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	Current	Δ from YD	Δ from 7D Avg
Nat Gas Prompt	\$ 3.03	▲ \$ 0.01	▲ \$ 0.05

	Current	Δ from YD	Δ from 7D Avg
WTI Prompt	\$ 38.94	▲ \$ 0.38	▼ \$ (1.1)

	Current	Δ from YD	Δ from 7D Avg
Brent Prompt	\$ 40.83	▲ \$ 0.37	▼ \$ (1.0)

### 00z GWDD Change

Cooler Change

Warmer Change

ECMWF Ensemble 00z	1-5 Day	6-10 Day	11-15 Day	Total
12 Hr Chg	0.0	-0.3	0.3	0.0
24 Hr Chg	0.2	5.2	-5.3	0.2

GFS Ensemble 00z	1-5 Day	6-10 Day	11-15 Day	Total
12 Hr Chg	-1.0	0.2	-11.2	-12.0
24 Hr Chg	0.1	5.2	-5.1	0.2

	Current	Δ from YD	Δ from 7D Avg
US Dry Production	86.5	▼ -1.76	▼ -2.45

	Current	Δ from YD	Δ from 7D Avg
US Power Burns	29.5	▲ 0.39	▲ 1.43

	Current	Δ from YD	Δ from 7D Avg
US ResComm	26.3	▼ -1.03	▲ 7.50

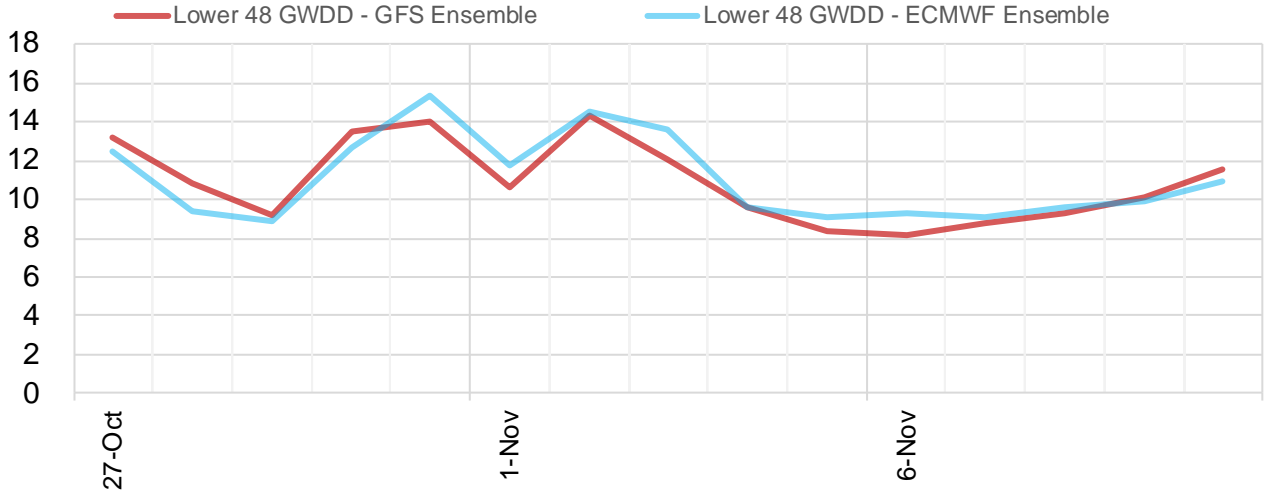
	Current	Δ from YD	Δ from 7D Avg
Canadian Imports	4.5	▼ -0.12	▲ 0.25

	Current	Δ from YD	Δ from 7D Avg
Net LNG Exports	8.8	▼ -0.55	▼ -0.09

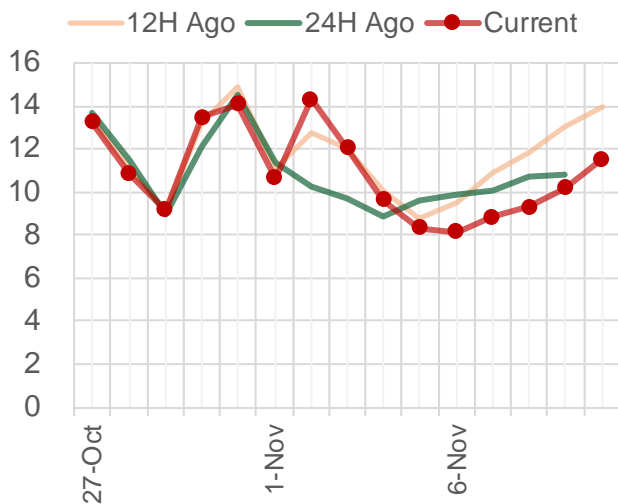
	Current	Δ from YD	Δ from 7D Avg
Mexican Exports	6.3	▲ 0.12	▼ 0.00

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

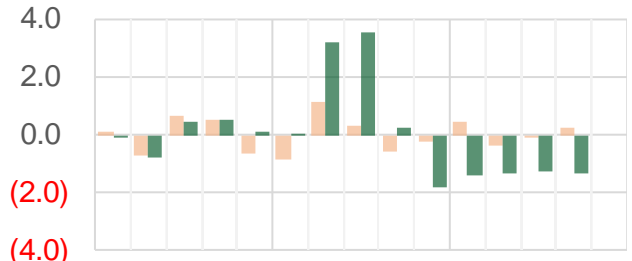
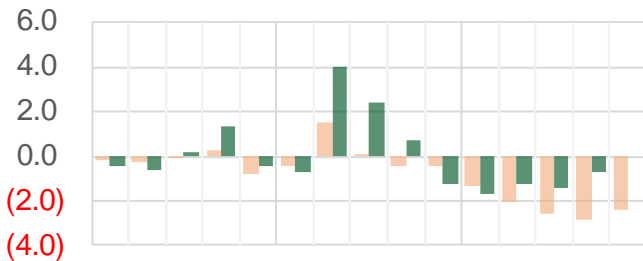
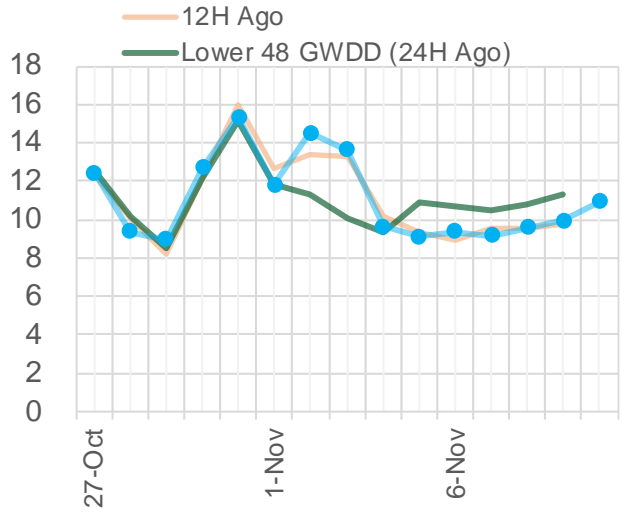
Lower 48 TDD Forecast



