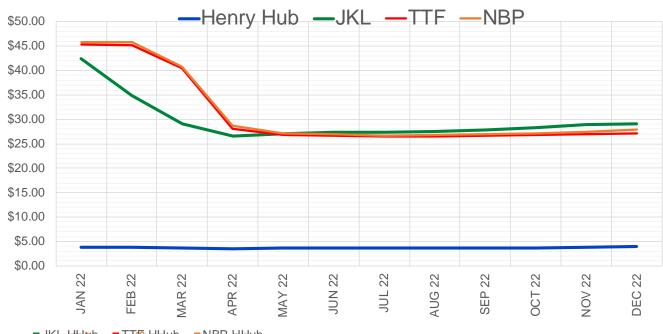
		Cash	Prompt	Cash to
	Units	Settled	Settle	Prompt
AGT Citygate	\$/MMBtu	62.50	18.44	-44.06
TETCO M3	\$/MMBtu	3.72	6.89	3.17
FGT Zone 3	\$/MMBtu	4.25	3.98	-0.27
Zone 6 NY	\$/MMBtu	4.25	7.73	3.48
Chicago Citygate	\$/MMBtu	3.61	4.27	0.67
Michcon	\$/MMBtu	3.48	3.66	0.18
Columbia TCO Pool	\$/MMBtu	2.98	3.44	0.46
Ventura	\$/MMBtu	3.51	4.91	1.40
Rockies/Opal	\$/MMBtu	5.11	4.11	-1.00
El Paso Permian Basin	\$/MMBtu	3.34	4.00	0.66
Socal Citygate	\$/MMBtu	7.05	6.06	-0.99
Malin	\$/MMBtu	5.08	4.98	-0.10
Houston Ship Channel	\$/MMBtu	3.65	4.19	0.54
Henry Hub Cash	\$/MMBtu	3.68	3.77	0.09
AECO Cash	C\$/GJ	3.16	3.12	-0.04
Station2 Cash	C\$/GJ	3.15	5.58	2.43
Dawn Cash	C\$/GJ	3.61	3.81	0.20

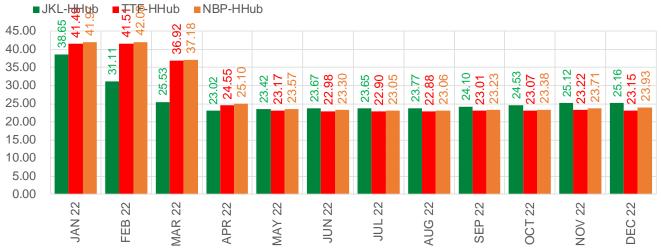
Source: CME, Bloomberg



					Ve	. 4 Weeks		
	Units	Current Price	vs.	Last Week	٧s	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		0.305
NatGas Oct21/Jan22	\$/MMBtu	-2.151		-0.235	•	-1.455		-2.432
NatGas Apr22/Oct22	\$/MMBtu	0.161		0.009		0.155		0.128
WTI Crude	\$/Bbl	70.86		-0.810	•	-5.240		21.760
Brent Crude	\$/Bbl	73.52		-1.630		-5.370		21.260
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18		0.000		0.000		0.000
Heating Oil	cents/Gallon	221.99		-3.170		-7.350		70.690
Propane, Mt. Bel	cents/Gallon	1.02		-0.005	•	-0.228		0.379
Ethane, Mt. Bel	cents/Gallon	0.33		-0.008		-0.072		0.134
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						

Nat Gas Term Structure (\$MMBTU)





	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	\$3.797	\$3.735	\$3.625	\$3.561	\$3.579	\$3.627	\$3.680	\$3.695	\$3.682	\$3.722	\$3.820	\$4.013
JKL	\$42.450	\$34.845	\$29.155	\$26.580	\$27.000	\$27.300	\$27.330	\$27.465	\$27.785	\$28.250	\$28.940	\$29.175
JKL-HHub	\$38.653	\$31.110	\$25.530	\$23.019	\$23.421	\$23.673	\$23.650	\$23.770	\$24.103	\$24.528	\$25.120	\$25.162
TTF	\$45.285	\$45.248	\$40.545	\$28.108	\$26.753	\$26.611	\$26.579	\$26.573	\$26.691	\$26.788	\$27.043	\$27.158
TTF-HHub	\$41.488	\$41.513	\$36.920	\$24.547	\$23.174	\$22.984	\$22.899	\$22.878	\$23.009	\$23.066	\$23.223	\$23.145
NBP	\$45.763	\$45.811	\$40.801	\$28.656	\$27.147	\$26.926	\$26.726	\$26.758	\$26.910	\$27.099	\$27.528	\$27.943
NBP-HHub	\$41.966	\$42.076	\$37.176	\$25.095	\$23.568	\$23.299	\$23.046	\$23.063	\$23.228	\$23.377	\$23.708	\$23.930



Weather Storage Model - Next 4 Week Forecast

