

NGI's LNG INSIGHT

Bringing a North American Focus to International LNG

MONDAY, JULY 6, 2020 - VOL. 1, NO. 183

Daily Rundown

- Dominion has sold another 25% stake in Cove Point LNG
- U.S. feed gas deliveries have again plummeted as production is on the rise
- Jordan Cove LNG cleared another regulatory hurdle, but still faces a series of challenges

MARKETS REVIEW

LNG Recap: Berkshire Hathaway Affiliate to Takeover Operations at Cove Point

A Berkshire Hathaway Inc. affiliate will take over operations of the Cove Point liquefied natural gas (LNG) export terminal after it agreed to acquire a 25% stake in the facility as part of a broader \$9.7 billion deal to buy Dominion Energy Inc.'s natural gas transmission and storage segment.

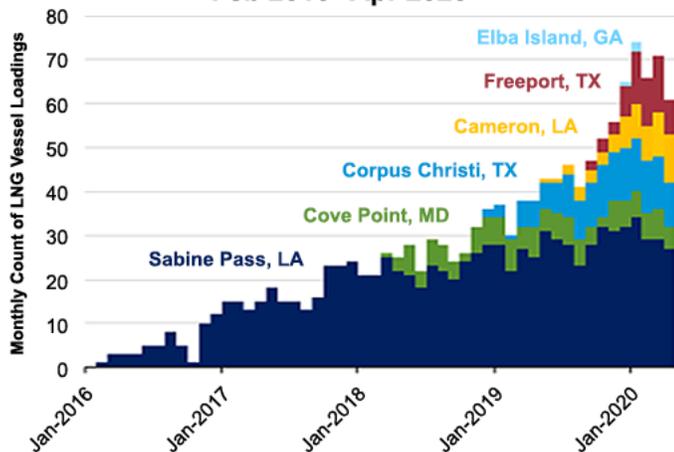
Dominion will retain a 50% passive interest in the terminal, one of six in operation across the United States that's located on the Chesapeake Bay in Lusby, MD, south of Baltimore. Dominion is divesting the transmission and storage assets as it plans to focus entirely on its state-regulated electricity and natural gas utilities. The deal is expected to close in 4Q2020.

The sale of interest in Cove Point to Berkshire Hathaway Energy follows another late last year, when Dominion sold a 25% stake to Brookfield Asset Management Inc. in a deal valued at more than \$2 billion.

Cove Point has storage capacity of 14.6 Bcf and the ability to send out 1.8 Bcf/d. It was built in the 1970s to import LNG and started exporting in April 2018.

...cont' pg. 4

LNG Vessel Loadings at U.S. LNG Export Facilities Feb 2016–Apr 2020



Note: Data for April 2020 are EIA's estimates based on vessel shipping data provided by Bloomberg Finance, L.P. and Marinetraffic.com.

Source: EIA

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Prompt Month Statistics - Previous 5 Trading Days

| | 29-Jun | 30-Jun | 1-Jul | 2-Jul | 6-Jul |
|---|---------|--------|--------|--------|--------|
| Max GOM Netback (\$US/MMBtu) | 1.563 | 1.591 | 1.537 | 1.518 | 1.583 |
| L48 LNG Feedstock Deliveries (dth/d) | 4.20 | 4.47 | 3.26 | 3.04 | 3.22 |
| Futures (\$US/MMBtu) | | | | | |
| Henry Hub | 1.709 | 1.751 | 1.671 | 1.734 | 1.830 |
| JPN/KOR | 2.200 | 2.150 | 2.200 | 2.200 | 2.195 |
| NBP | 1.981 | 2.011 | 1.961 | 1.916 | 1.904 |
| TTF | 2.002 | 2.031 | 1.934 | 1.958 | 2.024 |
| Shipping (\$US/MMBtu)* | | | | | |
| Sabine Pass to Tokyo | 0.917 | 0.917 | 0.918 | 0.918 | 0.918 |
| Sabine Pass to Milford Haven (U.K.) | 0.424 | 0.425 | 0.425 | 0.424 | 0.424 |
| Sabine Pass to Gate (NW Europe) | 0.440 | 0.441 | 0.439 | 0.439 | 0.441 |
| Landed Price Arbitrage (\$US/MMBtu)** | | | | | |
| Sabine to Tokyo | -0.682 | -0.781 | -0.639 | -0.712 | -0.828 |
| Sabine to Gate | -0.403 | -0.423 | -0.426 | -0.476 | -0.522 |
| Europe Fundamentals | | | | | |
| Gas in Storage (TWh)*** | 877.1 | 880.8 | 883.3 | 887.0 | 898.4 |
| % Full | 79.3% | 79.6% | 79.8% | 80.2% | 81.2% |
| Difference to Last Year (TWh) | 96.9 | 96.3 | 93.9 | 92.6 | 89.8 |
| Gas in LNG Storage (10 ³ m ³)*** | 5457.12 | 5068.1 | 4901.5 | 4893.5 | 5375.6 |
| % Full | 58.2% | 54.1% | 52.3% | 52.2% | 57.3% |
| Spark Spread (Eur/MWh) | 20.58 | 21.58 | 22.34 | 22.10 | 23.19 |
| Clean Spark Spread (Eur/MWh) | 8.79 | 9.72 | 10.18 | 10.09 | 10.22 |
| Dark Spread (Eur/MWh) | 15.05 | 16.46 | 16.57 | 16.09 | 17.33 |
| Clean Dark Spread (Eur/MWh) | -13.06 | -11.84 | -12.45 | -12.55 | -13.62 |
| PVB/TTF Premium (%) | 30.5% | 30.5% | 27.9% | 28.8% | 27.7% |
| NW Europe Mean Temp (°F) | 63 | 63 | 66 | 68 | TBD |
| % Diff From 30-Yr Normal | -0.5% | -0.2% | 3.4% | 5.6% | N/A |
| Asia Fundamentals | | | | | |
| JKM/KOR Oil Parity Slope | 5.3% | 5.2% | 5.2% | 5.1% | 5.1% |
| Brent Oil Price Parity (\$US/MMBtu) | 7.17 | 7.08 | 7.23 | 7.42 | 7.41 |
| JKM/KOR Futures (\$US/MMBtu) | 2.20 | 2.15 | 2.20 | 2.20 | 2.20 |
| Japan Coal Price (\$US/MMBtu) | 2.94 | 2.91 | 2.89 | 2.94 | 2.98 |
| Beijing Mean Temp (°F) | 77 | 83 | 82 | 77 | 77 |
| % Diff From Normal | 2.9% | -0.5% | 0.5% | -6.6% | -3.7% |
| Seoul Mean Temp (°F) | 73 | 69 | 69 | 73 | 75 |
| % Diff From Normal | 2.6% | -3.6% | -2.7% | 2.0% | 3.3% |
| Tokyo Mean Temp (°F) | 77 | 77 | 78 | 79 | 78 |
| % Diff From Normal | 5.5% | 5.4% | 5.9% | 6.9% | 4.0% |
| Latin America Fundamentals (\$US/MMBtu) | | | | | |
| Mexico | | | | | |
| East (Altamira) DES | 1.70 | 1.72 | 1.70 | 1.68 | 1.75 |
| West (Manzanillo) DES | 2.11 | 2.12 | 2.11 | 2.09 | 2.16 |
| Argentina DES | 2.11 | 2.13 | 2.12 | 2.10 | 2.17 |
| Brazil DES | 1.90 | 1.92 | 1.91 | 1.89 | 1.96 |
| Chile DES | 2.19 | 2.21 | 2.20 | 2.18 | 2.25 |
| Colombia DES | 1.74 | 1.76 | 1.75 | 1.73 | 1.79 |
| Panama DES | 1.77 | 1.78 | 1.77 | 1.75 | 1.81 |

Current prompt month prices are for Aug, unless otherwise noted.

*Assumes full freight for both laden and ballast legs.

