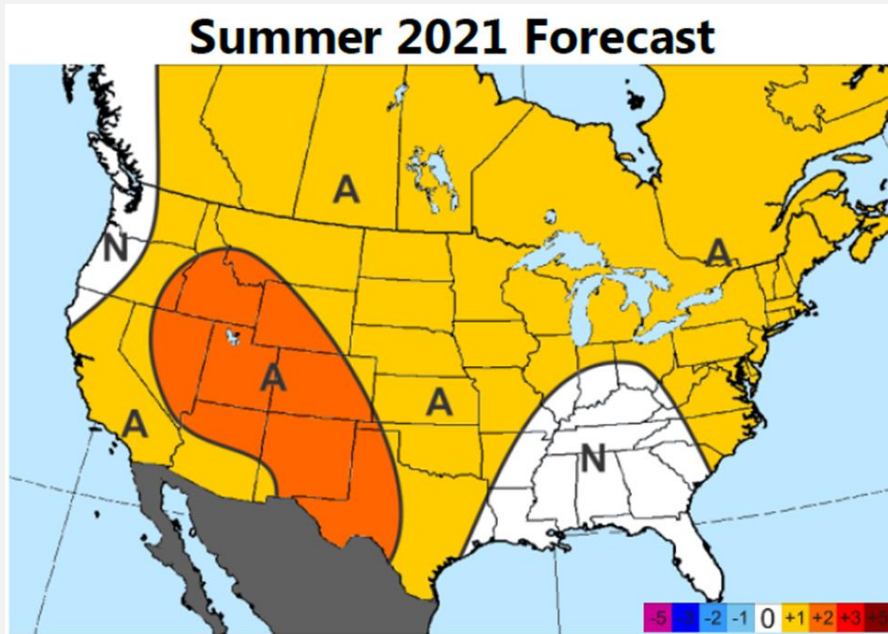
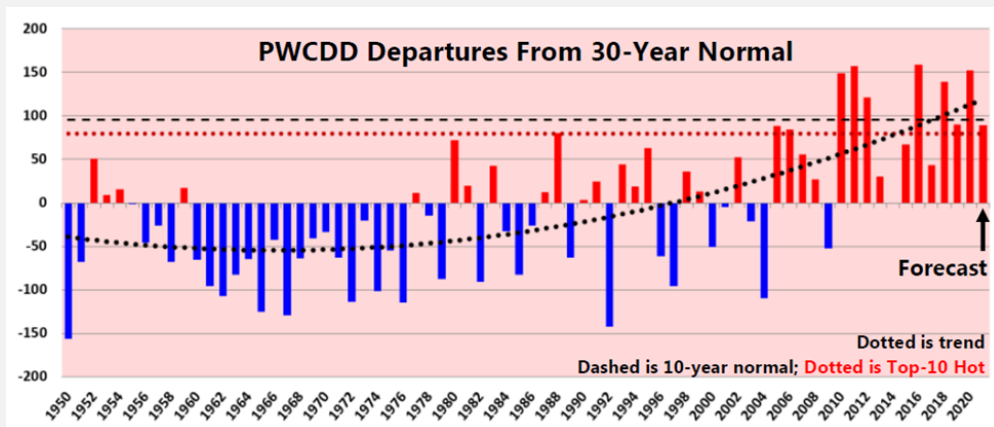


Maxar discussed their Summer 2021 forecast on enlyst this past week. Despite the cooling trend for the end of April, they show broadly a hotter than normal summer season with drought-affected areas in the West. The forecast is ~10% hotter than the 1981-2010 30Y normal per national population-weighted CDD measures and ranks in the top-10 for hottest summers back to 1950.

“Many of the factors contributing to the hotter summers of late are still present this year, including the warm Atlantic (i.e. +AMO) as observed in each of the past 10 years and the anomalously warm tropical waters in the West Pacific as observed in eight of the past 10 years.”

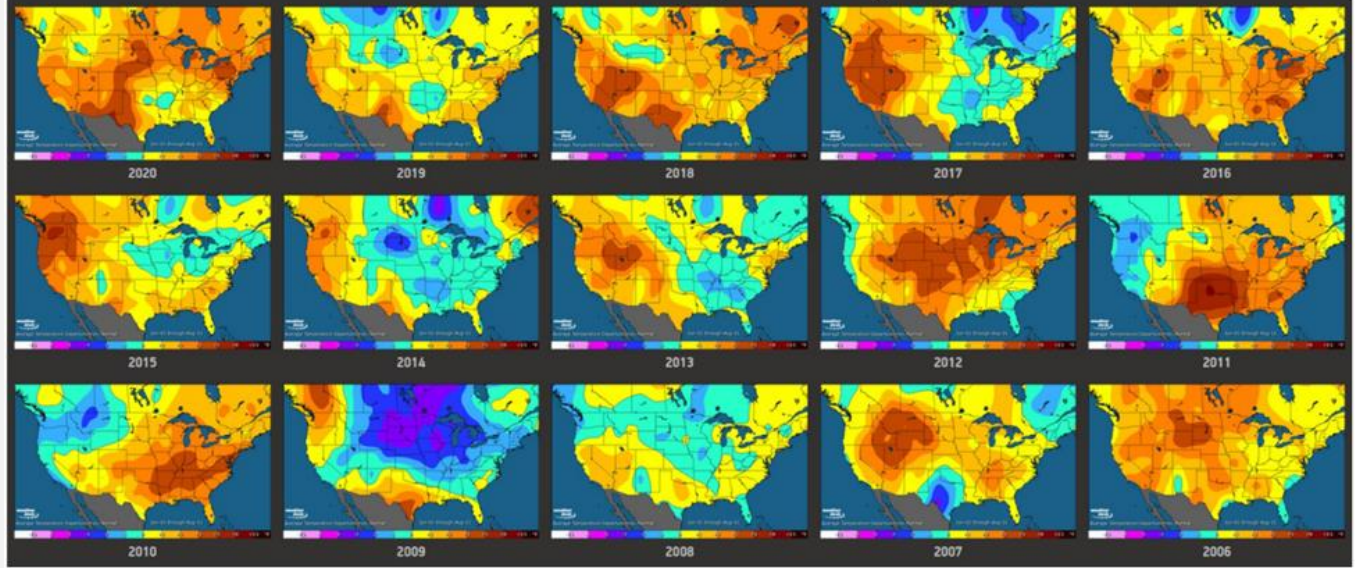


Despite the ranking, it is not surprising to forecast a top-10 hot summer at this lead time. Six of the top-7 hottest summers have all occurred in the past 10 years. Below shows the PWCCDs from June-August vs. the 30Y normal. It's evident how we have trended warmer over the past decade. A 10Y normal would be the 7th hottest back to 1950 with ~11% higher PWCCDs versus the 30Y normal, and therefore we feel comfortable in using the 10Y normal in our demand modeling exercise.



