

Daily Rundown

- Chesapeake is looking to link an additional 4 mmt to international indexes in near future
- Woodside agrees to a 20-year, 1.3 mmt SPA with Mexico Pacific Ltd.
- ExxonMobil inches back forecast for Golden Pass LNG startup to 1Q2025

CONTRACTS

Chesapeake Working to Diversify LNG Supply Deals, Gain Price Exposure In Asia, Europe

While Chesapeake Energy Corp. works to finalize its natural gas supply deals with LNG buyers, management says it's narrowing down opportunities to link more of its Haynesville and Marcellus shale supply to international benchmarks in the months to come.

Chesapeake currently has tentative agreements with liquefied natural gas traders that could link up to 3 million metric tons/year (mmty) worth of feed gas supply to [international indexes](#).

Chesapeake's Justin Brady, LNG and commercial operations director, told NGI the company is looking to capitalize further on that momentum and potentially place as much as an additional 4 mmt under supply agreements in the short-term.

[What's Coming? LNG Insight is now offering NGI's North American LNG Project Tracker for clients to quickly see developments across the U.S., Canada and Mexico. [Download the data sheet now.](#)]

"The goal to get into LNG is ultimately about diversification for Chesapeake," Brady said. "We're going to be a 100% U.S. natural gas player, and that means we'll be highly dependent on Henry Hub. Diversifying across these other indexes just makes a lot of sense for us."

From The Well To Water

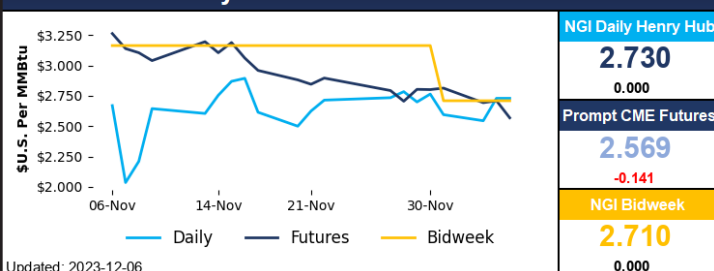
Chesapeake [announced a heads of agreement](#) (HOA) in October to potentially supply up to 1 mmt to global commodities trader Vitol Inc. for 15 years at prices indexed to the Japan-Korea Marker (JKM). Chesapeake previously signed a 2 mmt HOA with [Gunvor Group Ltd.](#) linked to JKM and both companies have selected Energy Transfer LP's Lake Charles LNG project in Louisiana as the possible liquefaction point.

So far, Chesapeake's deals have leaned toward Asian LNG prices as trading houses look to meet [regional demand](#) for more U.S. LNG supply. Brady said the firm is also looking for opportunities to diversify further with its next partnerships, possibly

...cont' pg. 4

[See NGI's North American LNG Export Project Tracker Here](#)

NGI's Henry Hub Natural Gas Price Tracker



Prompt Month Statistics - Previous 5 Trading Days

	30-Nov	1-Dec	4-Dec	5-Dec	6-Dec
Max GOM Netback (\$US/MMBtu)	12.581	12.692	12.499	12.509	12.456
L48 LNG Feedgas Del (Million dth/d)	13.37	13.71	14.85	13.75	14.63
Futures (\$US/MMBtu)					
Henry Hub	2.802	2.814	2.694	2.710	2.569
JPN/KOR	16.135	16.250	16.050	16.060	16.005
NBP	13.529	13.931	12.724	12.006	12.347
TTF	13.461	13.887	12.751	12.074	12.428
Shipping (\$US/MMBtu)*					
Sabine Pass to Tokyo	3.554	3.558	3.551	3.551	3.549
Sabine Pass to Milford Haven (U.K.)	1.778	1.785	1.766	1.754	1.759
Sabine Pass to Gate (NW Europe)	1.890	1.897	1.878	1.866	1.872
Landed Price Arbitrage (\$US/MMBtu)**					
Sabine to Tokyo	9.359	9.456	9.401	9.393	9.501
Sabine to Gate	8.349	8.754	7.775	7.091	7.602
Europe Fundamentals					
Gas in Storage (TWh)***	1100.1	1093.5	1075.8	1070.3	1063.5
% Full	96.5%	95.9%	94.4%	93.9%	93.3%
Difference to Last Year (TWh)	52.8	50.8	48.1	45.9	42.4
Gas in LNG Storage (10 ³ m ³)***	5753.99	5620.2	5429.1	5393.9	5532.1
% Full	69.4%	67.8%	65.5%	65.1%	66.8%
Spark Spread (Eur/MWh)	22.26	22.96	22.88	22.61	21.18
Clean Spark Spread (Eur/MWh)	-7.50	-8.78	-7.99	-8.24	-8.90
Dark Spread (Eur/MWh)	64.27	67.02	60.37	56.37	56.45
Clean Dark Spread (Eur/MWh)	-6.74	-8.70	-13.26	-17.23	-15.31
PVB/TTF Premium (%) (Jan)	-6.1%	-2.8%	-3.4%	-5.6%	-4.2%
NW Europe Mean Temp (°F)	35	33	33	33	TBD
% Diff From 30-Yr Normal	-15.3%	-17.4%	-19.3%	-17.6%	
Asia Fundamentals					
JKM/KOR Oil Parity Slope	19.5%	20.6%	20.6%	20.8%	21.5%
Brent Oil Price Parity (\$US/MMBtu)	14.25	13.57	13.42	13.28	12.78
JKM/KOR Futures (\$US/MMBtu)	16.14	16.25	16.05	16.06	16.01
Japan Coal Price (\$US/MMBtu)	6.61	6.67	6.72	6.70	7.00
Beijing Mean Temp (°F)	31	28	32	41	43
% Diff From Normal	-3.3%	-9.4%	5.8%	35.8%	45.9%
Seoul Mean Temp (°F)	26	27	38	43	42
% Diff From Normal	-35.3%	-31.3%	-1.4%	15.1%	12.3%
Tokyo Mean Temp (°F)	53	49	51	49	53
% Diff From Normal	5.1%	-1.7%	2.9%	-0.2%	8.6%
Latin America Fundamentals (\$US/MMBtu) (January Prompt Month)					
Mexico					
East (Altamira) DES	12.85	12.96	12.77	12.78	12.72
West (Manzanillo) DES	13.84	13.95	13.75	13.62	13.71
Argentina DES	14.59	14.71	14.30	13.38	13.88
Brazil DES	13.76	13.87	13.54	12.62	13.12
Chile DES	14.12	14.23	14.03	13.91	13.99
Colombia DES	13.12	13.23	13.04	12.79	12.99
Panama DES	13.12	13.23	13.04	12.88	12.99