Lower 48 GWDD - GFS Ensemble



Lower 48 GWDD - ECMWF Ensemble



Source: WSI, Bloomberg

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## Lower 48 Component Models

### Daily Balances

	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	DoD	vs. 7D
<b>Lower 48 Dry Production</b>	<b>89.0</b>	<b>89.6</b>	<b>89.3</b>	<b>89.0</b>	<b>88.8</b>	<b>88.3</b>	<b>86.5</b>	▼ -1.8	▼ -2.5
<b>Canadian Imports</b>	<b>4.2</b>	<b>4.1</b>	<b>4.3</b>	<b>4.5</b>	<b>4.5</b>	<b>4.6</b>	<b>4.5</b>	▼ -0.1	▲ 0.1
L48 Power	29.4	29.1	28.1	25.7	24.9	29.1	29.5	▲ 0.4	▲ 1.8
L48 Residential & Commercial	13.5	12.7	14.4	21.3	26.0	27.3	26.3	▼ -1.0	▲ 7.1
L48 Industrial	22.4	22.1	22.1	22.5	22.3	22.3	22.2	▼ -0.1	▼ -0.1
L48 Lease and Plant Fuel	4.9	4.9	4.9	4.9	4.9	4.9	4.8	▼ -0.1	▼ -0.1
L48 Pipeline Distribution	2.1	2.0	2.1	2.3	2.5	2.8	2.7	▼ 0.0	▲ 0.4
<b>L48 Regional Gas Consumption</b>	<b>72.3</b>	<b>70.8</b>	<b>71.6</b>	<b>76.7</b>	<b>80.6</b>	<b>86.3</b>	<b>85.5</b>	▼ -0.8	▲ 9.1
<b>Net LNG Delivered</b>	<b>8.88</b>	<b>8.33</b>	<b>8.70</b>	<b>9.37</b>	<b>9.41</b>	<b>9.38</b>	<b>8.83</b>	▼ -0.5	▼ -0.2
<b>Total Mexican Exports</b>	<b>6.5</b>	<b>6.6</b>	<b>6.6</b>	<b>6.1</b>	<b>5.8</b>	<b>6.2</b>	<b>6.3</b>	▲ 0.1	▼ 0.0
<b>Implied Daily Storage Activity</b>	<b>5.6</b>	<b>8.0</b>	<b>6.8</b>	<b>1.4</b>	<b>-2.5</b>	<b>-9.0</b>	<b>-9.6</b>		
<b>EIA Reported Daily Storage Activity</b>									
<b>Daily Model Error</b>									

### EIA Storage Week Balances

	18-Sep	25-Sep	2-Oct	9-Oct	16-Oct	23-Oct	WoW	vs. 4W
<b>Lower 48 Dry Production</b>	<b>87.8</b>	<b>86.9</b>	<b>87.3</b>	<b>87.2</b>	<b>85.8</b>	<b>89.1</b>	▲ 3.3	▲ 2.3
<b>Canadian Imports</b>	<b>3.8</b>	<b>3.6</b>	<b>3.9</b>	<b>4.5</b>	<b>4.0</b>	<b>3.6</b>	▼ -0.4	▼ -0.4
L48 Power	33.5	30.8	30.7	31.0	30.5	28.5	▼ -2.0	▼ -2.2
L48 Residential & Commercial	8.0	9.9	9.5	13.6	11.5	17.0	▲ 5.5	▲ 5.9
L48 Industrial	21.3	21.1	22.2	21.5	21.9	22.8	▲ 0.9	▲ 1.1
L48 Lease and Plant Fuel	4.8	4.8	4.8	4.8	4.7	4.9	▲ 0.2	▲ 0.1
L48 Pipeline Distribution	2.1	2.0	2.0	2.2	2.1	2.2	▲ 0.2	▲ 0.2
<b>L48 Regional Gas Consumption</b>	<b>69.7</b>	<b>68.6</b>	<b>69.2</b>	<b>73.0</b>	<b>70.7</b>	<b>75.4</b>	▲ 4.7	▲ 5.0
<b>Net LNG Exports</b>	<b>7.3</b>	<b>5.8</b>	<b>6.8</b>	<b>7.5</b>	<b>6.9</b>	<b>8.0</b>	▲ 1.1	▲ 1.3
<b>Total Mexican Exports</b>	<b>6.2</b>	<b>6.4</b>	<b>6.3</b>	<b>6.2</b>	<b>6.2</b>	<b>6.3</b>	▲ 0.1	▲ 0.0
<b>Implied Daily Storage Activity</b>	<b>8.3</b>	<b>9.6</b>	<b>8.9</b>	<b>5.1</b>	<b>6.0</b>	<b>3.0</b>	<b>-3.1</b>	
<b>EIA Reported Daily Storage Activity</b>	<b>9.4</b>	<b>10.9</b>	<b>10.7</b>	<b>6.6</b>	<b>7.0</b>			
<b>Daily Model Error</b>	<b>-1.1</b>	<b>-1.2</b>	<b>-1.8</b>	<b>-1.5</b>	<b>-1.0</b>			