Below are the outcomes of the past 15 summers from Maxar. Of these, 11 are in the top-20 for hottest summers back to 1950 including eight in the top-10. Also notable is that zero seasons among this list ranked in the top-20 for coolest back to 1950.

Past 15 Summers (June-August)



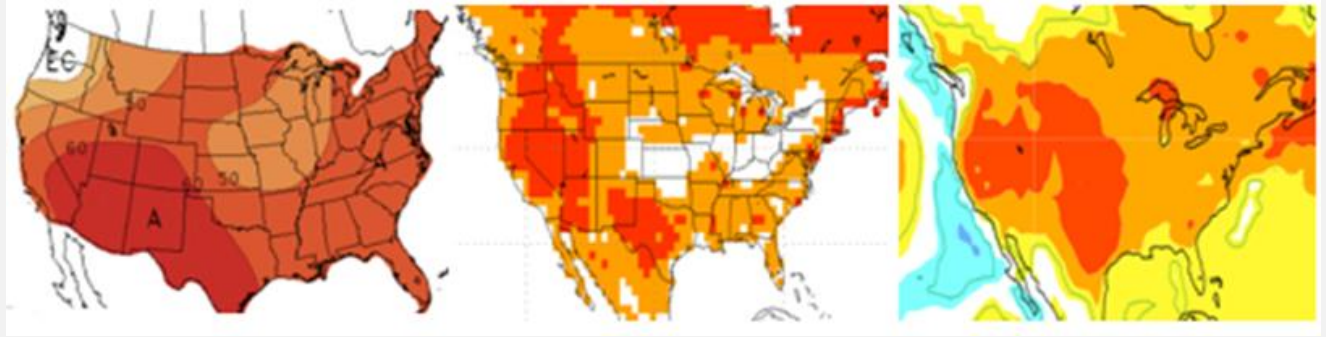
As a comparison, here are the May-July views from all the other major models.

3-Month Weather Outlooks (May-July)

CPC

CFS

ECMWF



Hurricane forecast issued on April 8th

Colorado State University researchers are predicting an above-average 2021 Atlantic Hurricane Season, with 17 named storms and eight hurricanes.

2021 FORECAST AS OF 8 APRIL 2021		
Forecast Parameter	CSU Forecast	1981-2010* Average
Named Storms (NS)	17	12.1
Named Storm Days (NSD)	80	59.4
Hurricanes (H)	8	6.4
Hurricane Days (HD)	35	24.2
Major Hurricanes (MH)	4	2.7
Major Hurricane Days (MHD)	9	6.2
Accumulated Cyclone Energy (ACE)	150	106
Net Tropical Cyclone Activity (NTC)	160	116

**CSU will change its climatology from 1981-2010 to the new climatology that NOAA decides to use with its seasonal outlooks*

PROBABILITIES FOR AT LEAST ONE MAJOR (CATEGORY 3-4-5) HURRICANE LANDFALL ON EACH OF THE FOLLOWING COASTAL AREAS:

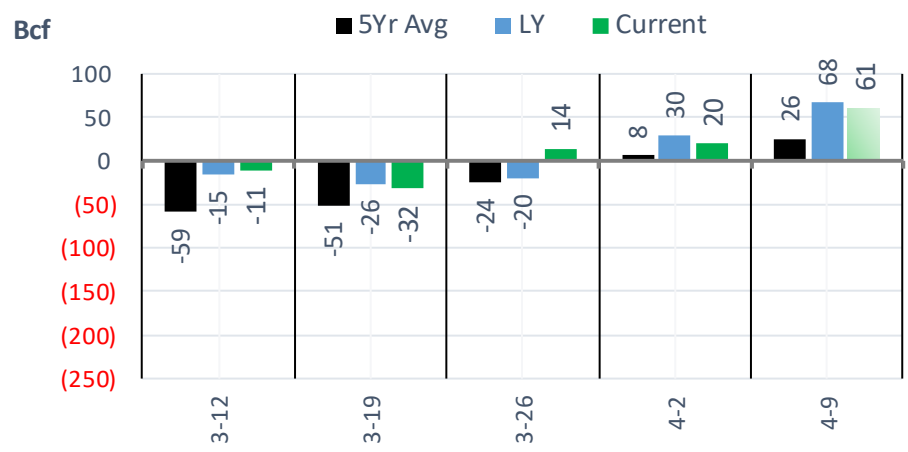
- 1) Entire continental U.S. coastline - 69% (average for last century is 52%)
- 2) U.S. East Coast Including Peninsula Florida - 45% (average for last century is 31%)
- 3) Gulf Coast from the Florida Panhandle westward to Brownsville - 44% (average for last century is 30%)

PROBABILITY FOR AT LEAST ONE MAJOR (CATEGORY 3-4-5) HURRICANE TRACKING INTO THE CARIBBEAN (10-20°N, 88-60°W)

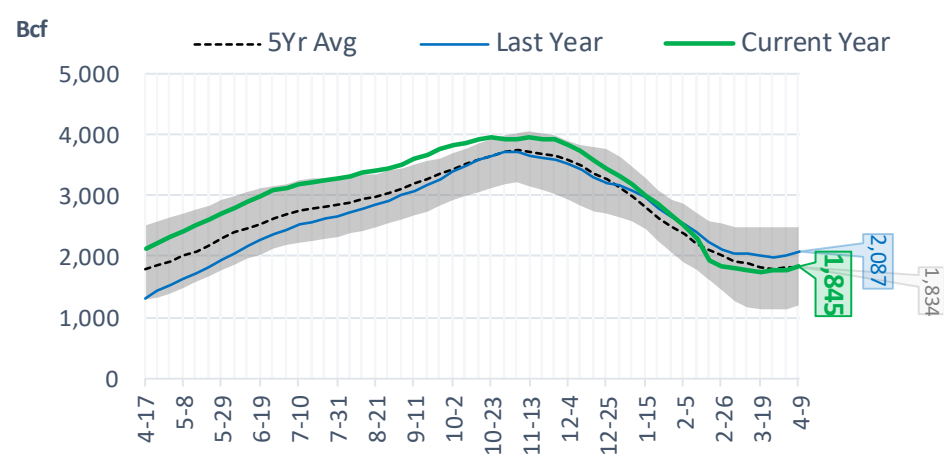
- 1) 58% (average for last century is 42%)