Current prompt month prices are for January, 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-Dec 2023
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)

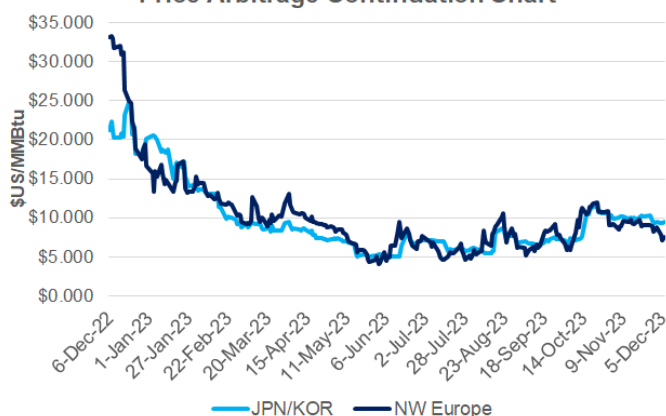
Month	JPN/KOR	NBP	TTF	JPN/KOR	NBP	TTF	JPN/KOR	NBP	TTF	Max	Chg	HH	Diff (Margin)
Jan-24	\$16.005	\$12.347	\$12.428	\$3.549	\$1.759	\$1.872	\$12.456	\$10.588	\$10.556	\$12.456	(\$0.053)	\$2.569	\$9.887

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

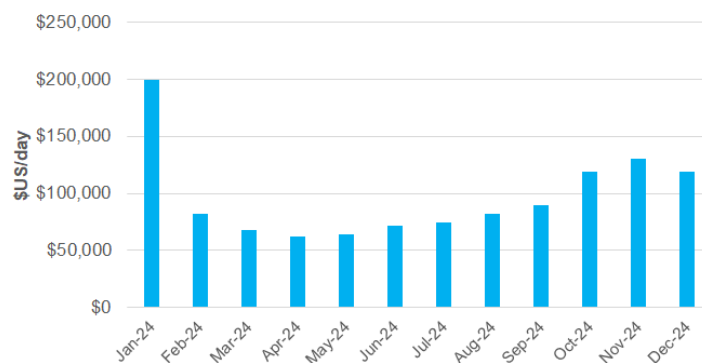
Feb-24	\$14.160	\$12.626	\$12.610	\$1.915	\$0.923	\$0.973	\$12.245	\$11.703	\$11.637	\$12.245	\$0.176	\$2.517	\$9.728
Mar-24	\$13.215	\$12.562	\$12.594	\$1.697	\$0.820	\$0.864	\$11.518	\$11.742	\$11.730	\$11.742	\$0.335	\$2.383	\$9.359
Apr-24	\$12.775	\$12.383	\$12.413	\$1.604	\$0.775	\$0.816	\$11.171	\$11.608	\$11.597	\$11.608	\$0.323	\$2.370	\$9.238
May-24	\$12.815	\$12.182	\$12.358	\$1.635	\$0.788	\$0.832	\$11.180	\$11.393	\$11.527	\$11.527	\$0.336	\$2.448	\$9.079
Jun-24	\$12.910	\$12.012	\$12.371	\$1.738	\$0.839	\$0.890	\$11.172	\$11.173	\$11.481	\$11.481	\$0.350	\$2.596	\$8.885
Jul-24	\$13.025	\$12.044	\$12.397	\$1.769	\$0.854	\$0.906	\$11.256	\$11.190	\$11.491	\$11.491	\$0.244	\$2.745	\$8.746
Aug-24	\$13.125	\$12.076	\$12.419	\$1.883	\$0.914	\$0.970	\$11.242	\$11.161	\$11.449	\$11.449	\$0.228	\$2.794	\$8.655
Sep-24	\$13.325	\$12.270	\$12.534	\$1.993	\$0.972	\$1.031	\$11.332	\$11.297	\$11.502	\$11.502	\$0.139	\$2.772	\$8.730
Oct-24	\$14.390	\$12.571	\$12.823	\$2.418	\$1.187	\$1.261	\$11.972	\$11.384	\$11.562	\$11.972	\$0.466	\$2.841	\$9.131
Nov-24	\$14.880	\$14.054	\$13.773	\$2.577	\$1.286	\$1.359	\$12.303	\$12.768	\$12.414	\$12.768	\$0.343	\$3.222	\$9.546
Dec-24	\$14.880	\$15.059	\$14.340	\$2.433	\$1.225	\$1.286	\$12.447	\$13.834	\$13.053	\$13.834	\$0.290	\$3.689	\$10.145
NTM Avg	\$13.792	\$12.682	\$12.755				\$11.691	\$11.653	\$11.667	\$12.006	\$0.265	\$2.746	\$9.261