### Monthly Balances

	2Yr Ago	LY					MTD		
	Oct-18	Oct-19	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	MoM	vs. LY
<b>Lower 48 Dry Production</b>	<b>86.7</b>	<b>95.0</b>	<b>86.6</b>	<b>87.8</b>	<b>87.7</b>	<b>87.7</b>	<b>87.6</b>	▼ -0.1	▼ -7.4
<b>Canadian Imports</b>	<b>4.7</b>	<b>4.6</b>	<b>4.0</b>	<b>4.4</b>	<b>4.9</b>	<b>3.8</b>	<b>4.1</b>	▲ 0.3	▼ -0.5
L48 Power	28.8	30.8	35.0	43.8	40.7	33.2	29.5	▼ -3.7	▼ -1.2
L48 Residential & Commercial	16.1	15.2	8.8	8.0	7.7	8.7	15.7	▲ 7.0	▲ 0.4
L48 Industrial	22.6	24.0	19.2	19.3	20.6	21.0	22.1	▲ 1.1	▼ -1.9
L48 Lease and Plant Fuel	4.9	5.2	4.8	4.9	4.8	4.8	4.8	▲ 0.0	▼ -0.4
L48 Pipeline Distribution	2.1	2.3	2.2	2.4	2.3	2.1	2.2	▲ 0.1	▼ 0.0
<b>L48 Regional Gas Consumption</b>	<b>74.5</b>	<b>77.4</b>	<b>70.1</b>	<b>78.4</b>	<b>76.1</b>	<b>69.8</b>	<b>74.3</b>	▲ 4.5	▼ -3.1
<b>Net LNG Exports</b>	<b>3.3</b>	<b>6.7</b>	<b>4.0</b>	<b>3.3</b>	<b>4.0</b>	<b>5.9</b>	<b>7.8</b>	▲ 1.8	▲ 1.1
<b>Total Mexican Exports</b>	<b>5.0</b>	<b>5.5</b>	<b>5.7</b>	<b>6.1</b>	<b>6.3</b>	<b>6.4</b>	<b>6.2</b>	▼ -0.1	▲ 0.8
<b>Implied Daily Storage Activity</b>	<b>8.6</b>	<b>10.0</b>	<b>10.9</b>	<b>4.4</b>	<b>6.2</b>	<b>9.4</b>	<b>3.4</b>		
<b>EIA Reported Daily Storage Activity</b>									
<b>Daily Model Error</b>									

Source: Bloomberg, analytix.ai

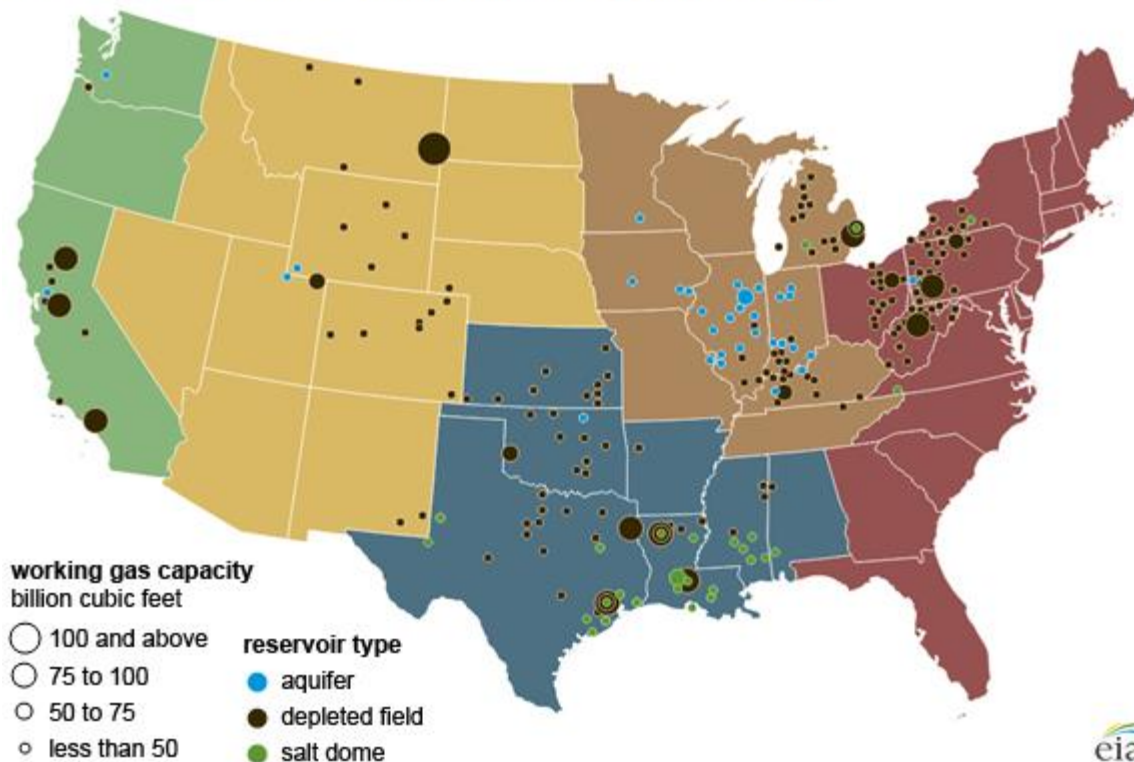
### Regional S/D Models Storage Projection

Week Ending 23-Oct

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	2.7	1.5	4.1	29
East	0.2	2.0	2.2	15
Midwest	0.3	0.7	1.0	7
Mountain	3.3	-3.2	0.2	1
South Central	-1.2	2.0	0.8	6
Pacific	0.0	0.0	0.0	0