EIA Storage Report

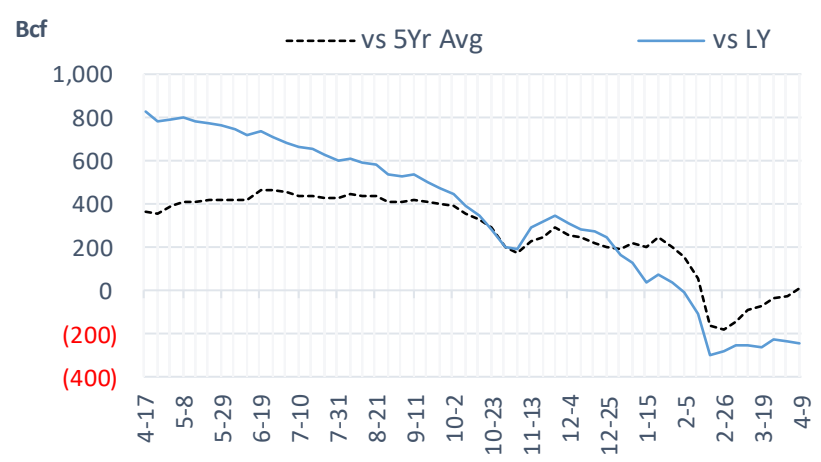
Total Lower 48 YoY Weekly Change



Total Lower 48 Storage Levels



Total Lower 48 LY Surplus/Deficit

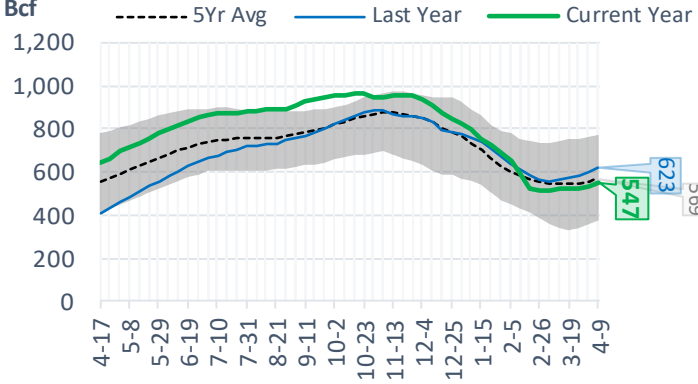


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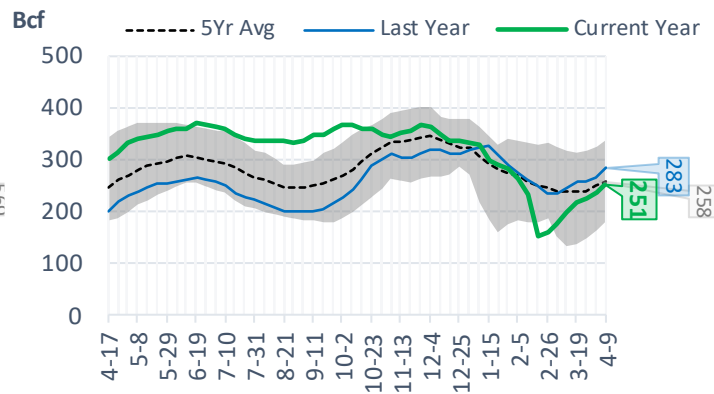
Natural Gas Storage Stats - Last 5 Weeks

Week Ending	Current 9-Apr	Week - 1 2-Apr	Week - 2 26-Mar	Week - 3 19-Mar	Week - 4 12-Mar	Week - 5 5-Mar
Total Lower 48 Storage Level	1845	1784	1764	1750	1782	1793
Weekly Change	+61	+20	+14	-32	-11	-52
vs LY	-242	-235	-225	-259	-253	-257
vs 5Yr Avg	+11	-24	-36	-74	-93	-141
S. Central Salt Storage Level	251	235	226	215	197	176
Weekly Change	+16	+9	+11	+18	+21	+17
vs LY	-32	-29	-30	-41	-48	-58
vs 5Yr Avg	-7	-13	-13	-21	-40	-62
S. Central NonSalt Storage Level	547	533	523	519	519	509
Weekly Change	+14	+10	+4	0	+10	-2
vs LY	-76	-71	-60	-52	-47	-47
vs 5Yr Avg	-22	-25	-25	-23	-24	-35
Midwest Storage Level	414	398	401	405	426	440
Weekly Change	+16	-3	-4	-21	-14	-25
vs LY	-71	-77	-77	-90	-88	-93
vs 5Yr Avg	+16	-2	-6	-19	-23	-33
East Storage Level	311	305	307	307	328	350
Weekly Change	+6	-2	0	-21	-22	-33
vs LY	-86	-77	-77	-93	-86	-80
vs 5Yr Avg	+8	+2	-3	-22	-25	-32
Mountain Storage Level	118	115	112	112	114	113
Weekly Change	+3	+3	0	-2	+1	-4
vs LY	+23	+23	+20	+19	+18	+15
vs 5Yr Avg	+11	+9	+6	+6	+7	+4
Pacific Storage Level	205	198	194	193	199	205
Weekly Change	+7	+4	+1	-6	-6	-5
vs LY	+2	-4	-3	-2	0	+5
vs 5Yr Avg	+7	+4	+5	+7	+13	+17