West of Suez Spot 174K XDF/MEGI Day Rate: \$200,000

West of Suez 1-Yr TC 174K XDF/MEGI Vessel Rate: \$97,000

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.

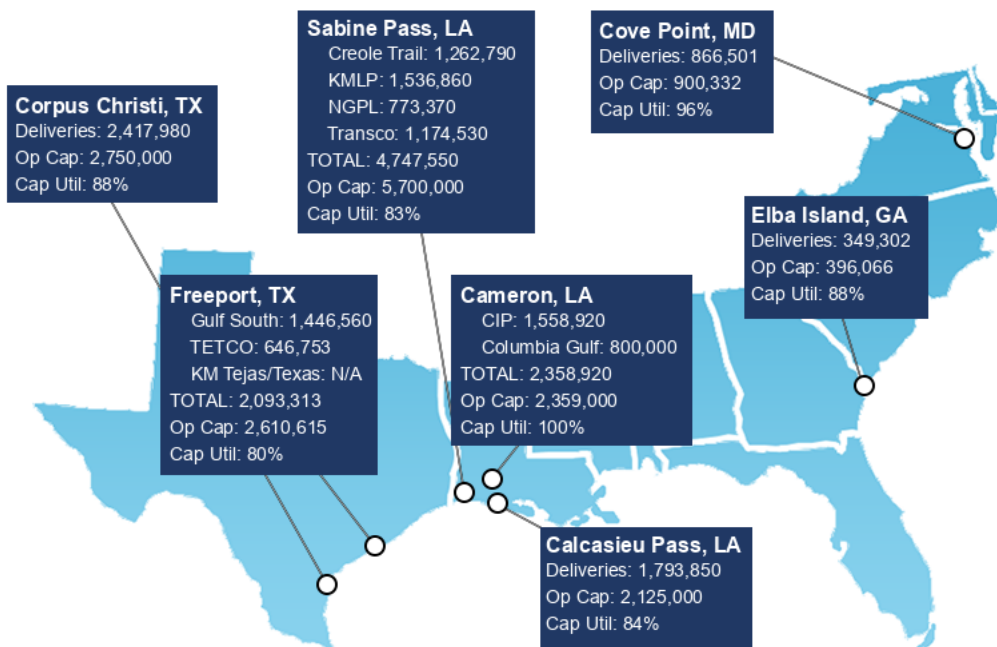
Other North America LNG Netback Prices 6-Dec-2023