\*Adjustment Factor is calculated based on historical regional deltas

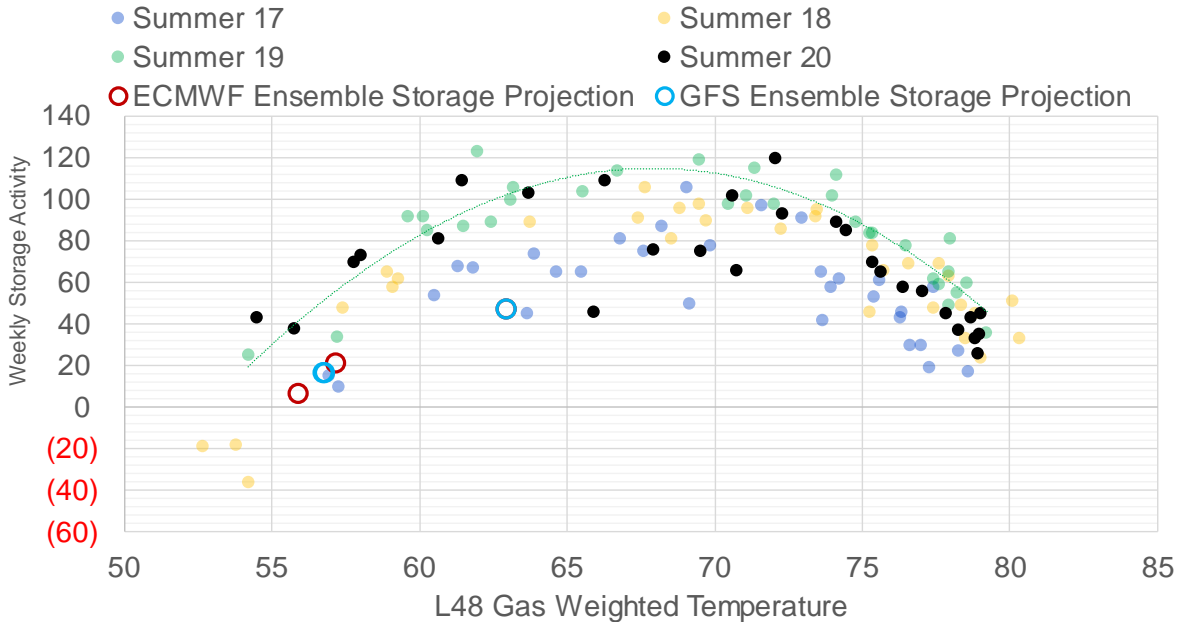
U.S. underground natural gas storage facilities by type (July 2015)



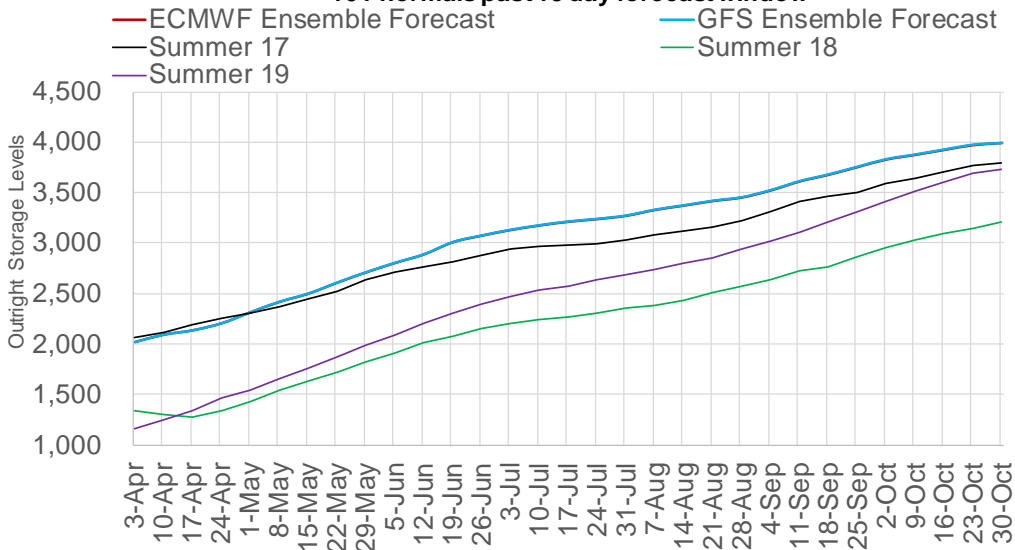
### Weather Model Storage Projection

Next report and beyond	
Week Ending	Week Storage Projection
30-Oct	19
06-Nov	12
13-Nov	-5

### Weather Storage Model - Next 4 Week Forecast



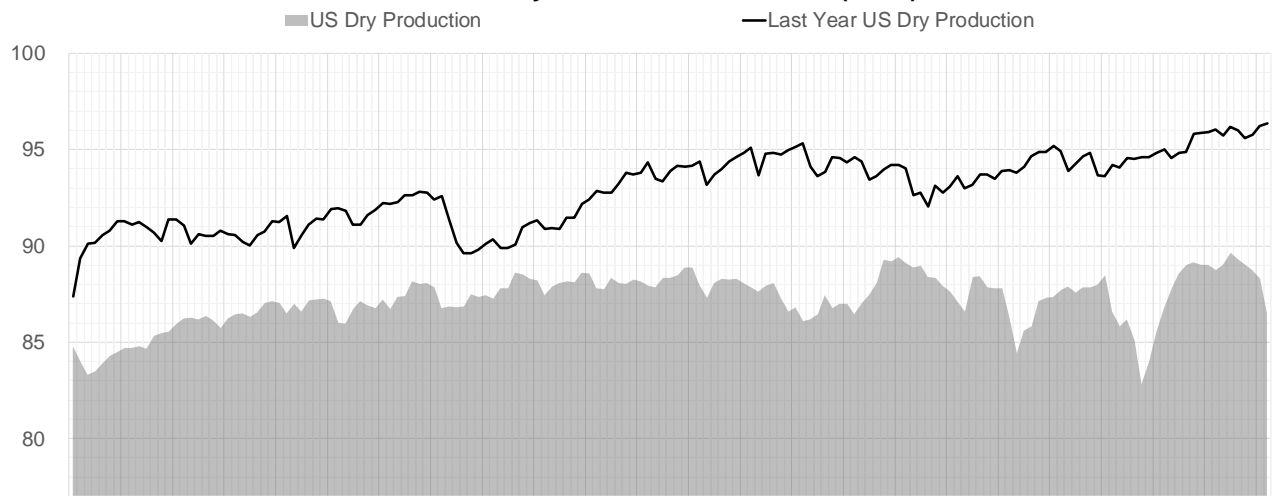
### Weather Based End of Winter Projection (Bcf) 10Y normals past 15 day forecast window