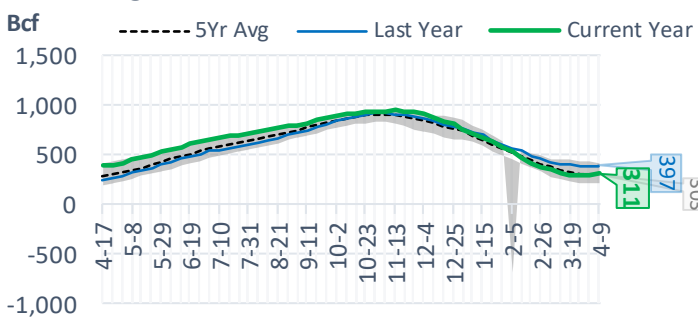
NonSalt Storage Levels



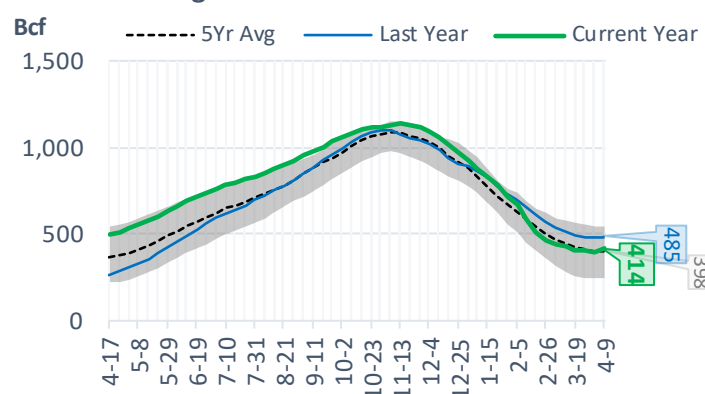
Salt Storage Levels



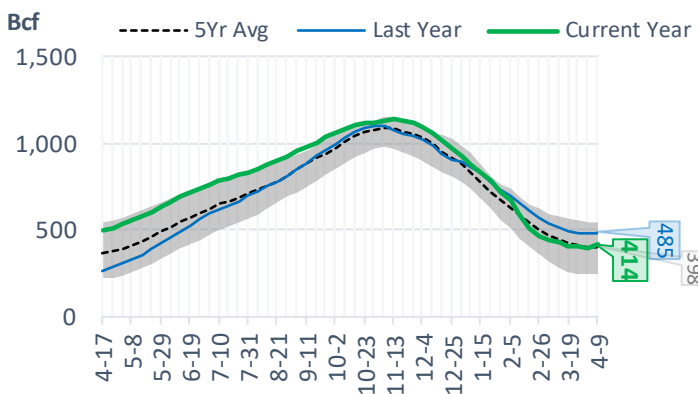
East Storage Levels



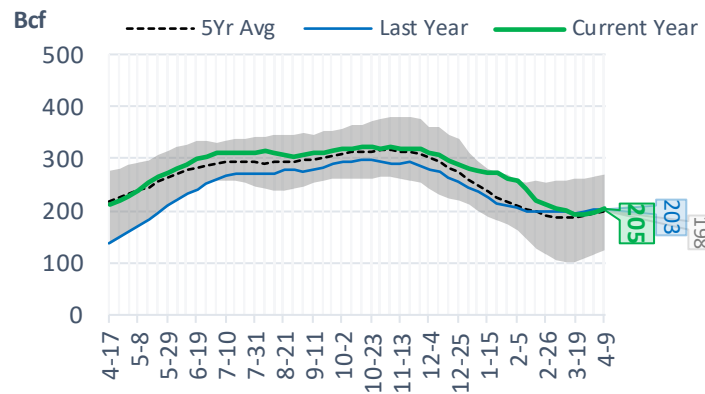
Midwest Storage Levels



Midwest Storage Levels



Pacific Storage Levels



EIA Storage Week Balances

	12-Mar	19-Mar	26-Mar	2-Apr	9-Apr	16-Apr	WoW	vs. 4W
Lower 48 Dry Production	91.8	91.8	92.0	92.5	92.1	91.3	▼-0.8	▼-0.8
Canadian Imports	4.7	5.0	4.5	4.5	4.2	4.3	▲0.1	▼-0.3
L48 Power	24.9	24.9	24.2	24.7	23.3	24.5	▲1.2	▲0.2
L48 Residential & Commercial	30.2	30.3	24.9	23.2	18.5	18.4	▼-0.1	▼-5.8
L48 Industrial	18.6	21.2	20.2	21.0	21.7	19.6	▼-2.1	▼-1.4
L48 Lease and Plant Fuel	5.1	5.1	5.1	5.1	5.1	5.0	▼0.0	▼0.0
L48 Pipeline Distribution	2.6	2.6	2.3	2.3	2.1	2.1	▲0.1	▼-0.2
L48 Regional Gas Consumption	81.4	84.1	76.7	76.4	70.7	69.7	▼-1.0	▼-7.3
Net LNG Exports	10.6	11.2	11.6	11.7	11.5	11.4	▼-0.1	▼-0.1
Total Mexican Exports	6.5	6.3	6.6	6.4	6.2	7.3	▲1.1	▲0.9
Implied Daily Storage Activity	-2.0	-4.8	1.6	2.4	7.9	7.3	-0.6	
EIA Reported Daily Storage Activity	-1.6	-4.6	2.0	2.9	8.7			
Daily Model Error	-0.4	-0.2	-0.4	-0.4	-0.8			

Monthly Balances

	2Yr Ago Apr-19	LY Apr-20	Dec-20	Jan-21	Feb-21	Mar-21	MTD Apr-21	MoM	vs. LY
Lower 48 Dry Production	89.1	91.9	91.0	90.5	85.1	92.0	91.7	▼-0.3	▲1.1
Canadian Imports	4.6	4.0	5.8	6.3	6.4	4.7	4.4	▼-0.4	▼-1.9
L48 Power	24.6	25.6	28.0	28.2	27.7	25.0	24.1	▼-0.9	▼-4.0
L48 Residential & Commercial	19.1	20.5	40.0	43.8	47.7	28.3	19.6	▼-8.6	▼-24.2
L48 Industrial	21.5	19.9	23.3	23.4	22.2	20.1	20.7	▲0.6	▼-2.7
L48 Lease and Plant Fuel	4.9	5.1	5.0	5.1	4.7	5.1	5.0	▼0.0	▼0.0
L48 Pipeline Distribution	2.2	2.3	3.1	3.2	3.4	2.5	2.2	▼-0.4	▼-1.1
L48 Regional Gas Consumption	72.3	73.2	99.4	103.7	105.7	81.0	71.7	▼-9.3	▼-32.0
Net LNG Exports	4.5	8.2	11.0	10.5	8.4	11.1	11.5	▲0.3	▲1.0
Total Mexican Exports	4.7	4.8	5.8	6.2	5.7	6.5	6.7	▲0.3	▲0.6
Implied Daily Storage Activity	12.3	9.6	-19.5	-23.5	-28.3	-1.9	6.1		
EIA Reported Daily Storage Activity									
Daily Model Error									