	Netback to Western Canada	NGI's AECO Forwards	Diff	Diff %	Netback to Costa Azul	NGI's SoCal Border Forwards	Diff	Diff %	Netback to Cove Point	NGI's Transco Zn 5 Forwards	Diff	Diff %	NGI's Waha Forwards
	\$US/MMBtu	\$US/MMBtu	\$US/MMBtu	%	\$US/MMBtu	\$US/MMBtu	\$US/MMBtu	%	\$US/MMBtu	\$US/MMBtu	\$US/MMBtu	%	\$US/MMBtu
Jan-24	\$14.432	\$1.791	\$12.641	706%	\$14.096	\$4.906	\$9.190	187%	\$12.415	\$6.967	\$5.448	78%	\$2.587
Feb-24	\$13.399	\$1.748	\$11.651	667%	\$13.242	\$4.528	\$8.714	192%	\$12.357	\$6.011	\$6.346	106%	\$2.569
Mar-24	\$12.455	\$1.614	\$10.841	672%	\$12.297	\$2.946	\$9.351	317%	\$11.921	\$3.032	\$8.889	293%	\$1.485
Apr-24	\$11.970	\$1.577	\$10.393	659%	\$11.803	\$2.804	\$8.999	321%	\$11.701	\$2.772	\$8.929	322%	\$1.170
May-24	\$11.962	\$1.523	\$10.439	685%	\$11.785	\$2.355	\$9.430	400%	\$11.584	\$2.879	\$8.705	302%	\$1.264
Jun-24	\$11.876	\$1.573	\$10.303	655%	\$11.659	\$3.025	\$8.634	285%	\$11.430	\$2.966	\$8.464	285%	\$1.601
Jul-24	\$11.924	\$1.584	\$10.340	653%	\$11.692	\$4.284	\$7.408	173%	\$11.396	\$3.245	\$8.151	251%	\$2.248
Aug-24	\$12.089	\$1.614	\$10.475	649%	\$11.870	\$4.463	\$7.407	166%	\$11.478	\$3.194	\$8.284	259%	\$2.402
Sep-24	\$12.420	\$1.608	\$10.812	672%	\$12.230	\$4.355	\$7.875	181%	\$11.714	\$2.859	\$8.855	310%	\$2.122
Oct-24	\$13.564	\$1.740	\$11.824	680%	\$13.392	\$3.145	\$10.247	326%	\$12.440	\$2.913	\$9.527	327%	\$1.861
Nov-24	\$14.134	\$2.318	\$11.816	510%	\$13.979	\$4.563	\$9.416	206%	\$13.426	\$2.701	\$10.725	397%	\$2.374
Dec-24	\$14.171	\$2.724	\$11.447	420%	\$14.024	\$7.088	\$6.936	98%	\$14.451	\$4.139	\$10.312	249%	\$3.465
NTM Avg	\$12.866	\$1.785	\$11.082	621%	\$12.672	\$4.039	\$8.634	214%	\$12.193	\$3.640	\$8.553	235%	\$2.096

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 2024, 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-Dec-2023



Daily Summary (Volumes Listed in Dekatherms)

Total Deliveries to U.S. LNG Export Facilities:

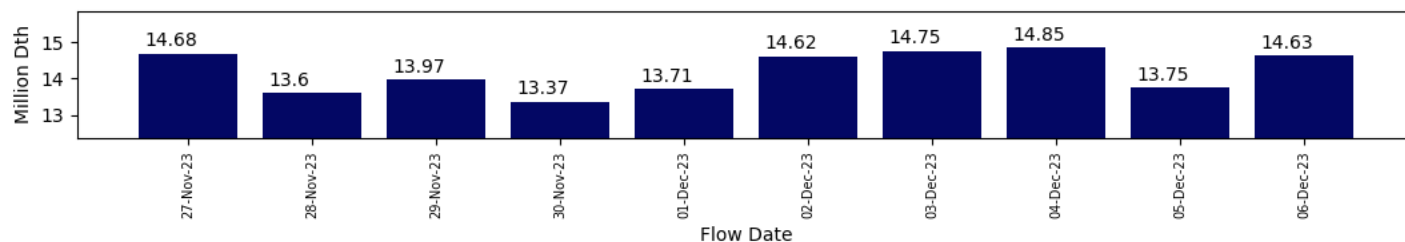
14,627,416

Previous Day:

13,748,958

Change:

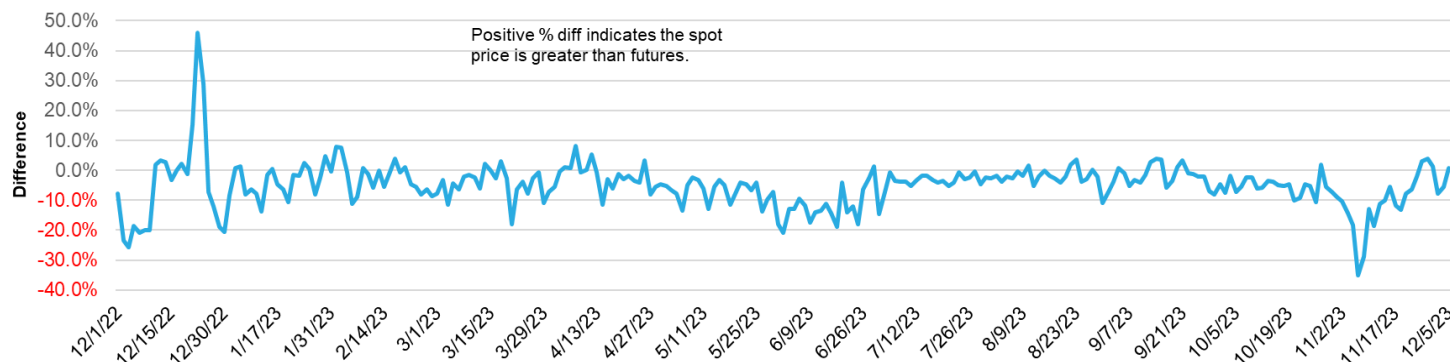
878,458

NGI's LNG INSIGHT


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-Dec-2023



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

NGI's LNG INSIGHT


LNG Freight Costs for Selected Routes

6-Dec-2023

Trade Route (\$ / MMBtu)	174k MEGI			160k TFDE			145k ST		
Bonny / Montoir	1.667	0.001	▲	1.635	-0.002	▼	1.677	-0.003	▼
Bonny / Tokyo	3.769	0.004	▲	3.670	-0.003	▼	3.755	-0.007	▼
Ras Laffan / Montoir	2.232	-0.009	▼	2.186	-0.009	▼	2.308	-0.015	▼
Ras Laffan / Tokyo	2.049	-0.008	▼	1.994	-0.009	▼	2.122	-0.014	▼
Dampier / Tokyo	1.303	-0.002	▼	1.279	0.002	▲	1.378	0.004	▲
Zeebrugge / Bahia Blanca	2.271	0.002	▲	2.307	-0.003	▼	2.348	-0.007	▼
Zeebrugge / Dahej	2.226	-0.004	▼	2.201	-0.008	▼	2.450	-0.007	▼
Zeebrugge / Tokyo	3.730	0.002	▲	3.848	-0.005	▼	3.904	-0.010	▼
Sabine / Bahia Blanca	2.128	-0.015	▼	2.205	-0.018	▼	2.165	-0.028	▼
Sabine / Dahej	3.104	-0.023	▼	3.252	-0.026	▼	3.176	-0.042	▼
Sabine / Tokyo	3.059	-0.024	▼	3.213	-0.026	▼	3.148	-0.042	▼
Sabine / Zeebrugge	1.606	-0.013	▼	1.653	-0.013	▼	1.621	-0.021	▼
Port Moresby / Tokyo	1.290	-0.007	▼	1.258	-0.008	▼	1.343	-0.013	▼

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)
5-Dec-2023

Vessel Rates		
Vessel Type / Region	WEST	EAST
174k XDF / MEGI	200,000	195,000
155k - 165k TFDE	170,000	155,000
138k - 145k ST	130,000	125,000

Pacific Voyage Parameters

100% Fuel and 100% Hire on Ballast Bonus to Load Port

Middle East Voyage Parameters

100% Fuel and 100% Hire on Ballast Bonus to Load Port

Atlantic Voyage Parameters

100% Fuel and 100% Hire on Ballast Bonus to Load Port

Source: Fearnleys (www.fearnleys.com)

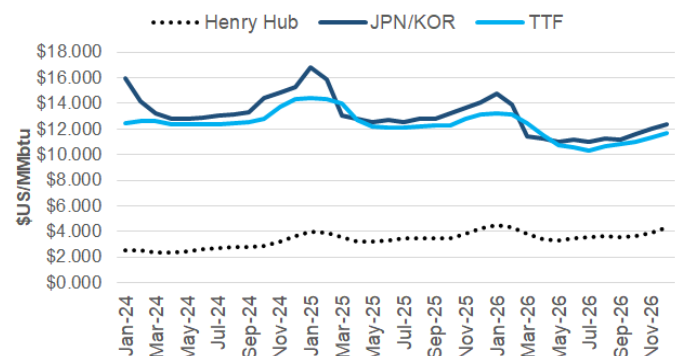
West of Suez LNG Vessel Rate Curve 6-Dec-2023

Month	6-Dec	5-Dec	Chg
Jan-24	200,000	200,000	0
Feb-24	82,263	83,799	-1,536
Mar-24	68,111	69,383	-1,272
Apr-24	62,203	63,364	-1,161
May-24	64,409	65,612	-1,203
Jun-24	71,908	73,251	-1,343
Jul-24	73,969	75,350	-1,381
Aug-24	82,282	83,819	-1,536
Sep-24	89,999	91,679	-1,680
Oct-24	119,355	121,584	-2,229
Nov-24	130,088	132,517	-2,429
Dec-24	119,413	121,643	-2,230
Average	97,000	98,500	-1,500

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.

NGI's LNG INSIGHT

Source: NGI estimates based on Fearnleys data

Global Futures Settles Through 2026 6-Dec-2023


Henry Hub	Date	12-Month Strip*	CY2024	CY2025	CY2026
	6-Dec-23	\$2.746	\$2.746	\$3.583	\$3.784
	5-Dec-23	\$2.897	\$2.897	\$3.754	\$3.953
	Chg	(\$0.151)	(\$0.151)	(\$0.171)	(\$0.169)
JPN/KOR	Date	12-Month Strip*	CY2024	CY2025	CY2026
	6-Dec-23	\$13.824	\$13.824	\$13.581	\$11.924
	5-Dec-23	\$13.747	\$13.747	\$13.403	\$11.944
	Chg	\$0.077	\$0.077	\$0.178	(\$0.020)
TTF	Date	12-Month Strip*	CY2024	CY2025	CY2026
	6-Dec-23	\$12.754	\$12.754	\$12.869	\$11.463
	5-Dec-23	\$12.422	\$12.422	\$12.648	\$11.405
	Chg	\$0.332	\$0.332	\$0.221	\$0.058