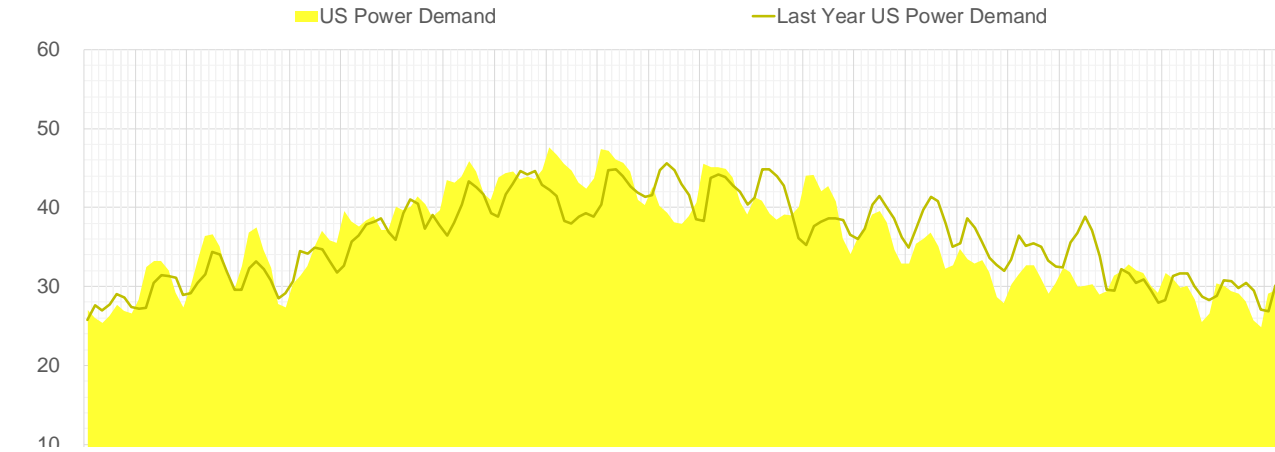
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### Supply – Demand Trends

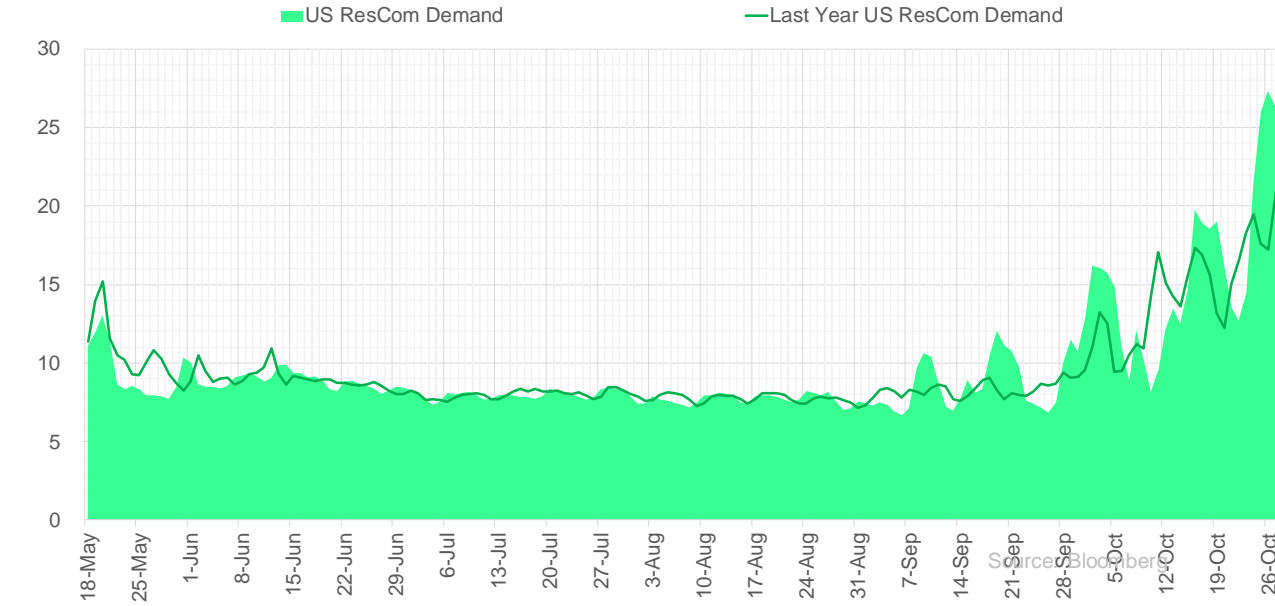
#### US Dry Natural Gas Production (Bcf/d)