Source: Bloomberg, analytix.ai

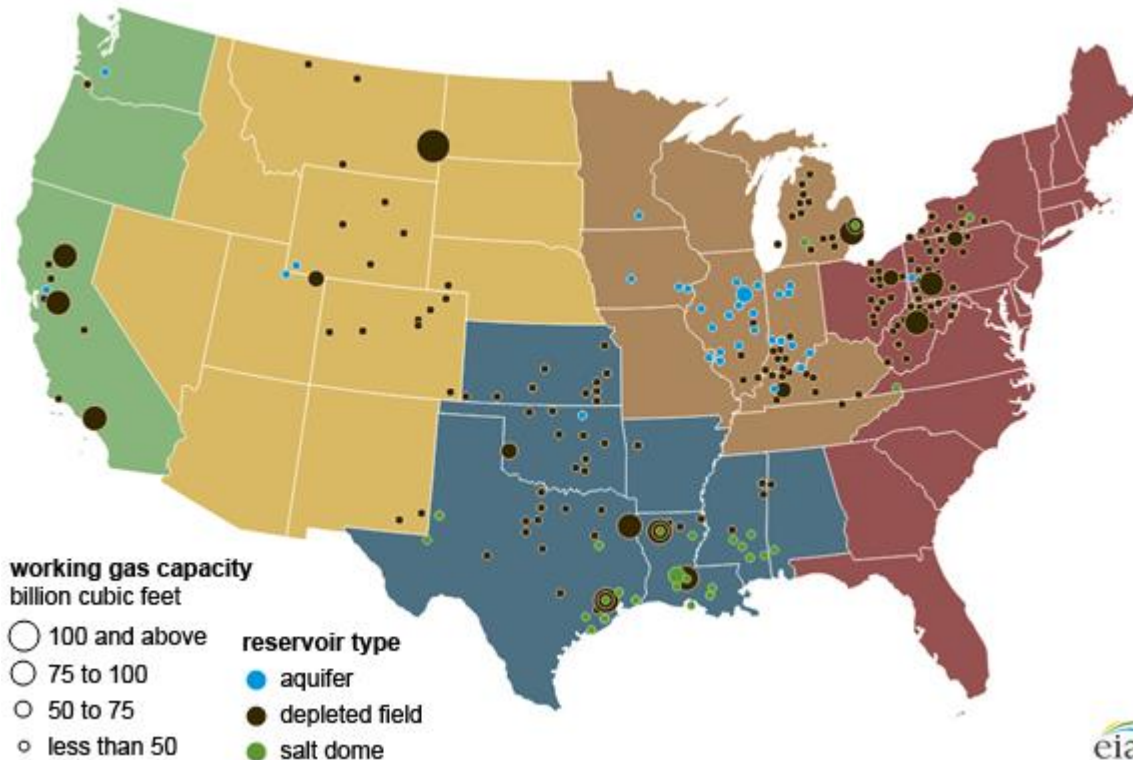
Regional S/D Models Storage Projection

Week Ending 16-Apr

	Daily Raw Storage	Daily Adjustment Factor	Daily Average Storage Activity (Adjusted) *	Weekly Adjusted Storage Activity
L48	6.9	1.0	7.9	55
East	0.8	2.2	3.0	21
Midwest	2.1	-0.2	2.0	14
Mountain	3.1	-2.8	0.3	2
South Central	-0.3	2.2	1.9	13
Pacific	1.2	-0.4	0.8	5

*Adjustment Factor is calculated based on historical regional deltas

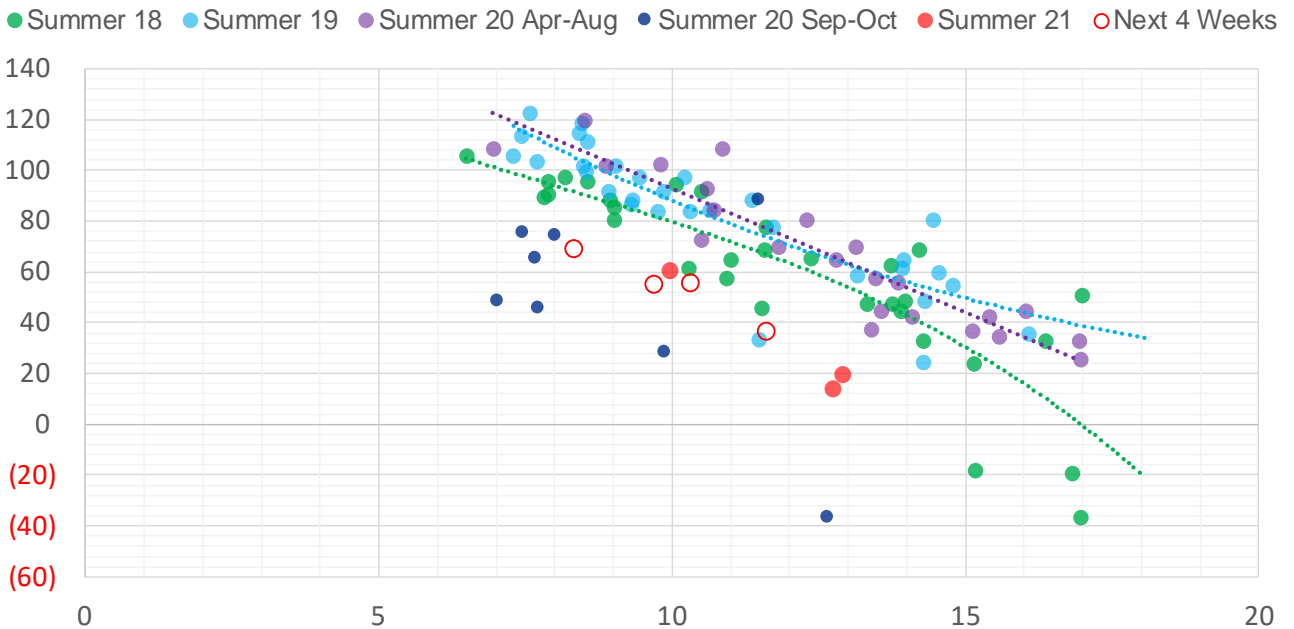
U.S. underground natural gas storage facilities by type (July 2015)