**Excludes regas fees.

***Most recent data available. Typically delayed by two calendar days.

NGI's LNG INSIGHT

U.S. Gulf Coast LNG Netback Prices (12-Month Strip) 6-Jul-2020

Futures Settle (\$US/MMBtu)

Est Shipping Cost from Gulf Coast (\$US/MMBtu)

Gulf Coast Netback (\$US/MMBtu)

Netback Less Henry Hub Futures (\$US/MMBtu)

Spot Month (shipping based on spot market vessel rate)

| Month | JPN/KOR | NBP | TTF | JPN/KOR | NBP | TTF | JPN/KOR | NBP | TTF | Max | Chg | HH | Diff (Margin) |
|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------------|
| Aug-20 | \$2.195 | \$1.904 | \$2.024 | \$0.918 | \$0.424 | \$0.441 | \$1.277 | \$1.480 | \$1.583 | \$1.583 | \$0.064 | \$1.830 | (\$0.247) |

Rest of Curve (shipping based on 1-Yr vessel rate, adjusted for seasonality)

| | | | | | | | | | | | | | |
|----------------|----------------|----------------|----------------|---------|---------|---------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Sep-20 | \$2.600 | \$2.278 | \$2.301 | \$1.187 | \$0.567 | \$0.592 | \$1.413 | \$1.711 | \$1.709 | \$1.711 | \$0.095 | \$1.893 | (\$0.182) |
| Oct-20 | \$3.190 | \$2.809 | \$2.865 | \$1.455 | \$0.708 | \$0.745 | \$1.735 | \$2.100 | \$2.120 | \$2.120 | \$0.151 | \$1.983 | \$0.137 |
| Nov-20 | \$3.900 | \$4.035 | \$3.890 | \$1.568 | \$0.776 | \$0.814 | \$2.332 | \$3.260 | \$3.076 | \$3.260 | \$0.185 | \$2.335 | \$0.925 |
| Dec-20 | \$4.515 | \$4.685 | \$4.268 | \$1.495 | \$0.737 | \$0.768 | \$3.020 | \$3.948 | \$3.500 | \$3.948 | \$0.190 | \$2.741 | \$1.207 |
| Jan-21 | \$4.915 | \$4.930 | \$4.370 | \$1.322 | \$0.642 | \$0.664 | \$3.593 | \$4.289 | \$3.706 | \$4.289 | \$0.222 | \$2.870 | \$1.419 |
| Feb-21 | \$5.125 | \$4.990 | \$4.381 | \$1.198 | \$0.573 | \$0.589 | \$3.927 | \$4.417 | \$3.792 | \$4.417 | \$0.216 | \$2.870 | \$1.547 |
| Mar-21 | \$4.750 | \$4.661 | \$4.322 | \$1.066 | \$0.504 | \$0.519 | \$3.684 | \$4.157 | \$3.802 | \$4.157 | \$0.210 | \$2.733 | \$1.424 |
| Apr-21 | \$4.275 | \$4.252 | \$4.133 | \$1.001 | \$0.471 | \$0.488 | \$3.274 | \$3.781 | \$3.646 | \$3.781 | \$0.194 | \$2.473 | \$1.308 |
| May-21 | \$4.360 | \$4.052 | \$4.086 | \$1.022 | \$0.478 | \$0.498 | \$3.338 | \$3.574 | \$3.588 | \$3.588 | \$0.171 | \$2.440 | \$1.148 |
| Jun-21 | \$4.230 | \$3.889 | \$4.050 | \$1.082 | \$0.509 | \$0.533 | \$3.148 | \$3.379 | \$3.517 | \$3.517 | \$0.170 | \$2.482 | \$1.035 |
| Jul-21 | \$4.170 | \$3.902 | \$4.013 | \$1.098 | \$0.519 | \$0.543 | \$3.072 | \$3.383 | \$3.470 | \$3.470 | \$0.172 | \$2.530 | \$0.940 |
| NTM Avg | \$4.019 | \$3.866 | \$3.725 | | | | \$2.818 | \$3.290 | \$3.126 | \$3.320 | \$0.170 | \$2.432 | \$0.888 |

West of Suez Spot 174K XDF/MEGI Day Rate: \$38,000

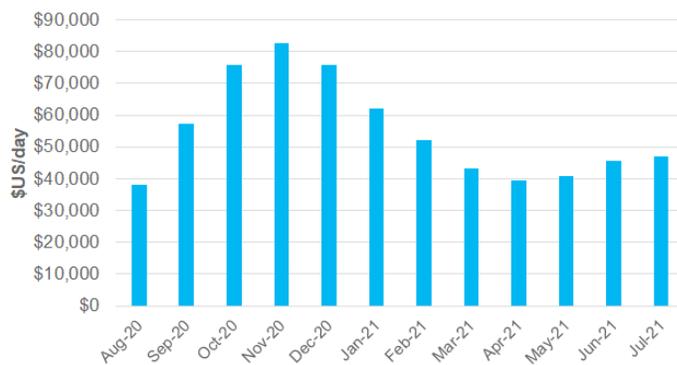
West of Suez 1-Yr TC 174K XDF/MEGI Vessel Rate: \$55,000

Spot Month Sabine Pass Export Landed Price Arbitrage Continuation Chart



Source: NGI calculations, CSI, Fearnleys

West of Suez LNG Vessel Rate Curve



Note: Based on 174,000 m³ XDF/MEGI vessels. This is not an actual traded curve. Figures represent NGI's estimate of a laden leg forward curve based on current spot market and 1-yr charter rates, adjusted for historical seasonality. The simple average of all months equals the 1-yr charter rate.

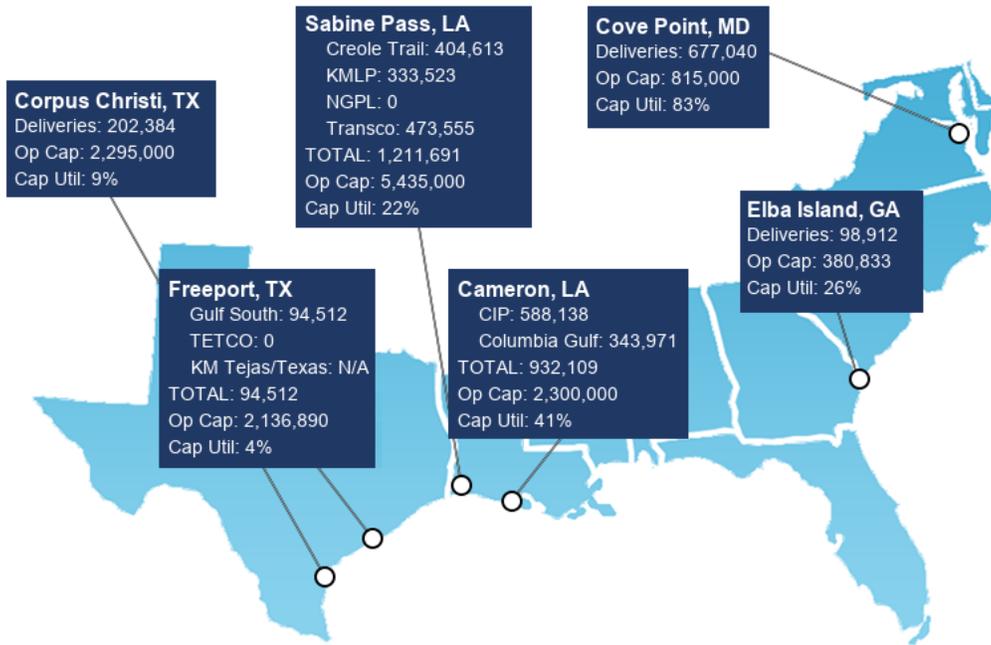
Other North America LNG Netback Prices 6-Jul-2020