#### US Daily Power Burns (Bcf/d)

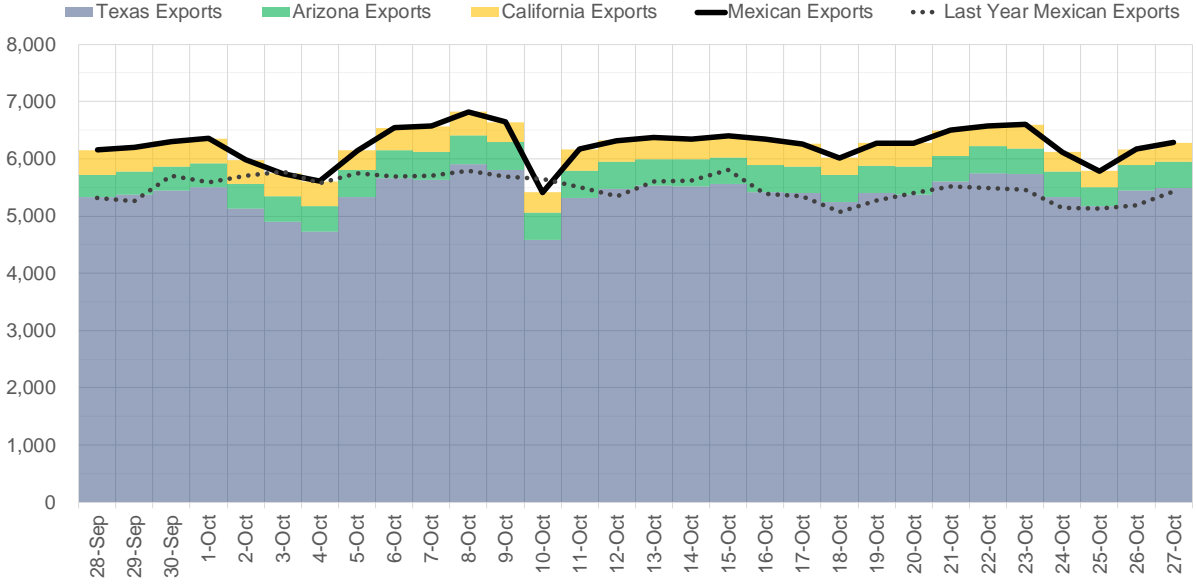


#### US Daily ResCom Consumption (Bcf/d)

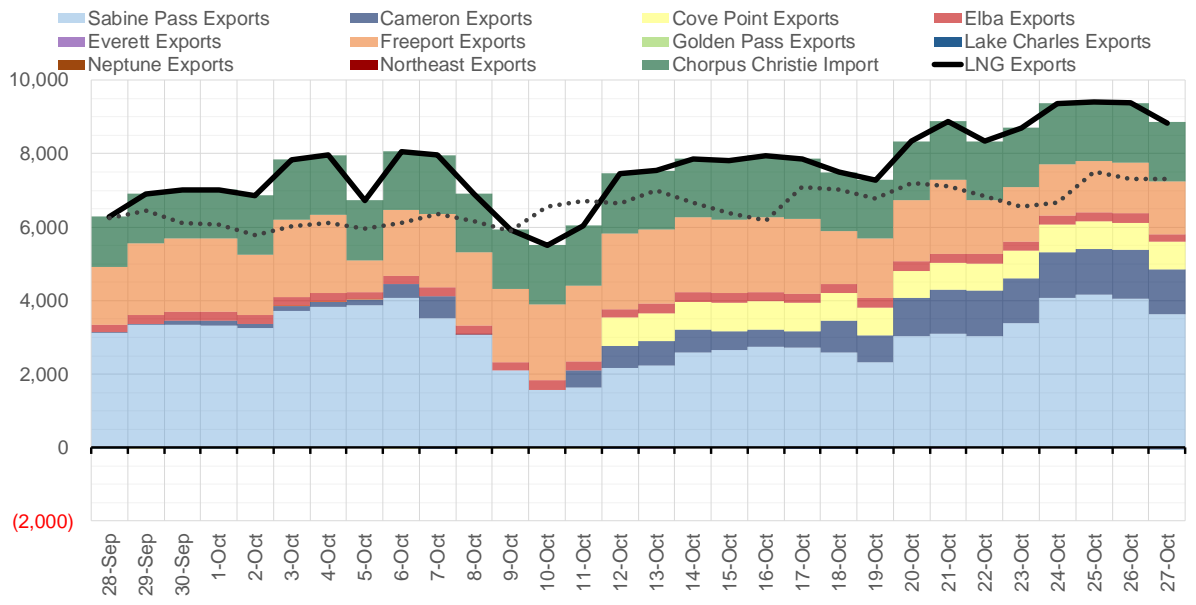


Source: Bloomberg

### Mexican Exports - Last 30 days (MMcf/d)



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



Source: Bloomberg

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## 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	2020	C	4.00	9632	11	2020	P	2.00	56083
11	2020	C	3.25	7994	11	2020	C	3.50	38985
12	2020	C	3.75	7218	3	2021	P	2.00	36558
12	2020	C	4.50	4502	12	2020	P	2.00	32586
11	2020	C	3.05	4492	11	2020	C	3.25	31859
12	2020	P	2.75	4187	3	2021	C	6.00	31555
12	2020	C	5.00	3886	3	2021	C	5.00	31312
11	2020	C	3.15	3798	1	2021	C	4.50	29618
11	2020	C	3.00	3748	10	2021	C	4.00	28285
12	2020	P	2.50	3691	3	2021	C	3.25	28028
12	2020	P	3.00	3115	12	2020	C	4.00	27825
11	2020	C	3.10	2982	4	2021	C	5.00	26870
12	2020	C	4.25	2472	3	2021	C	4.00	26318
12	2020	P	2.90	2439	1	2021	C	3.50	26119
11	2020	C	3.20	2327	10	2021	C	3.25	25790
3	2021	C	4.50	2220	3	2021	C	7.00	25598
3	2021	C	5.00	2134	12	2020	P	2.50	25339
11	2020	P	2.90	1912	11	2020	C	4.00	23906
1	2021	C	7.00	1800	11	2020	P	2.25	23580
11	2020	P	3.00	1547	11	2020	C	5.00	22403
11	2020	P	2.80	1507	11	2020	C	3.00	21328
3	2021	C	4.00	1258	1	2021	C	6.00	21317
11	2020	P	2.95	1176	3	2021	C	3.00	21052
12	2020	P	3.20	1146	12	2020	C	4.50	20197
3	2021	C	3.25	1000	11	2020	P	2.50	20088
3	2021	C	10.00	1000	8	2021	C	4.00	20074
3	2021	C	3.75	1000	2	2021	C	5.00	19895
10	2021	C	4.50	1000	11	2020	P	1.75	19541
4	2021	P	2.50	880	11	2020	C	2.75	19303
2	2021	C	4.50	850	1	2021	P	2.50	19086
5	2021	P	2.50	850	3	2021	C	3.50	19043
6	2021	P	2.50	850	2	2021	P	2.25	19037
7	2021	P	2.50	850	4	2021	C	4.00	18901
8	2021	P	2.50	850	12	2020	C	3.75	18412
9	2021	P	2.50	850	1	2021	P	2.25	18188
10	2021	P	2.50	850	12	2020	C	3.50	18076
12	2020	C	3.50	839	8	2021	P	2.25	17742
1	2021	P	3.00	806	1	2021	C	3.00	17297
12	2020	P	3.25	772	1	2021	C	3.75	17132
12	2020	P	2.70	754	10	2021	C	5.00	16815
1	2021	C	5.00	738	5	2021	C	4.00	16805
3	2021	C	6.00	738	11	2020	P	2.65	16682
11	2020	P	2.75	717	2	2021	C	3.50	16657
1	2021	C	3.50	713	1	2021	C	5.00	16359
1	2021	C	6.00	704	2	2021	P	2.50	16296
4	2021	P	2.75	700	11	2020	P	2.75	15969
5	2021	P	2.75	700	12	2020	P	2.75	15861
6	2021	P	2.75	700	3	2021	P	2.50	15856
6	2021	P	2.75	700	11	2020	P	2.80	15715
7	2021	P	2.75	700	2	2021	C	4	15493