Weather Model Storage Projection

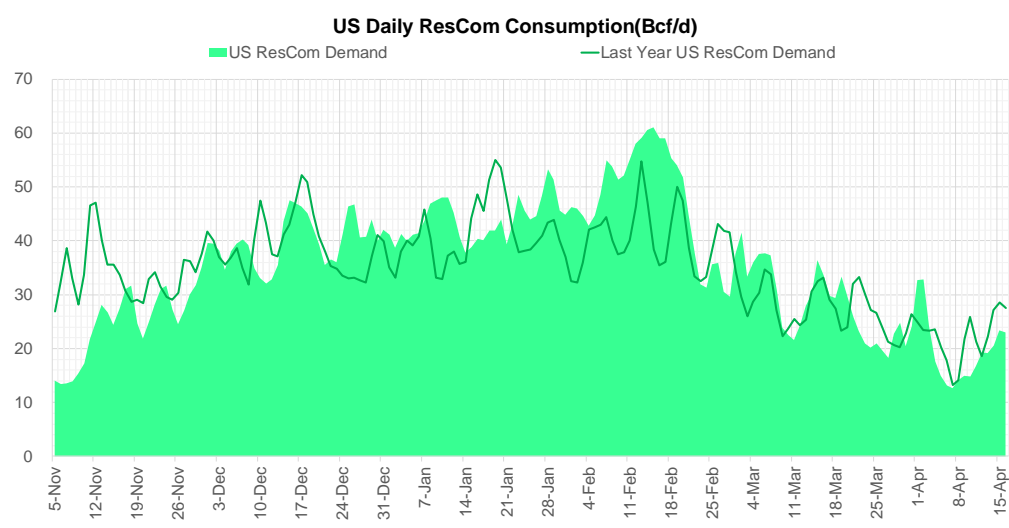
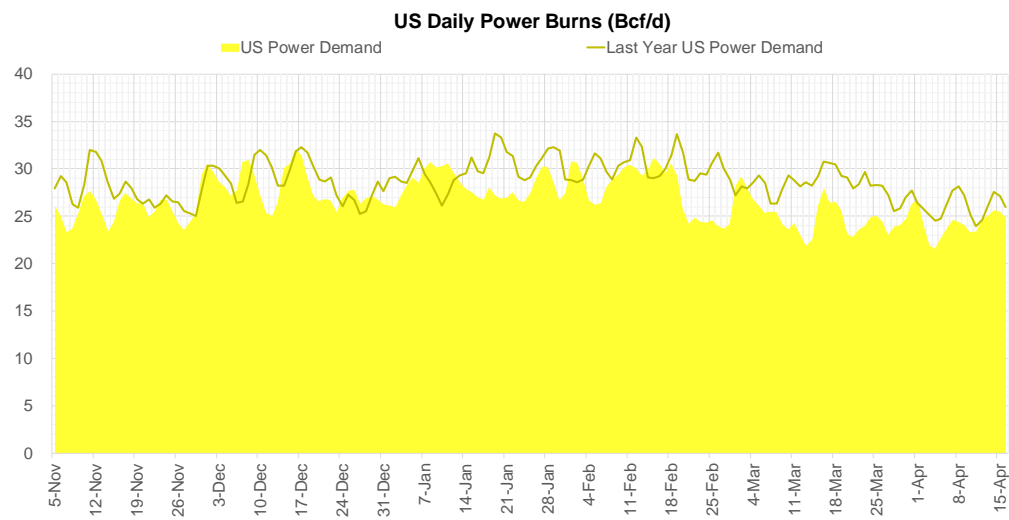
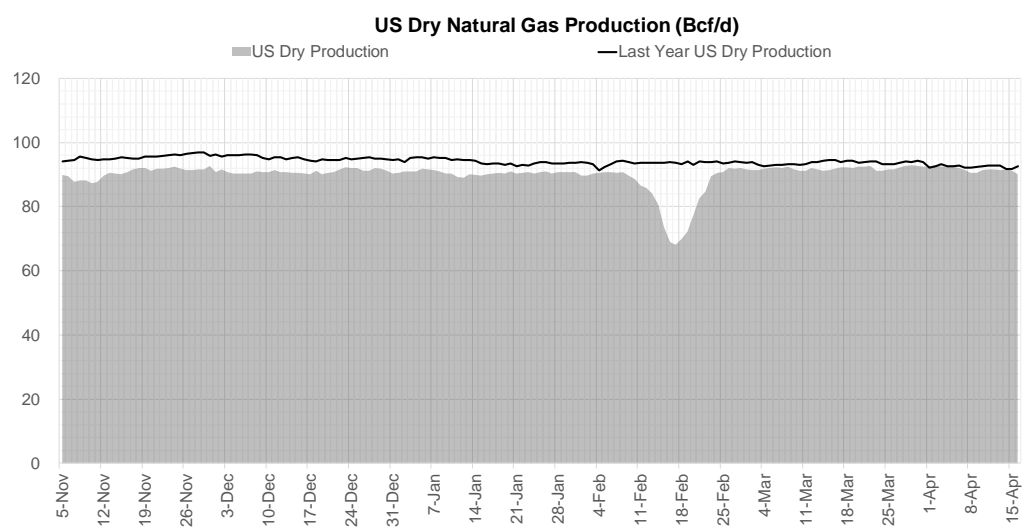
Next report and beyond		
Week Ending	Temp	Week Storage Projection
23-Apr	11.6	37
30-Apr	9.7	55
07-May	8.4	69

Weather Storage Model - Next 4 Week Forecast



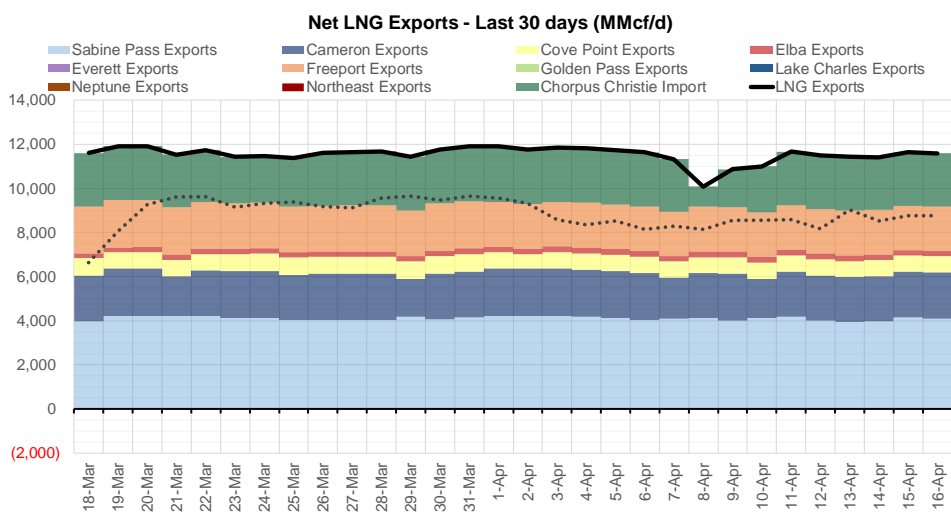
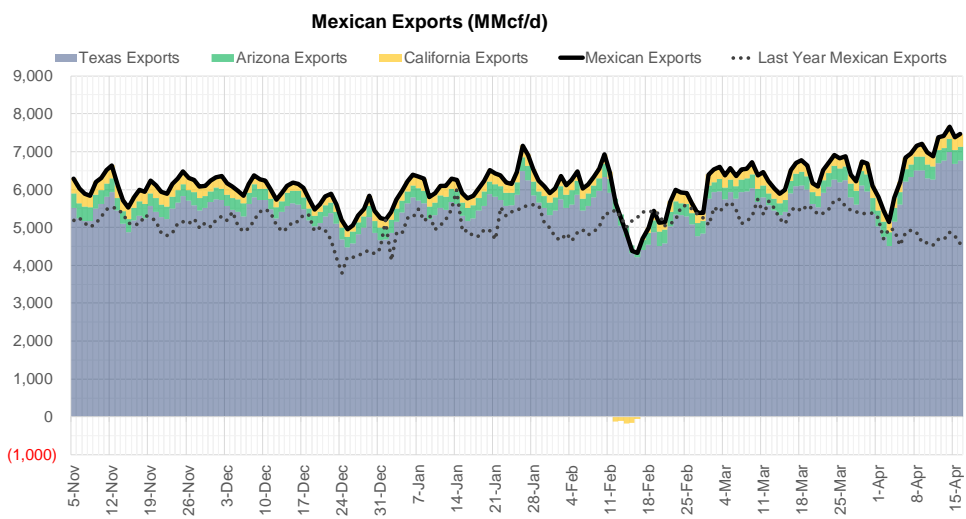
Note: this is not our official end of season forecast. This chart signifies where storage levels end with 10-year normal weather and current market tightness relative to last year