| | Netback to NGI's AECO | | | | Netback to NGI's SoCal | | | | Netback to NGI's Transco | | | | NGI's Waha |
|----------------|-----------------------|----------------|----------------|-------------|------------------------|-----------------|----------------|------------|--------------------------|----------------|----------------|------------|----------------|
| | Western Canada | Forwards | Diff | Diff % | Costa Azul | Border Forwards | Diff | Diff % | Cove Point | Zn 5 Forwards | Diff | Diff % | Forwards |
| | \$US/MMBtu | \$US/MMBtu | \$US/MMBtu | % | \$US/MMBtu | \$US/MMBtu | \$US/MMBtu | % | \$US/MMBtu | \$US/MMBtu | \$US/MMBtu | % | \$US/MMBtu |
| Aug-20 | \$1.817 | \$1.353 | \$0.464 | 34% | \$1.750 | \$1.921 | -\$0.171 | -9% | \$1.670 | \$1.755 | -\$0.085 | -5% | \$1.418 |
| Sep-20 | \$2.130 | \$1.375 | \$0.755 | 55% | \$2.042 | \$1.828 | \$0.214 | 12% | \$1.863 | \$1.758 | \$0.105 | 6% | \$1.323 |
| Oct-20 | \$2.681 | \$1.410 | \$1.271 | 90% | \$2.585 | \$1.769 | \$0.816 | 46% | \$2.391 | \$1.852 | \$0.539 | 29% | \$1.252 |
| Nov-20 | \$3.265 | \$1.763 | \$1.502 | 85% | \$3.141 | \$2.232 | \$0.909 | 41% | \$3.478 | \$2.369 | \$1.109 | 47% | \$1.674 |
| Dec-20 | \$3.830 | \$1.857 | \$1.973 | 106% | \$3.694 | \$3.335 | \$0.359 | 11% | \$4.086 | \$3.475 | \$0.611 | 18% | \$2.198 |
| Jan-21 | \$4.267 | \$1.912 | \$2.355 | 123% | \$4.139 | \$3.385 | \$0.754 | 22% | \$4.363 | \$4.774 | -\$0.411 | -9% | \$2.381 |
| Feb-21 | \$4.561 | \$1.904 | \$2.657 | 140% | \$4.451 | \$3.227 | \$1.224 | 38% | \$4.495 | \$4.652 | -\$0.157 | -3% | \$2.368 |
| Mar-21 | \$4.251 | \$1.834 | \$2.417 | 132% | \$4.157 | \$2.451 | \$1.706 | 70% | \$4.220 | \$3.080 | \$1.140 | 37% | \$2.093 |
| Apr-21 | \$3.839 | \$1.615 | \$2.224 | 138% | \$3.758 | \$1.940 | \$1.818 | 94% | \$3.863 | \$2.637 | \$1.226 | 46% | \$1.790 |
| May-21 | \$3.946 | \$1.558 | \$2.388 | 153% | \$3.870 | \$1.914 | \$1.956 | 102% | \$3.699 | \$2.475 | \$1.224 | 49% | \$1.698 |
| Jun-21 | \$3.809 | \$1.554 | \$2.255 | 145% | \$3.731 | \$2.128 | \$1.603 | 75% | \$3.656 | \$2.529 | \$1.127 | 45% | \$1.843 |
| Jul-21 | \$3.720 | \$1.610 | \$2.110 | 131% | \$3.636 | \$2.678 | \$0.958 | 36% | \$3.591 | \$2.338 | \$1.253 | 54% | \$2.030 |
| NTM Avg | \$3.510 | \$1.645 | \$1.864 | 113% | \$3.413 | \$2.401 | \$1.012 | 42% | \$3.448 | \$2.808 | \$0.640 | 23% | \$1.839 |

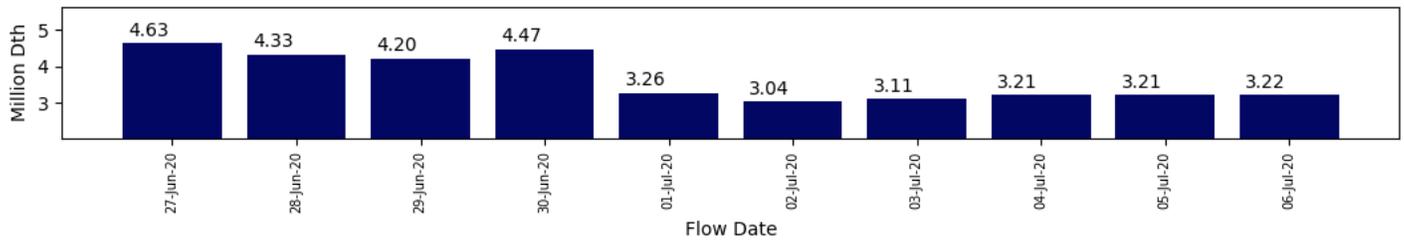
Note: Netbacks are based on deliveries to Asia & Europe. LNG Canada and Costa Azul liquefaction facilities are not expected to be in-service until 2025 and 2023, respectively. But the above calculations give an indication of how LNG may be priced on an FOB basis if those locations were operational. NGI's Forward Look has 10-year forward curves for more than 60 locations in North America. For more information, please visit our Forward Look product page at natgasintel.com/product/forward-look

Source: NGI's Forward Look, CSI, Fearnleys, NGI calculations

NGI's LNG INSIGHT U.S. LNG EXPORT TRACKER 06-Jul-2020

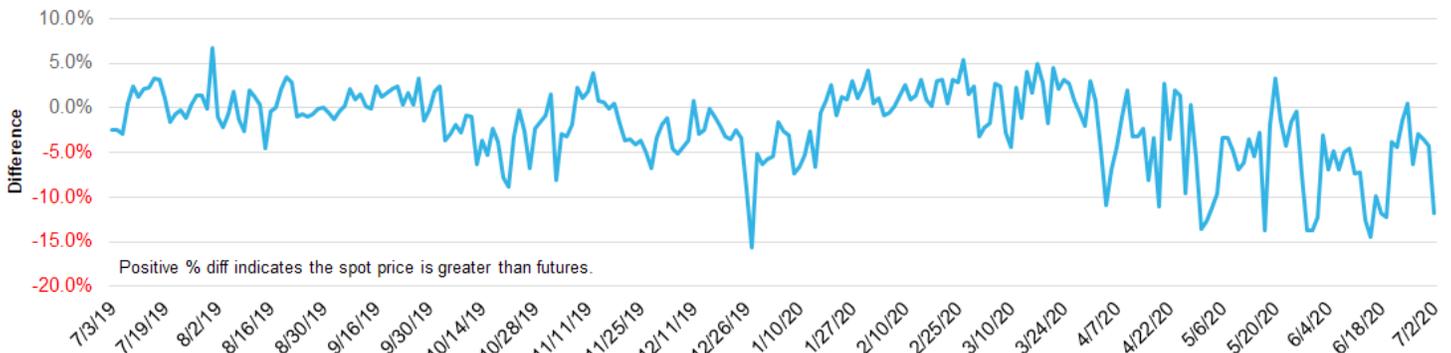


| Daily Summary (Volumes Listed in Dekatherms) | |
|---|-----------|
| Total Deliveries to U.S. LNG Export Facilities: | 3,216,648 |
| Previous Day: | 3,208,963 |
| Change: | 7,685 |



Note: Figures are NGI's estimates of gas delivered to each respective LNG liquefaction facility, listed in dekatherms, and based on best available cycle as of the morning of each listed gas day.
 Source: Pipeline EBBs, NGI calculations

NGI's Daily Henry Hub Spot Index vs. Prompt (CME) Futures Contract 6-Jul-2020



Interested in the data behind this chart? NGI publishes daily and monthly spot market prices for Henry Hub and more than 140 other locations in North America. Please go to natgasintel.com/product/daily-gpi for more details.