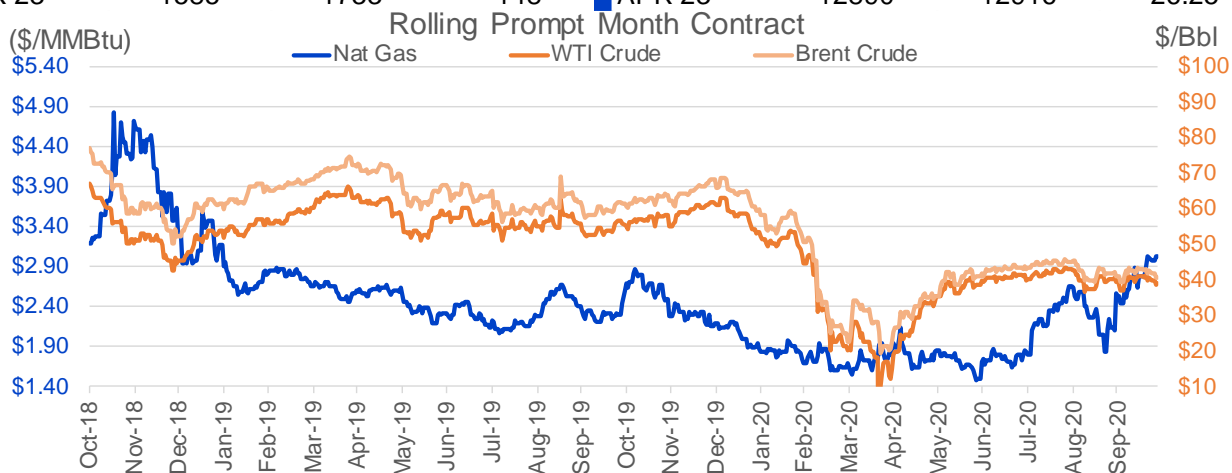
Source: CME, ICE

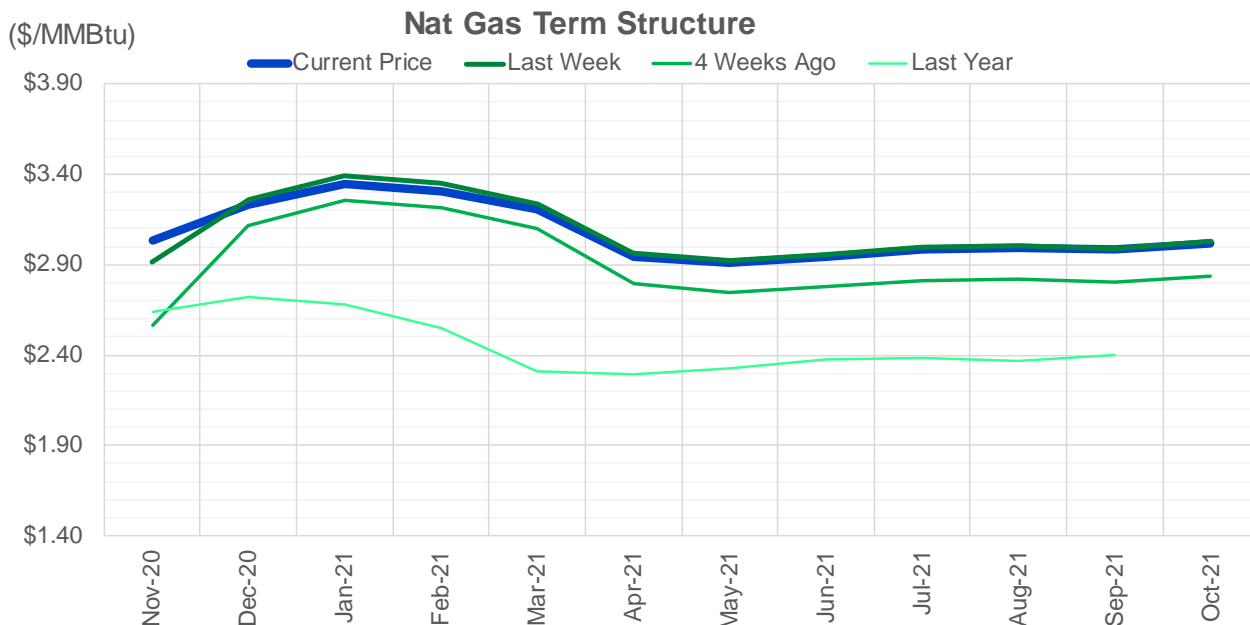


### Nat Gas Futures Open Interest

CME and ICE Combined

CME Henry Hub Futures (10,000 MMBtu)				ICE Henry Hub Futures Contract Equivalent (10,000 MM			
	Current	Prior	Daily Change	FOR JUNE 26	Current	Prior	Daily Change
NOV 20	14745	18689	-3944	NOV 20	62131	61443	688
DEC 20	181829	180336	1493	DEC 20	78470	79139	-668.5
JAN 21	203398	204786	-1388	JAN 21	90331	90814	-482.75
FEB 21	84060	83838	222	FEB 21	64675	64722	-47.25
MAR 21	136545	137119	-574	MAR 21	85825	84803	1021.75
APR 21	74030	74356	-326	APR 21	67429	67384	45
MAY 21	49803	50015	-212	MAY 21	65052	64695	357.5
JUN 21	34335	33741	594	JUN 21	56930	56879	51.75
JUL 21	26400	26204	196	JUL 21	58959	58863	96.5
AUG 21	27931	27430	501	AUG 21	62010	61608	402
SEP 21	39415	39664	-249	SEP 21	57047	56957	90.5
OCT 21	89992	90615	-623	OCT 21	69675	71340	-1665
NOV 21	33935	33774	161	NOV 21	51829	51518	311
DEC 21	27561	27580	-19	DEC 21	47321	47250	70.75
JAN 22	32034	31381	653	JAN 22	45300	44796	503.5
FEB 22	20311	20079	232	FEB 22	37247	36637	609.5
MAR 22	21909	22146	-237	MAR 22	40092	39493	599.25
APR 22	21536	21750	-214	APR 22	37956	37554	401.5
MAY 22	9591	9650	-59	MAY 22	29314	29012	302.25
JUN 22	5125	5103	22	JUN 22	28080	27762	318.5
JUL 22	4456	4400	56	JUL 22	29718	29275	443
AUG 22	3320	3270	50	AUG 22	28093	27692	401.25
SEP 22	3356	3316	40	SEP 22	27682	27419	262.5
OCT 22	4305	4193	112	OCT 22	32026	31863	162.75
NOV 22	3571	3573	-2	NOV 22	27278	26895	383
DEC 22	4270	4319	-49	DEC 22	30752	30304	448
JAN 23	3806	3590	216	JAN 23	14520	14485	35
FEB 23	941	941	0	FEB 23	13564	13538	25.5
MAR 23	2140	1503	637	MAR 23	13656	13659	-3
APR 23	1585	1733	-148	APR 23	12890	12916	-26.25





	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21
<b>Current Price</b>	<b>\$3.033</b>	<b>\$3.229</b>	<b>\$3.350</b>	<b>\$3.308</b>	<b>\$3.208</b>	<b>\$2.947</b>	<b>\$2.912</b>	<b>\$2.944</b>	<b>\$2.983</b>	<b>\$2.993</b>	<b>\$2.983</b>	<b>\$3.015</b>
Last Week	\$2.913	\$3.260	\$3.391	\$3.352	\$3.238	\$2.963	\$2.926	\$2.956	\$2.994	\$3.003	\$2.991	\$3.026