Supply – Demand Trends



Source: Bloomberg

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Source: Bloomberg

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

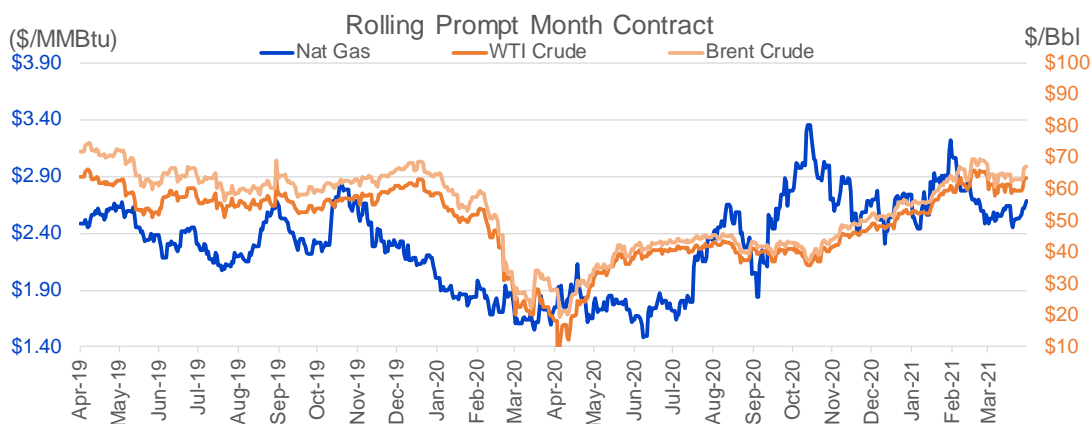
CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE VOL	CONTRACT MONTH	CONTRACT YEAR	PUT/CALL	STRIKE	CUMULATIVE OI
5	2021	C	2.75	7144	10	2021	C	4.00	38935
5	2021	P	2.50	6718	5	2021	C	3.00	33832
5	2021	P	2.40	4179	8	2021	C	4.00	33718
5	2021	C	2.85	3251	5	2021	P	2.50	31211
6	2021	P	2.25	2861	10	2021	C	3.25	29937
5	2021	P	2.55	2754	7	2021	C	4.00	28238
5	2021	P	2.65	2290	6	2021	C	4.00	27953
5	2021	P	2.45	2051	10	2021	C	5.00	26539
6	2021	P	2.50	1814	5	2021	C	3.50	25934
6	2021	P	2.35	1772	5	2021	P	2.00	25423
5	2021	C	2.70	1732	8	2021	C	3.50	25003
6	2021	P	2.70	1566	5	2021	C	3.25	24913
5	2021	C	3.00	1490	6	2021	P	2.50	24738
6	2021	C	3.00	1343	5	2021	C	4.00	24706
6	2021	P	2.40	1329	5	2021	P	2.25	24003
8	2021	C	2.80	1300	10	2021	C	3.50	23065
6	2021	C	3.25	1129	6	2021	C	3.00	23050
5	2021	P	2.35	1105	5	2021	C	2.75	21861
7	2021	C	2.80	1063	8	2021	C	3.25	21685
6	2021	C	2.80	1016	7	2021	C	3.25	21192
9	2021	C	2.80	1000	5	2021	P	2.40	19658
10	2021	C	2.80	1000	10	2021	C	3.00	19636
2	2022	C	3.25	1000	6	2021	P	2.25	19615
5	2021	P	2.60	897	6	2021	C	3.25	19434
5	2021	C	2.90	877	8	2021	P	2.25	19413
5	2021	C	2.80	858	6	2021	C	3.50	19117
6	2021	C	2.90	811	9	2021	C	3.50	18978
5	2021	C	2.60	810	4	2022	C	3.00	18762
10	2021	P	2.60	800	7	2021	P	2.50	18664
5	2021	C	2.65	781	7	2021	C	3.50	18567
5	2021	C	3.35	751	10	2021	P	2.00	18110
9	2021	P	2.60	750	10	2021	P	2.50	18009
5	2021	C	2.95	673	9	2021	P	2.00	17768
6	2021	C	2.60	600	8	2021	C	3.00	17359
1	2022	P	2.00	600	8	2021	P	2.50	17065
6	2021	P	2.55	536	6	2021	P	2.00	17057
6	2021	P	2.60	504	11	2021	C	4.00	16600
6	2021	C	3.05	502	12	2021	C	4.00	16417
9	2021	C	3.05	502	6	2021	C	2.75	16223
7	2021	C	2.60	500	10	2021	P	2.25	15969
7	2021	C	3.05	500	7	2021	C	3.00	15880
8	2021	C	2.60	500	6	2021	C	3.75	15649
8	2021	C	3.05	500	7	2021	P	2.00	15558
9	2021	C	2.60	500	8	2021	P	2.00	14825
9	2021	P	2.80	500	9	2021	C	4.00	14200
10	2021	C	2.60	500	12	2021	P	2.00	13951
10	2021	C	3.05	500	9	2021	P	1.90	13733
10	2021	P	2.80	500	5	2021	P	2.60	13730
8	2021	C	3.25	485	3	2022	C	5.00	13675
					9	2021	C	3.25	13535