* Jan 2024 through Dec 2024

Source: Bloomberg, CSI, NGI calculations

NGI's LNG INSIGHT

Global LNG & NatGas Futures Prices (Jan 2024) 6-Dec-2023

Contract	Cur/Unit	Settle	Chg	% Chg	Settle (\$US/MMBtu)
JPN/KOR	\$US/MMBtu	\$16.005	-\$0.055	-0.3%	\$16.005
NBP	pence/therm	98.25p	2.87p	3.0%	\$12.347
TTF	Eur/MWh	€ 39.313	€ 1.180	3.1%	\$12.428
Henry Hub	\$US/MMBtu	\$2.569	-\$0.141	-5.2%	\$2.569

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

Source: NGI calculations, CSI

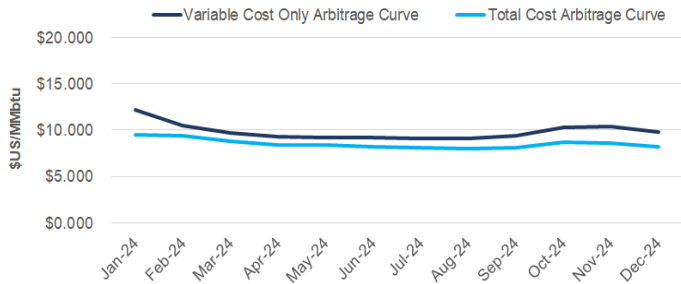
NGI's LNG INSIGHT

... from CONTRACTS - Chesapeake Working to Diversify LNG Supply Deals, pg. 1
netting agreements linked to European gas prices or Brent crude.

Brady said forging deals with large trading houses like Vitol and Gunvor has been a great way to expose Chesapeake's natural gas to foreign markets, but the types of deals and partners it can bring to the table are expected to expand as the company nears an investment-grade rating.

"We have a full trading team that knows how to move gas around the United States, and we do that really well,

...cont' pg. 6

Estimated Sabine Pass / Asia 12-Month Forward LNG Arbitrage Curves 6-Dec-2023


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 include variable expenses and fixed vessel chartering fees.

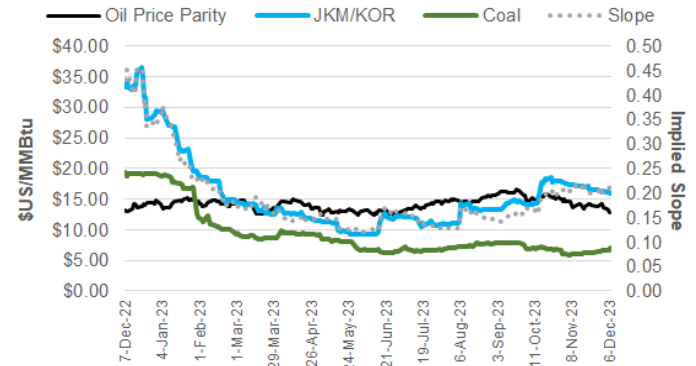
	115% HH	Shipping Costs		Variable	Total		Variable	Total
Month	Futures	Variable	Fixed	Only Landed	Landed	JPN/KOR	Arbitrage	Arbitrage
				Cost	Cost	Futures	Spread	Spread
Jan-24	\$2.954	\$0.868	\$2.681	\$3.823	\$6.504	\$16.005	\$12.182	\$9.501
Feb-24	\$2.895	\$0.812	\$1.103	\$3.707	\$4.810	\$14.160	\$10.453	\$9.350
Mar-24	\$2.740	\$0.784	\$0.913	\$3.524	\$4.437	\$13.215	\$9.691	\$8.778
Apr-24	\$2.726	\$0.770	\$0.834	\$3.496	\$4.330	\$12.775	\$9.279	\$8.445
May-24	\$2.815	\$0.771	\$0.863	\$3.587	\$4.450	\$12.815	\$9.228	\$8.365
Jun-24	\$2.985	\$0.774	\$0.964	\$3.760	\$4.723	\$12.910	\$9.150	\$8.187
Jul-24	\$3.157	\$0.777	\$0.992	\$3.934	\$4.926	\$13.025	\$9.091	\$8.099
Aug-24	\$3.213	\$0.780	\$1.103	\$3.993	\$5.096	\$13.125	\$9.132	\$8.029
Sep-24	\$3.188	\$0.786	\$1.206	\$3.974	\$5.180	\$13.325	\$9.351	\$8.145
Oct-24	\$3.267	\$0.818	\$1.600	\$4.085	\$5.685	\$14.390	\$10.305	\$8.705
Nov-24	\$3.705	\$0.833	\$1.744	\$4.538	\$6.282	\$14.880	\$10.342	\$8.598
Dec-24	\$4.242	\$0.833	\$1.601	\$5.075	\$6.676	\$14.880	\$9.805	\$8.204