Source: NGI's Daily Gas Price Index, CSI, NGI calculations





LNG Freight Costs for Selected Routes

6-Jul-2020

| Trade Route (\$ / MMBtu) | 174k MEGI | | | 160k TFDE | | | 145k ST | | |
|--------------------------|-----------|--------|---|-----------|-------|---|---------|-------|---|
| Bonny / Montoir | 0.393 | 0.000 | ↔ | 0.407 | 0.000 | ↔ | 0.446 | 0.000 | ↔ |
| Bonny / Tokyo | 0.805 | -0.001 | ▼ | 0.891 | 0.000 | ↔ | 1.015 | 0.001 | ▲ |
| Ras Laffan / Montoir | 0.428 | 0.000 | ↔ | 0.441 | 0.000 | ↔ | 0.467 | 0.000 | ↔ |
| Ras Laffan / Tokyo | 0.322 | 0.000 | ↔ | 0.347 | 0.000 | ↔ | 0.394 | 0.000 | ↔ |
| Dampier / Tokyo | 0.277 | 0.000 | ↔ | 0.299 | 0.000 | ↔ | 0.348 | 0.000 | ↔ |
| Zeebrugge / Bahia Blanca | 0.473 | 0.000 | ↔ | 0.548 | 0.000 | ↔ | 0.631 | 0.000 | ↔ |
| Zeebrugge / Dahej | 0.511 | 0.000 | ↔ | 0.575 | 0.000 | ↔ | 0.706 | 0.000 | ↔ |
| Zeebrugge / Tokyo | 0.802 | -0.001 | ▼ | 0.938 | 0.000 | ↔ | 1.060 | 0.001 | ▲ |
| Sabine / Bahia Blanca | 0.469 | 0.000 | ↔ | 0.552 | 0.000 | ↔ | 0.626 | 0.000 | ↔ |
| Sabine / Dahej | 0.706 | -0.001 | ▼ | 0.836 | 0.000 | ↔ | 0.928 | 0.001 | ▲ |
| Sabine / Tokyo | 0.693 | -0.001 | ▼ | 0.816 | 0.000 | ↔ | 0.917 | 0.001 | ▲ |
| Sabine / Zeebrugge | 0.395 | 0.000 | ↔ | 0.501 | 0.000 | ↔ | 0.605 | 0.001 | ▲ |
| Port Moresby / Tokyo | 0.275 | 0.000 | ↔ | 0.296 | 0.000 | ↔ | 0.340 | 0.000 | ↔ |

Source: Fearnleys (www.fearnleys.com). Assumes cold vessel. Speed used is 17 knots on laden passage and 16 knots on ballast passage.



Spot LNG Vessel Rates (\$USD/day)

6-Jul-2020

| Vessel Rates | | |
|----------------------|--------|--------|
| Vessel Type / Region | WEST | EAST |
| 174k XDF / MEGI | 38,000 | 38,000 |
| 155k - 165k TFDE | 33,000 | 30,000 |
| 138k - 145k ST | 23,000 | 21,000 |

Pacific Voyage Parameters

Fuel and 50% Hire on Ballast Bonus to Singapore

Middle East Voyage Parameters

Fuel and 50% Hire on Ballast Bonus to Fujairah

Atlantic Voyage Parameters

Fuel and 50% Hire on Ballast Bonus to Load Port; or to Gibraltar for voyages staying within the Atlantic basin

Source: Fearnleys (www.fearnleys.com)

West of Suez LNG Vessel Rate Curve 6-Jul-2020

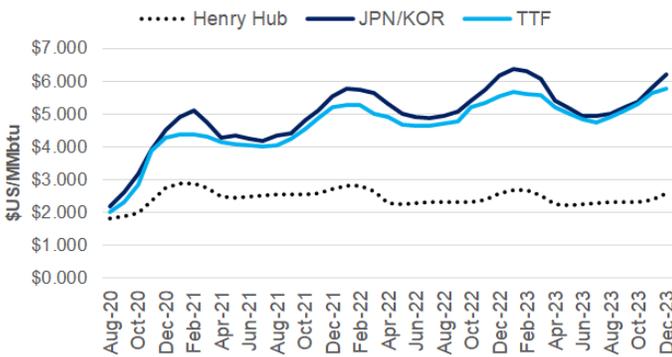
| Month | 6-Jul | 2-Jul | Chg |
|----------------|---------------|---------------|----------|
| Aug-20 | 38,000 | 38,000 | 0 |
| Sep-20 | 57,163 | 57,163 | 0 |
| Oct-20 | 75,809 | 75,809 | 0 |
| Nov-20 | 82,625 | 82,625 | 0 |
| Dec-20 | 75,845 | 75,845 | 0 |
| Jan-21 | 61,977 | 61,977 | 0 |
| Feb-21 | 52,249 | 52,249 | 0 |
| Mar-21 | 43,261 | 43,261 | 0 |
| Apr-21 | 39,508 | 39,508 | 0 |
| May-21 | 40,909 | 40,909 | 0 |
| Jun-21 | 45,672 | 45,672 | 0 |
| Jul-21 | 46,982 | 46,982 | 0 |
| Average | 55,000 | 55,000 | 0 |

Note: Based on 174,000 m³XDF/MEGI vessels. This is not an actual traded curve. Figures represent NGI's estimate of a laden leg forward curve based on current spot market and 1-yr charter rates, adjusted for historical seasonality. The simple average of all months equals the 1-yr charter rate.



Source: NGI estimates based on Fearnleys data

Global Futures Settles Through 2023 6-Jul-2020



| Contract | Date | 12-Month Strip* | CY2021 | CY2022 | CY2023 |
|-----------|----------|-----------------|-----------|-----------|-----------|
| Henry Hub | 6-Jul-20 | \$2.432 | \$2.612 | \$2.444 | \$2.401 |
| | 2-Jul-20 | \$2.420 | \$2.631 | \$2.451 | \$2.406 |
| | Chg | \$0.012 | (\$0.018) | (\$0.007) | (\$0.005) |
| | | | | | |
| JPN/KOR | 6-Jul-20 | \$4.019 | \$4.671 | \$5.387 | \$5.575 |
| | 2-Jul-20 | \$3.875 | \$4.505 | \$5.259 | \$5.450 |
| | Chg | \$0.143 | \$0.166 | \$0.128 | \$0.125 |
| | | | | | |
| TTF | 6-Jul-20 | \$3.725 | \$4.355 | \$5.002 | \$5.288 |
| | 2-Jul-20 | \$3.555 | \$4.170 | \$4.809 | \$5.102 |
| | Chg | \$0.170 | \$0.185 | \$0.194 | \$0.186 |
| | | | | | |

*Aug 2020 through Jul 2021

Source: Bloomberg, CSI, NGI calculations



Global LNG & NatGas Futures Prices (Aug 2020) 6-Jul-2020

| Contract | Cur/Unit | Settle | Chg | % Chg | Settle (\$US/MMBtu) |
|-----------|-------------|---------|----------|-------|---------------------|
| JPN/KOR | \$US/MMBtu | \$2.195 | -\$0.005 | -0.2% | \$2.195 |
| NBP | pence/therm | 15.23p | -0.14p | -0.9% | \$1.904 |
| TTF | Eur/MWh | € 6.096 | € 0.152 | 2.6% | \$2.024 |
| Henry Hub | \$US/MMBtu | \$1.830 | \$0.096 | 5.5% | \$1.830 |

NBP & TTF converted to \$US/MMBtu using same month forex futures contracts.

Source: NGI calculations, CSI



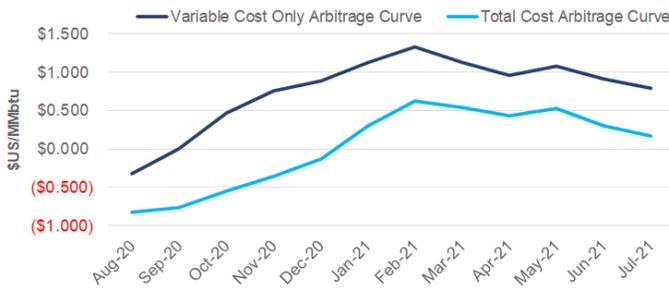
... from MARKETS REVIEW - Berkshire Hathaway Affiliate to Takeover, pg. 1

The deal comes as the global gas market continues to face headwinds due to the Covid-19 pandemic, but is ultimately expected to continue growing in the years ahead. U.S. LNG feed gas demand dropped by more than 1 Bcf day/day on July 1 and has remained around 3 Bcf/d compared to the June average of roughly 4 Bcf/d with dozens of cargoes for July and August lifting cancelled as it remains uneconomic to move American gas overseas at current prices.