vs. Last Week	\$0.120	-\$0.031	-\$0.041	-\$0.044	-\$0.030	-\$0.016	-\$0.014	-\$0.012	-\$0.011	-\$0.010	-\$0.008	-\$0.011
4 Weeks Ago	\$2.561	\$3.118	\$3.259	\$3.214	\$3.096	\$2.796	\$2.749	\$2.776	\$2.811	\$2.819	\$2.806	\$2.835
vs. 4 Weeks Ago	\$0.472	\$0.111	\$0.091	\$0.094	\$0.112	\$0.151	\$0.163	\$0.168	\$0.172	\$0.174	\$0.177	\$0.180
Last Year	\$2.597	\$2.639	\$2.724	\$2.678	\$2.547	\$2.313	\$2.293	\$2.330	\$2.373	\$2.383	\$2.369	\$2.397
vs. Last Year	\$0.436	\$0.590	\$0.626	\$0.630	\$0.661	\$0.634	\$0.619	\$0.614	\$0.610	\$0.610	\$0.614	\$0.618

	Units	Cash Settled	Prompt Settle	Cash to Prompt
AGT Citygate	\$/MMBtu	3.20	3.68	0.48
TETCO M3	\$/MMBtu	1.71	2.54	0.83
FGT Zone 3	\$/MMBtu	1.91	2.93	1.02
Zone 6 NY	\$/MMBtu	1.91	2.69	0.78
Chicago Citygate	\$/MMBtu	3.06	2.86	-0.20
Michcon	\$/MMBtu	2.63	2.76	0.13
Columbia TCO Pool	\$/MMBtu	2.26	2.50	0.24
Ventura	\$/MMBtu	7.30	2.87	-4.43
Rockies/Opal	\$/MMBtu	3.54	2.66	-0.89
El Paso Permian Basin	\$/MMBtu	2.43	1.60	-0.84
Socal Citygate	\$/MMBtu	4.64	3.40	-1.24
Malin	\$/MMBtu	3.45	3.30	-0.15
Houston Ship Channel	\$/MMBtu	3.04	2.89	-0.15
Henry Hub Cash	\$/MMBtu	2.90	2.76	-0.14
AECO Cash	C\$/GJ	2.47	2.37	-0.10
Station2 Cash	C\$/GJ	2.45	4.84	2.39
Dawn Cash	C\$/GJ	3.03	2.82	-0.21

Source: CME, Bloomberg

	Units	Current Price	vs. 4 Weeks			
			vs. Last Week	Ago	vs. Last Year	
NatGas Jan/Apr	\$/MMBtu	-0.40	▲ 0.025	▲ 0.060	▲ 0.039	
NatGas Mar/Apr	\$/MMBtu	-0.261	▲ 0.014	▼ -0.561	▼ -0.536	
NatGas Oct/Nov	\$/MMBtu	0.93	▲ 0.120	▲ 0.472	▲ 0.865	
NatGas Oct/Jan	\$/MMBtu	1.25	▼ -0.041	▲ 0.091	▲ 0.899	
WTI Crude	\$/Bbl	38.94	▼ -2.520	▼ -0.350	▼ -16.600	
Brent Crude	\$/Bbl	40.83	▼ -2.330	▼ -0.200	▼ -20.760	
Fuel Oil, NY Harbour 1%	\$/Bbl	98.03	▲ 0.000	▲ 0.000	▲ 0.000	
Heating Oil	cents/Gallon	114.03	▼ -3.320	▲ 3.130	▼ -81.600	
Propane, Mt. Bel	cents/Gallon	0.52	▼ -0.002	▲ 0.028	▲ 0.056	
Ethane, Mt. Bel	cents/Gallon	0.21	▼ -0.002	▲ 0.016	▲ 0.027	
Coal, PRB	\$/MTon	12.30	▲ 0.000	▲ 0.000	▲ 0.050	
Coal, ILB	\$/MTon	31.05	▲ 0.000	▲ 0.000	▼ -4.500	