Source: NGI calculations, CSI, Fearnleys

NGI^{INSIGHT}
Asia LNG Parity Prices 6-Dec-2023

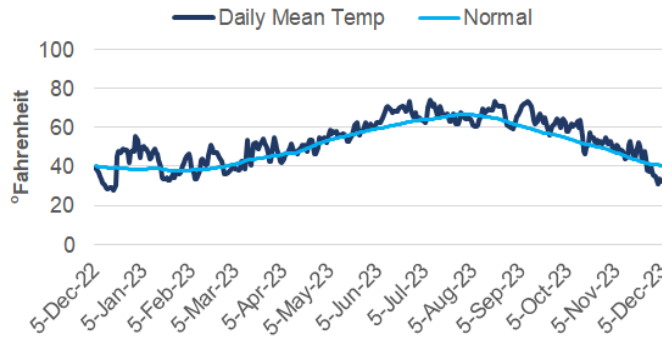
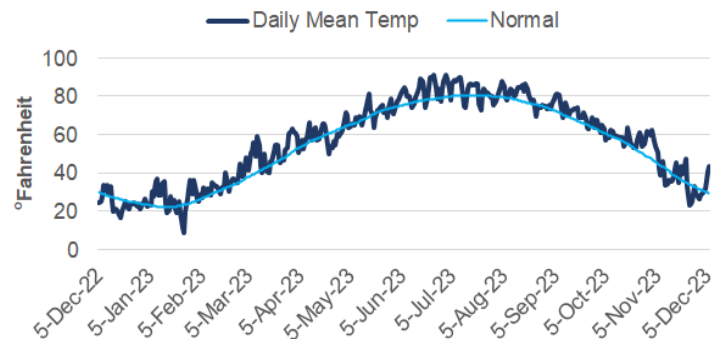
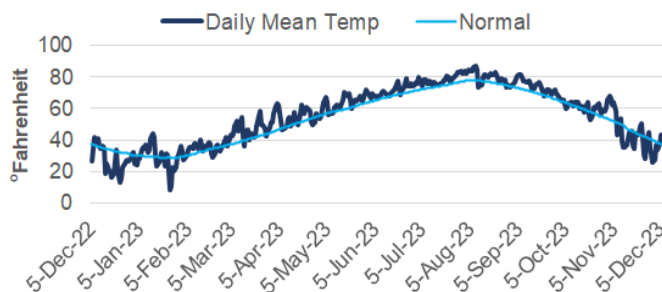
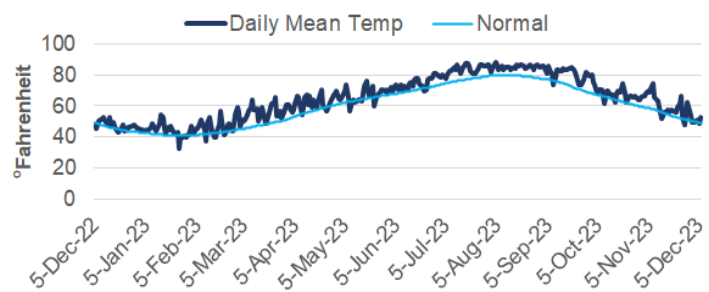
Current Spot Month Japan/Korea Futures Contract Price (Jan): **\$16.005**
 Current Spot Month Brent Crude Oil Futures Price (Jan): **\$74.30**
 Current Spot Month Japan Coal Price (Dec): **\$7.00**
 Implied Current Japan/Korea Slope to Brent: **21.5%**

Oil Price		Oil Parity Price (17.2% Slope)	
Crude Mo.	3 Mo Avg JCC	Brent	3 Mo Avg JCC
Jan-24	\$83.08	\$74.30	\$14.29
			\$12.78

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

NGI^{INSIGHT}
Europe & Asia Weather Data 6-Dec-2023
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

NGI^{INSIGHT}

U.S. Landed vs. European Prices January 2024 6-Dec-2023

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

Source	Pricing Point	HH Price	Gate Landed Price (GLP)
GOM	Henry Hub	\$2.569	\$3.294

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	€ 39.33	\$12.432	\$9.139
Czech Rep	CZ VTP	€ 40.96	\$12.949	\$9.655
France	PEG	€ 36.67	\$11.592	\$8.298
Germany	NCG	€ 39.88	\$12.606	\$9.313
Italy	PSV	€ 38.50	\$12.171	\$8.878
Netherlands	TTF	€ 39.31	\$12.428	\$9.135
Slovakia	CEGH VTP	€ 38.87	\$12.288	\$8.995
Spain	PVB	€ 37.65	\$11.901	\$8.607
UK	NBP	98.25p	\$12.347	\$9.054

Euro Exchange Rate: 1.0787

Pound Exchange Rate: 1.2567

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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

but once you get out on the water, we're not one of the big players anymore," Brady said. "We're working now to better understand how everything fits and if we find people to partner up with that have a bigger presence in the space, it could be a benefit."