The decline in LNG feed gas demand comes as

...cont' pg. 6

Estimated Sabine Pass / Asia 12-Month Forward LNG Arbitrage Curves 6-Jul-2020



Note: Assumes title changes hands at sea, so no regas fees. Negative GOM/Asia spreads may not increase the risk of GOM LNG shut-ins as much as those between GOM and Europe, since Europe has much more storage capacity than Asia. As such, Europe often serves as the market of "last resort." Variable costs assume vessels have been chartered, and include fuel, boiloff, Panama Canal and port fees only. Total costs includes variable expenses and fixed vessel chartering fees.

| Month | 115% HH Shipping Costs | | | Variable Only Landed | | Total Landed | | Variable Arbitrage Spread | | Total Arbitrage Spread | |
|--------|------------------------|----------|---------|----------------------|---------|--------------|-----------|---------------------------|--------|------------------------|--|
| | Futures | Variable | Fixed | Cost | Cost | Futures | Spread | Spread | Spread | Spread | |
| Aug-20 | \$2.105 | \$0.409 | \$0.509 | \$2.513 | \$3.023 | \$2.195 | (\$0.318) | (\$0.828) | | | |
| Sep-20 | \$2.177 | \$0.421 | \$0.766 | \$2.598 | \$3.364 | \$2.600 | \$0.002 | (\$0.764) | | | |
| Oct-20 | \$2.280 | \$0.439 | \$1.016 | \$2.719 | \$3.736 | \$3.190 | \$0.471 | (\$0.546) | | | |
| Nov-20 | \$2.685 | \$0.460 | \$1.108 | \$3.145 | \$4.253 | \$3.900 | \$0.755 | (\$0.353) | | | |
| Dec-20 | \$3.152 | \$0.479 | \$1.017 | \$3.631 | \$4.648 | \$4.515 | \$0.884 | (\$0.133) | | | |
| Jan-21 | \$3.301 | \$0.491 | \$0.831 | \$3.791 | \$4.622 | \$4.915 | \$1.124 | \$0.293 | | | |
| Feb-21 | \$3.301 | \$0.497 | \$0.700 | \$3.798 | \$4.498 | \$5.125 | \$1.327 | \$0.627 | | | |
| Mar-21 | \$3.143 | \$0.486 | \$0.580 | \$3.629 | \$4.209 | \$4.750 | \$1.121 | \$0.541 | | | |
| Apr-21 | \$2.844 | \$0.471 | \$0.530 | \$3.315 | \$3.845 | \$4.275 | \$0.960 | \$0.430 | | | |
| May-21 | \$2.806 | \$0.474 | \$0.548 | \$3.280 | \$3.828 | \$4.360 | \$1.080 | \$0.532 | | | |
| Jun-21 | \$2.854 | \$0.470 | \$0.612 | \$3.324 | \$3.937 | \$4.230 | \$0.906 | \$0.293 | | | |
| Jul-21 | \$2.910 | \$0.468 | \$0.630 | \$3.378 | \$4.008 | \$4.170 | \$0.792 | \$0.162 | | | |

Source: NGI calculations, CSI, Fearnleys

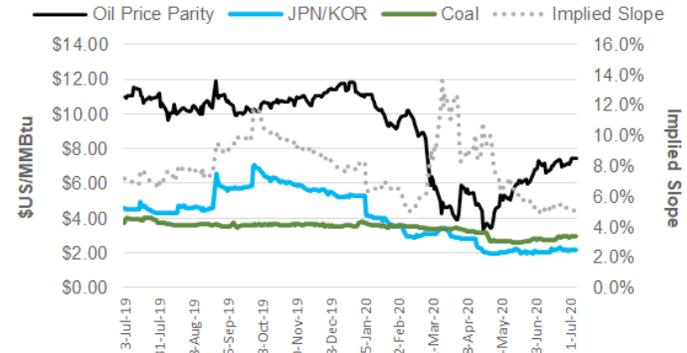


Daily Prompt Oil Linked Asia Parity Prices 6-Jul-2020

Current Spot Month Japan/Korea Futures Contract Price (Aug): **\$2.195**
 Current Spot Month Brent Crude Oil Futures Price (Sep): **\$43.10**
 Current Spot Month Japan Coal Price (Jul): **\$2.98**
 Implied Current Japan/Korea Slope to Brent: **5.1%**

| Crude Mo. | Oil Price | | Oil Parity Price (17.2% Slope) | |
|-----------|--------------|---------|--------------------------------|--------|
| | 3 Mo Avg JCC | Brent | 3 Mo Avg JCC | Brent |
| Sep-20 | \$58.23 | \$43.10 | \$10.02 | \$7.41 |

Trailing 12M Daily Prompt Japan/Korea Futures



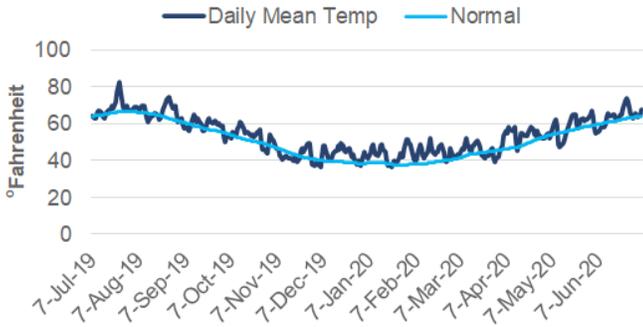
Note: Oil linked parity figures tend to serve as a cap on Asian LNG market prices, while coal prices can help act as a floor.

Source: NGI calculations, ICE, CSI, METI

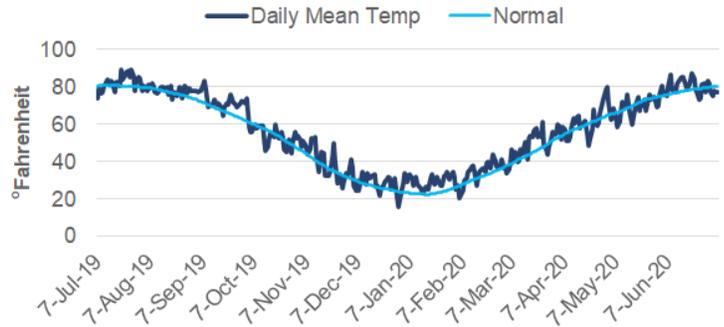


Europe & Asia Weather Data 6-Jul-2020

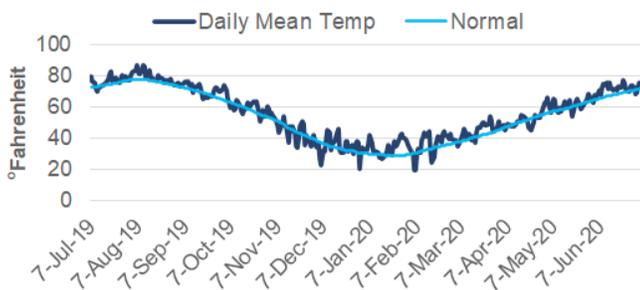
Trailing 365 Day Mean Temperatures - Northwest Europe



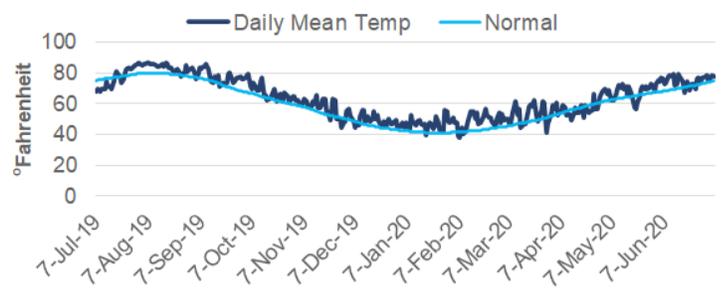
Trailing 365 Day Mean Temperatures - Beijing



Trailing 365 Day Mean Temperatures - Seoul



Trailing 365 Day Mean Temperatures - Tokyo



Source: NGI calculations, Bloomberg



**U.S. Landed vs. European Prices Aug 2020
6-Jul-2020**

Estimated U.S. LNG Landed Price (\$US/MMBtu)

| Source | Pricing Point | HH Price | Gate Landed Price (GLP) |
|--------|---------------|----------|-------------------------|
| GOM | Henry Hub | \$1.830 | \$2.254 |

European NatGas Futures Prices (Eur/MWh & Pound/therm)

| Country | Pricing Point | Local Price MWh or therm | Local Price \$US/MMBtu | Diff to GLP* \$US/MMBtu |
|-------------|---------------|-----------------------------|---------------------------|----------------------------|
| Belgium | ZTP | € 5.95 | \$1.975 | -\$0.279 |
| Czech Rep | CZ VTP | € 6.43 | \$2.133 | -\$0.121 |
| France | PEG | € 5.98 | \$1.983 | -\$0.271 |
| Germany | NCG | € 6.12 | \$2.031 | -\$0.223 |
| Italy | PSV | € 7.07 | \$2.345 | \$0.091 |
| Netherlands | TTF | € 6.10 | \$2.024 | -\$0.231 |
| Slovakia | CEGH VTP | € 6.75 | \$2.241 | -\$0.014 |
| Spain | PVB | € 7.79 | \$2.584 | \$0.330 |
| UK | NBP | 15.23p | \$1.904 | -\$0.350 |

Euro Exchange Rate: 1.13265
 Pound Exchange Rate: 1.25010



Note: U.S. landed price is to the Gate Terminal in the Netherlands, and exclude any regas or European pipeline grid access fees. We estimate the variable portion of such charges range between \$0.10-\$0.50 per MMBtu. All local European prices are Eur/MWh, except UK, which is pence/therm.