Source: CME, Nasdaq, ICE

Nat Gas Futures Open Interest CME, ICE and Nasdaq 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
MAY 21	121902	133574	-11672	MAY 21	78085	79180	-1094
JUN 21	155978	148171	7807	JUN 21	76581	74466	2115
JUL 21	183986	182646	1340	JUL 21	86820	86251	569
AUG 21	66976	65295	1681	AUG 21	77479	78121	-642
SEP 21	103437	104333	-896	SEP 21	69071	69395	-324
OCT 21	128306	128817	-511	OCT 21	83460	83888	-428
NOV 21	64889	64451	438	NOV 21	60176	60106	69
DEC 21	45559	46104	-545	DEC 21	59391	59168	222
JAN 22	62870	62673	197	JAN 22	61490	61196	293
FEB 22	21838	22281	-443	FEB 22	45212	44866	346
MAR 22	41922	41796	126	MAR 22	50706	50553	153
APR 22	49177	49025	152	APR 22	47170	46987	183
MAY 22	25290	25234	56	MAY 22	40360	40170	190
JUN 22	13798	13864	-66	JUN 22	38882	38655	227
JUL 22	9070	9069	1	JUL 22	38493	38219	273
AUG 22	8581	8537	44	AUG 22	37813	37597	216
SEP 22	9104	9020	84	SEP 22	38718	38523	195
OCT 22	20924	20845	79	OCT 22	44058	43848	210
NOV 22	10223	10243	-20	NOV 22	34484	34313	171
DEC 22	9246	9247	-1	DEC 22	38911	38853	58
JAN 23	5898	5888	10	JAN 23	21068	20857	211
FEB 23	2350	2349	1	FEB 23	19816	19599	217
MAR 23	5228	5222	6	MAR 23	21793	21668	125
APR 23	5579	5584	-5	APR 23	17858	17707	151
MAY 23	4002	4003	-1	MAY 23	17776	17559	218
JUN 23	1019	998	21	JUN 23	16436	16367	69
JUL 23	1100	1096	4	JUL 23	16344	16211	133
AUG 23	751	751	0	AUG 23	16729	16658	71
SEP 23	613	613	0	SEP 23	15880	15684	196
OCT 23	1678	1675	3	OCT 23	16994	16926	68

Source: CME, ICE



(\$/MMBtu)

Nat Gas Term Structure




	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22
Current Price	\$2.686	\$2.755	\$2.828	\$2.854	\$2.839	\$2.855	\$2.924	\$3.060	\$3.152	\$3.084	\$2.902	\$2.537
Last Week	\$2.526	\$2.605	\$2.691	\$2.724	\$2.715	\$2.735	\$2.823	\$2.980	\$3.073	\$3.013	\$2.837	\$2.511
vs. Last Week	\$0.160	\$0.150	\$0.137	\$0.130	\$0.124	\$0.120	\$0.101	\$0.080	\$0.079	\$0.071	\$0.065	\$0.026
4 Weeks Ago	\$2.535	\$2.566	\$2.624	\$2.682	\$2.696	\$2.686	\$2.702	\$2.775	\$2.907	\$3.004	\$2.951	\$2.780
vs. 4 Weeks Ago	\$0.151	\$0.189	\$0.204	\$0.172	\$0.143	\$0.169	\$0.222	\$0.285	\$0.245	\$0.080	-\$0.049	-\$0.243
Last Year	\$1.753	\$1.903	\$2.074	\$2.154	\$2.184	\$2.250	\$2.472	\$2.791	\$2.928	\$2.890	\$2.766	\$2.499
vs. Last Year	\$0.933	\$0.852	\$0.754	\$0.700	\$0.655	\$0.605	\$0.452	\$0.269	\$0.224	\$0.194	\$0.136	\$0.038

	Units	Current Price	vs. Last Week	vs. 4 Weeks Ago	vs. Last Year
NatGas Jul21/Oct21	\$/MMBtu	0.027	▼ -0.017	▲ 0.007	▲ 0.039
NatGas Oct21/Nov21	\$/MMBtu	0.069	▼ -0.019	▼ -0.004	▲ 0.034
NatGas Oct21/Jan22	\$/MMBtu	0.297	▼ -0.041	▼ -0.005	▲ 0.028
NatGas Apr22/Oct22	\$/MMBtu	0.032	▼ -0.002	▼ -0.017	▼ -0.023
WTI Crude	\$/Bbl	63.45	▲ 4.130	▲ 2.030	▲ 45.180
Brent Crude	\$/Bbl	67.01	▲ 4.060	▲ 2.480	▲ 38.930
Fuel Oil, NY Harbour 1%	\$/Bbl	97.18	▲ 0.000	▲ 0.000	▲ 0.000
Heating Oil	cents/Gallon	190.04	▲ 9.280	▲ 7.810	▲ 94.410
Propane, Mt. Bel	cents/Gallon	0.82	▼ -0.028	▼ -0.103	▲ 0.473
Ethane, Mt. Bel	cents/Gallon	0.23	▲ 0.003	▲ 0.014	▲ 0.116
Coal, PRB	\$/MTon	12.30	▲ 0.000	▲ 0.000	▲ 0.000
Coal, PRB	\$/MMBtu	0.70			

Source: CME, Bloomberg

Baker Hughes Rig Counts

Rotary Rig Count						Baker Hughes 
4/16/2021						
U.S. Breakout Information	This Week	+/-	Last Week	+/-	Year Ago	
Oil	344	7	337	-94	438	
Gas	94	1	93	5	89	
Miscellaneous	1	-1	2	-1	2	
Directional	20	2	18	-8	28	
Horizontal	398	4	394	-85	483	
Vertical	21	1	20	3	18	
Canada Breakout	This Week	+/-	Last Week	+/-	Year Ago	
Oil	17	-2	19	10	7	
Gas	39	0	39	16	23	
Major Basin Variances	This Week	+/-	Last Week	+/-	Year Ago	
Ardmore Woodford	0	0	0	-4	4	
Arkoma Woodford	0	0	0	-1	1	
Barnett	1	0	1	-1	2	
Cana Woodford	12	0	12	5	7	
DJ-Niobrara	7	0	7	-9	16	
Eagle Ford	33	0	33	-9	42	
Granite Wash	3	2	1	1	2	
Haynesville	45	0	45	10	35	
Marcellus	29	-1	30	-6	35	
Permian	227	3	224	-56	283	
Utica	10	0	10	1	9	
Williston	15	1	14	-19	34	