**Negative numbers indicate imported U.S. LNG is more expensive than the local price.

Source: NGI calculations, CME, ICE, EEX, Powernext, CSI, Fearnleys

U.S. natural gas supplies continue to increase. Tudor, Pickering, Holt & Co. (TPH) said associated natural gas volumes increased by 1.5 Bcf/d last week, while overall gas volumes were up 2 Bcf/d.

“The increase in production and decrease in LNG puts the market back into an oversupply situation on a weather neutral basis, but thankfully current forecasts are very constructive of gas demand,” TPH said of the July heat that’s settled in across parts of the country.

Meanwhile, Bloomberg New Energy Finance (BNEF) warned in a note last week that if Covid-19 related ...cont' pg. 7

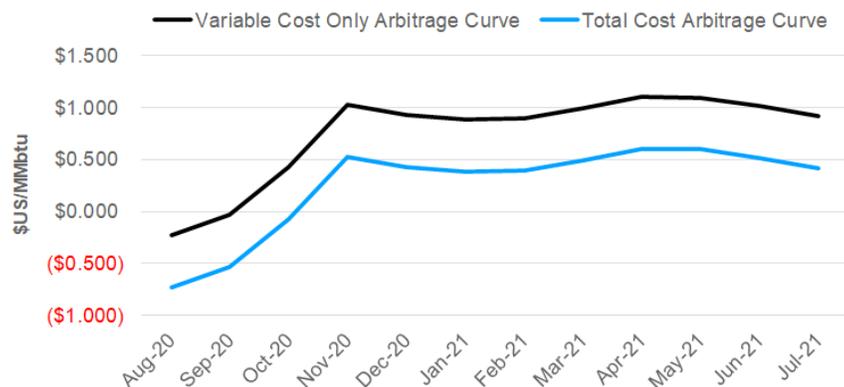
Spanish PVB vs. Dutch TTF Futures 6-Jul-2020

| Period | PVB \$US/ MMBtu | Chg | TTF \$US/ MMBtu | Chg | PVB/TTF Premium (\$) | PVB/TTF Premium % |
|--------|-----------------------|---------|-----------------------|---------|----------------------------|-------------------------|
| Aug-20 | \$2.584 | \$0.063 | \$2.024 | \$0.066 | \$0.561 | 27.7% |
| Sep-20 | \$2.840 | \$0.109 | \$2.301 | \$0.121 | \$0.539 | 23.4% |
| Oct-20 | \$3.186 | \$0.162 | \$2.865 | \$0.154 | \$0.321 | 11.2% |
| 4Q20 | \$3.868 | \$0.202 | \$3.674 | \$0.182 | \$0.195 | 5.3% |
| 1Q21 | \$4.612 | \$0.216 | \$4.358 | \$0.206 | \$0.255 | 5.8% |
| 2Q21 | \$4.295 | \$0.179 | \$4.090 | \$0.173 | \$0.205 | 5.0% |

Source: NGI calculations, CSI



**Estimated Sabine Pass / Europe (Gate) 12-Month Forward LNG Arbitrage
Curves 6-Jul-2020**



Note: Negative spreads increase the odds of U.S. Gulf of Mexico sourced LNG cargoes being shut-in. Variable costs assume vessels have been chartered, and include fuel, boil-off, and port fees only. Total costs include both variable expenses and fixed vessel chartering fees. Both exclude regas fees, which we estimate would add another \$0.10-\$0.50 in additional costs to each arbitrage curve calculation.



| Month | 115% Henry Hub Futures | Shipping Costs Variable Fixed | Variable Only Landed Cost | Total Landed Cost | TTF Futures | Variable Arbitrage Spread | Total Arbitrage Spread |
|--------|---------------------------|-------------------------------------|---------------------------------|-------------------------|----------------|---------------------------------|------------------------------|
| Aug-20 | \$2.105 | \$0.150 \$0.291 | \$2.254 | \$2.754 | \$2.024 | (\$0.231) | (\$0.731) |
| Sep-20 | \$2.177 | \$0.154 \$0.438 | \$2.331 | \$2.831 | \$2.301 | (\$0.030) | (\$0.530) |
| Oct-20 | \$2.280 | \$0.164 \$0.581 | \$2.444 | \$2.944 | \$2.865 | \$0.421 | (\$0.079) |
| Nov-20 | \$2.685 | \$0.181 \$0.633 | \$2.866 | \$3.366 | \$3.890 | \$1.024 | \$0.524 |
| Dec-20 | \$3.152 | \$0.187 \$0.581 | \$3.339 | \$3.839 | \$4.268 | \$0.929 | \$0.429 |
| Jan-21 | \$3.301 | \$0.189 \$0.475 | \$3.489 | \$3.989 | \$4.370 | \$0.880 | \$0.380 |
| Feb-21 | \$3.301 | \$0.189 \$0.400 | \$3.489 | \$3.989 | \$4.381 | \$0.892 | \$0.392 |
| Mar-21 | \$3.143 | \$0.188 \$0.332 | \$3.331 | \$3.831 | \$4.322 | \$0.991 | \$0.491 |
| Apr-21 | \$2.844 | \$0.185 \$0.303 | \$3.029 | \$3.529 | \$4.133 | \$1.104 | \$0.604 |
| May-21 | \$2.806 | \$0.184 \$0.314 | \$2.990 | \$3.490 | \$4.086 | \$1.096 | \$0.596 |
| Jun-21 | \$2.854 | \$0.183 \$0.350 | \$3.038 | \$3.538 | \$4.050 | \$1.012 | \$0.512 |
| Jul-21 | \$2.910 | \$0.183 \$0.360 | \$3.092 | \$3.592 | \$4.013 | \$0.920 | \$0.420 |

Source: NGI calculations, CSI, Fearnleys

**European Spark/Dark Spreads (Aug 2020)
6-Jul-2020**

EUA Carbon Price (Eur/mt): 29.67

| Nation | Eur/MWh | Spark Spread | | Clean Spark Spread | | |
|----------------|---------|--------------|--------------|--------------------|--------------|-------------|
| | | EFFCY | 49% | 45% | 49% | 45% |
| Power Futures | | | | | | |
| Gas Futures | | | | | | |
| BE | 34.10 | 5.950 | 21.99 | 20.88 | 9.91 | 7.56 |
| CZ | 37.34 | 6.425 | 24.26 | 23.06 | 12.19 | 9.74 |
| FR | 36.10 | 5.975 | 23.94 | 22.82 | 11.86 | 9.50 |
| DE | 35.03 | 6.118 | 22.58 | 21.43 | 10.50 | 8.11 |
| IT | 38.94 | 7.065 | 24.56 | 23.24 | 12.48 | 9.92 |
| NL | 33.01 | 6.096 | 20.60 | 19.46 | 8.53 | 6.14 |
| SK | 38.54 | 6.750 | 24.80 | 23.54 | 12.73 | 10.22 |
| ES | 37.00 | 7.785 | 21.15 | 19.70 | 9.08 | 6.38 |
| UK* | 36.51 | 5.736 | 24.84 | 23.76 | 4.67 | 1.52 |
| Average | | | 23.19 | 21.99 | 10.22 | 7.68 |

| Nation | Eur/MWh | Dark Spread | | Clean Dark Spread | |
|----------------|---------|-------------|--------------|-------------------|---------------|
| | | EFFCY | 35% | 35% | 35% |
| Power Futures | | | | | |
| Coal Futures | | | | | |
| BE | 34.10 | 52.60 | 15.14 | | -13.66 |
| CZ | 37.34 | 52.60 | 18.38 | | -10.42 |
| FR | 36.10 | 52.60 | 17.14 | | -11.66 |
| DE | 35.03 | 52.60 | 16.07 | | -12.73 |
| IT | 38.94 | 52.60 | 19.98 | | -8.82 |
| NL | 33.01 | 52.60 | 14.05 | | -14.75 |
| SK | 38.54 | 52.60 | 19.58 | | -9.22 |
| ES | 37.00 | 52.60 | 18.04 | | -10.76 |
| UK* | 36.51 | 52.60 | 17.56 | | -30.54 |
| Average | | | 17.33 | | -13.62 |

Belgium (BE) / Czech Rep (CZ) / France (FR) / Germany (DE) / Italy (IT) / Holland (NL) / Slovakia (SK) / Spain (ES) / United Kingdom (UK)

*UK clean spark and dark spreads incorporate the cost of the UK Carbon Price Support levy. See methodology for all assumptions.

Source: NGI calculations, CSI



energy demand loss continues, natural gas imports could fall by 1.1% to 5.3% this year. If the virus continues to prove resurgent, import declines could persist into 2024, with demand in the emerging markets of south and southeast Asia likely to see the biggest hits if pipeline and regasification infrastructure is delayed, BNEF said.

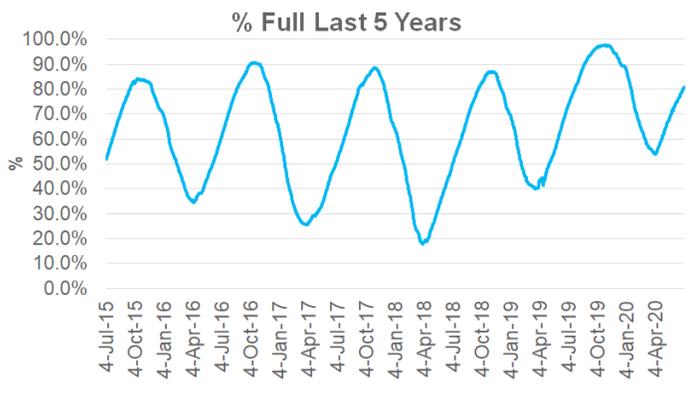
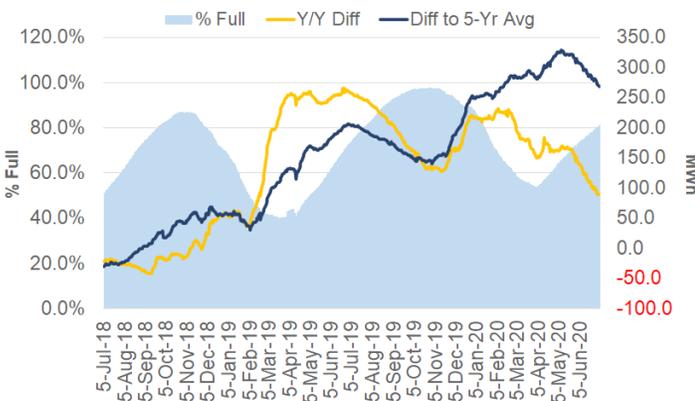
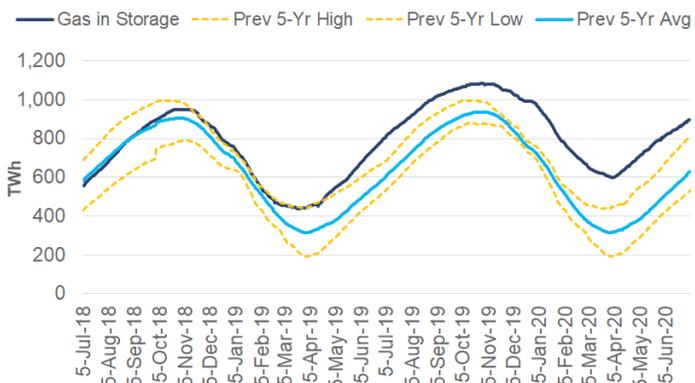
In other international developments, regulators in Denmark on Monday cleared the Nord Stream 2 (NS2) pipeline project to move ahead with work on the last 100-mile stretch of

...cont' pg. 8

European Union Gas Storage

Data as of 4-Jul-20 Chart Last Updated 6-Jul-20

| Volumes in TWh | Gas in Storage | | Working Gas | | Gas in Storage | | Prev 5-Yr | |
|----------------|----------------|---------|-------------|-----------|----------------|----------|-----------|--|
| | Q4-Jul-20 | Volume | % Full | Q4-Jul-19 | Y/Y Diff | 5-Yr Avg | Avg Diff | |
| Europe | 898.37 | 1106.36 | 81.2% | 808.61 | 89.76 | 630.02 | 268.36 | |



| % Full As of | 4-Jul-15 | 51.8% | 4-Jul-16 | 61.6% | 4-Jul-17 | 52.2% | 4-Jul-18 | 50.6% | 4-Jul-19 | 74.0% | 4-Jul-20 | 81.2% |
|--------------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|
|--------------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-------|

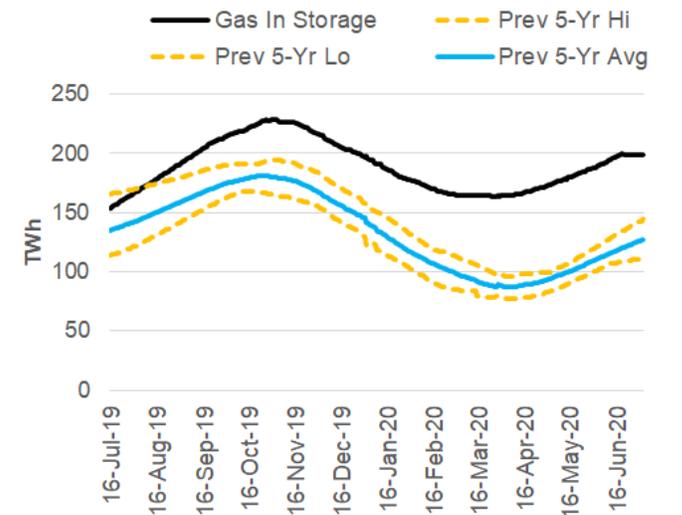
Source: NGI calculations, GIE

Ukraine Gas Storage

Data as of 4-Jul-20

Chart Last Updated: 6-Jul-20

| 4/7/20 | Volumes in TWh | | | Y/Y Diff | Prev 5-Yr Avg | 5-Yr Avg Diff |
|--------|----------------|--------|--------|----------|---------------|---------------|
| | WG Vol | % Full | 4/7/19 | | | |
| 199.19 | 320.17 | 62.2% | 145.07 | 54.12 | 127.29 | 71.91 |



Source: NGI calculations, GIE

European Union LNG Regas Terminal Storage

Data as of 4-Jul-20

Chart Last Updated: 6-Jul-20

| Country | Terminal | Inventory | | Max Cap | | % Util |
|--------------|---------------|-----------------------------------|--------------|-----------------------------------|--------------|--------|
| | | (10 ³ m ³) | Chg | (10 ³ m ³) | | |
| Belgium | Zeebrugge | 413.5 | 95.0 | 563.0 | 73.4% | |
| France | Dunkerque | 484.5 | 131.2 | 586.1 | 82.7% | |
| | Fos Tonkin | 48.4 | -15.1 | 80.0 | 60.4% | |
| | Montoir | 291.7 | 105.0 | 360.0 | 81.0% | |
| | Fas Cavaou | 63.3 | -64.4 | 330.0 | 19.2% | |
| Greece | Revythoussa | 129.9 | 2.7 | 225.0 | 57.8% | |
| Italy | Porto Levante | 204.0 | 29.5 | 250.0 | 81.6% | |
| | Panigaglia | 22.1 | 0.5 | 40.0 | 55.3% | |
| | Toscana | 99.2 | 57.5 | 137.2 | 72.4% | |
| Lithuania | Klaipėdos | 18.4 | -14.1 | 167.1 | 11.0% | |
| Netherlands | Gate | 443.0 | 37.8 | 540.0 | 82.0% | |
| Poland | Swinoujście | 247.5 | 115.0 | 320.0 | 77.3% | |
| Portugal | Sines | 301.5 | 139.4 | 390.0 | 77.3% | |
| Spain | Barcelona | 0.0 | 0.0 | 0.0 | 0.0% | |
| | Bilbao | 0.0 | 0.0 | 0.0 | 0.0% | |
| | Cartagena | 0.0 | 0.0 | 0.0 | 0.0% | |
| | Huelva | 0.0 | 0.0 | 0.0 | 0.0% | |
| | Mugarodos | 236.0 | 0.0 | 300.0 | 78.7% | |
| | Sagunto | 0.0 | 0.0 | 0.0 | 0.0% | |
| | TVB (Virtual) | 1224.8 | -123.2 | 3307.9 | 37.0% | |
| | UK | Grain | 839.0 | 90.8 | 1026.4 | 81.7% |
| | South Hook | 308.9 | -105.4 | 751.7 | 41.1% | |
| Total | | 5375.6 | 482.2 | 9374.3 | 57.3% | |

Source: NGI calculations, GIE

the system in Danish waters. The Danish Energy Agency cleared the **Gazprom**-led project to use pipe-laying vessels with anchors instead of those that use more complex self-positioning technology that were targeted by U.S. sanctions.

Work on the pipeline stopped in December after U.S. **sanctions** forced privately-held Allseas to suspend underwater pipe-laying activities in the Baltic Sea. The 1.9 Tcf/year NS2 would export gas from Russia to Europe across the Baltic Sea, terminating in Germany near the existing Nord Stream pipeline that follows a similar path. The Trump administration has resisted the project as it promotes U.S. LNG imports in the region and works to curb Russia's economic influence there.

Elsewhere, shippers and traders that have booked capacity at a critical outlet to move gas from Slovakia to Ukraine this summer are likely to face steep costs. **Ukrtransgaz** needs to conduct unexpected maintenance from August through October on the Budince interconnection, which had threatened to stop flows. The European gas market has increasingly utilized **Ukrainian storage facilities** as others on the continent are filling.

While Slovakia's system operator will offer capacity at another exit point, Velke Kapusany, Slovakian regulators rejected two solutions put forward by the Ukrainian system operator to cut costs associated with the maintenance outage. Slovakia's URSO said it would not allow shippers to transfer the capacity they booked on Budince to Velke Kapusany free of charge, or virtually merge the two points during maintenance.

European inventories continued to fill over the weekend as storage was at more than 81% of capacity on Saturday. Ukrainian storage was at 62% of capacity the same day, according to the latest available data. ■

2020 EDITION

NGI'S MAP OF MEXICO'S EMERGING NATURAL GAS INFRASTRUCTURE

- 12 LNG FACILITIES
- 59 OPERATIONAL PIPELINES
- 25 PROPOSED PIPELINES
- 24 US/MX IMP/EXP BORDER POINTS
- 9 MX GAS PROCESSING PLANTS
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- S. TX / MX ZOOMED INSET DETAIL

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REGULATORY

Jordan Cove LNG Secures Export License, but Uphill Battle Remains

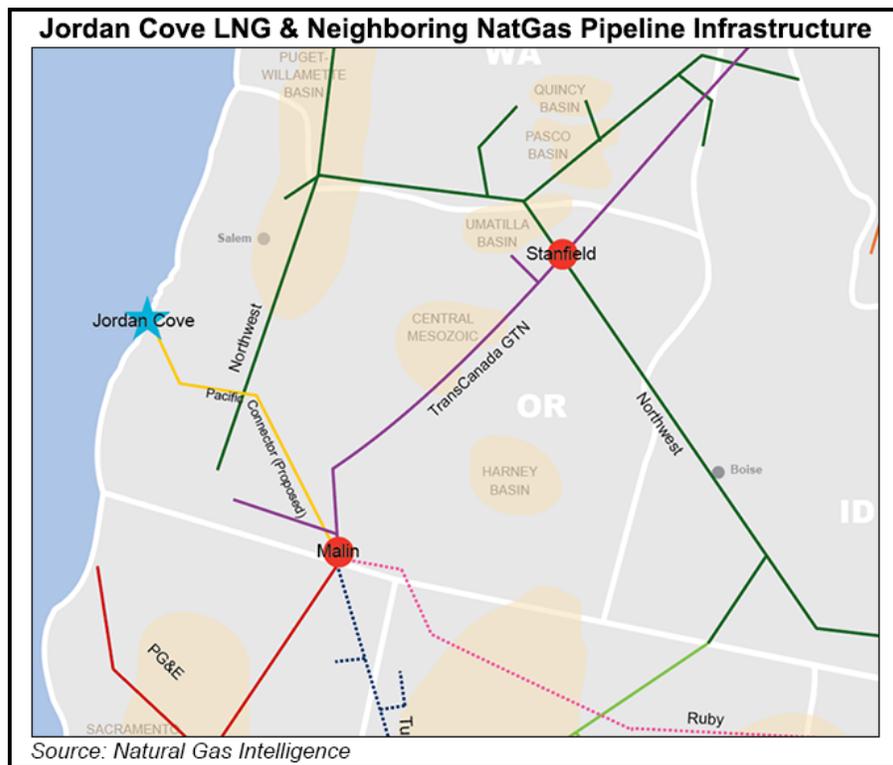
The U.S. Department of Energy (DOE) on Monday issued an export license for the beleaguered Jordan Cove liquefied natural gas (LNG) terminal proposed for Coos Bay, OR.

The facility would be the first of its kind on the West Coast if it's built and would further extend the reach of American natural gas into "key exporting markets" in Asia and beyond, said Steven Winberg, assistant secretary for fossil energy, in a virtual signing ceremony.

"There are few regions where it is more critical to advance energy security than in the Asia-Pacific region," said Secretary Dan Brouillette, adding that countries like India, Japan and South Korea are also dependent on Russia and the Middle East for gas imports.

"If the United States can export LNG to the Asia-Pacific from our West Coast, we can help those nations and others in the region reduce their reliance on countries that use energy as political leverage," he added.

Brouillette signed the final long-term order authorizing



exports from Jordan Cove about four months after the Federal Energy Regulatory Commission finally **authorized**

...cont' pg. 10

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the siting, construction and operation of the terminal. The project has cleared a series of regulatory hurdles and faced staunch opposition from environmental groups since it was proposed by Veresen Inc., which is now part of Pembina Pipeline Corp.

Despite the federal approvals, the export terminal faces an uphill battle in Oregon, where regulators have denied key authorizations for the project, including a water quality certification and a dredging permit. The terminal would also need to execute long-term supply contracts with global buyers, which have been increasingly hard to come by in a market full of cheap natural gas.

Jordan Cove would be capable of liquefying up to 1.04 Bcf/d for export. It would include a pipeline gas conditioning facility, five liquefaction trains, two full-containment LNG storage tanks and associated equipment, an LNG loading platform and transfer line, and marine and associated facilities. ■

Latin America DES Prices 6-Jul-2020

| Country | Terminal | \$/US/MMBtu | | | | | |
|-------------|--------------|-------------|------|------|------|------|------|
| | | Aug | Chg | Sep | Chg | Oct | Chg |
| Argentina | Bahia Blanca | 2.17 | 0.07 | 2.30 | 0.10 | 2.71 | 0.16 |
| Brazil | Pecem | 1.96 | 0.07 | 2.09 | 0.10 | 2.50 | 0.15 |
| Chile | Quintero | 2.25 | 0.07 | 2.38 | 0.10 | 2.79 | 0.15 |
| Colombia | Colombia | 1.79 | 0.07 | 1.92 | 0.10 | 2.33 | 0.15 |
| Mexico East | Altamira | 1.75 | 0.06 | 1.87 | 0.10 | 2.28 | 0.15 |
| Mexico West | Manzanillo | 2.16 | 0.07 | 2.29 | 0.10 | 2.70 | 0.15 |
| Panama | Costa Norte | 1.81 | 0.07 | 1.94 | 0.10 | 2.35 | 0.15 |



For more regional coverage of Latin America, please see NGI's Mexico Gas Price Index at natgasintel.com/news/mexico-gas-price-index

Source: NGI calculations, CME Group, CSI, Fearnleys



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