Last month, Chesapeake management told analysts during a third quarter call that the firm plans to keep 2024 production near this year's average level of 3.2 Bcfe/d, with an option to add an additional rig if prices begin to firm.

Other gas-focused exploration and production

...cont' pg. 7

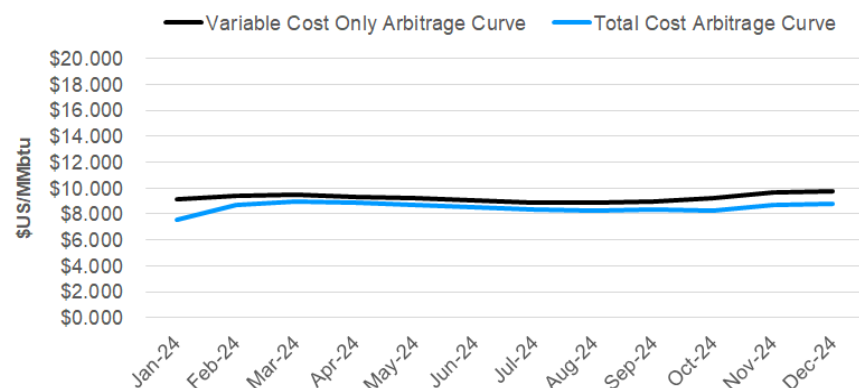
Spanish PVB vs. Dutch TTF Futures 6-Dec-2023

Period	PVB \$US/ MMBtu	Chg	TTF \$US/ MMBtu	Chg	PVB/TTF Premium (\$)	PVB/TTF Premium %
Jan-24	\$11.901	\$0.502	\$12.428	\$0.354	-\$0.527	-4.2%
Feb-24	\$12.041	\$0.538	\$12.610	\$0.347	-\$0.569	-4.5%
Mar-24	\$11.985	\$0.637	\$12.594	\$0.351	-\$0.609	-4.8%
2Q24	\$11.399	-\$0.921	\$12.074	-\$0.677	-\$0.675	-5.6%
3Q24	\$11.503	-\$1.070	\$12.263	-\$0.693	-\$0.760	-6.2%
4Q24	\$11.348	-\$1.195	\$12.243	-\$0.702	-\$0.895	-7.3%

Source: NGI calculations, CSI

NGI^{INSIGHT}

Estimated Sabine Pass / Europe (Gate) 12-Month Forward LNG Arbitrage Curves 6-Dec-2023



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.

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Month	115% Henry Hub Futures	Shipping Costs Variable Fixed	Variable Only Landed Cost	Total Landed Cost	TTF Futures	Variable Arbitrage Spread	Total Arbitrage Spread
Jan-24	\$2.954	\$0.339 \$1.533	\$3.294	\$4.826	\$12.428	\$9.135	\$7.602
Feb-24	\$2.895	\$0.342 \$0.630	\$3.237	\$3.867	\$12.610	\$9.373	\$8.742
Mar-24	\$2.740	\$0.342 \$0.522	\$3.082	\$3.604	\$12.594	\$9.512	\$8.990
Apr-24	\$2.726	\$0.339 \$0.477	\$3.065	\$3.541	\$12.413	\$9.349	\$8.872
May-24	\$2.815	\$0.338 \$0.494	\$3.153	\$3.647	\$12.358	\$9.205	\$8.711
Jun-24	\$2.985	\$0.338 \$0.551	\$3.324	\$3.875	\$12.371	\$9.047	\$8.496
Jul-24	\$3.157	\$0.339 \$0.567	\$3.496	\$4.063	\$12.397	\$8.901	\$8.335
Aug-24	\$3.213	\$0.339 \$0.631	\$3.552	\$4.183	\$12.419	\$8.867	\$8.236
Sep-24	\$3.188	\$0.341 \$0.690	\$3.529	\$4.219	\$12.534	\$9.004	\$8.315
Oct-24	\$3.267	\$0.346 \$0.915	\$3.613	\$4.528	\$12.823	\$9.210	\$8.295
Nov-24	\$3.705	\$0.362 \$0.997	\$4.067	\$5.064	\$13.773	\$9.706	\$8.709
Dec-24	\$4.242	\$0.371 \$0.915	\$4.614	\$5.529	\$14.340	\$9.726	\$8.811

Source: NGI calculations, CSI, Fearnleys

European Spark/Dark Spreads (January 2024) 6-Dec-2023

EUA Carbon Price (Eur/mt): 71.58

		Spark Spread		Clean Spark Spread	
		EFFCY	49%	49%	45%
Power Futures	Gas Futures	Spark Spread	Spark Spread	Spark Spread	Spark Spread
Nation	Eur/MWh	Eur/MWh	Eur/MWh	Eur/MWh	Eur/MWh
BE	100.54	39.325	20.50	13.15	-8.64
CZ	100.92	40.960	17.55	9.90	-11.58
FR	95.65	36.667	21.02	14.17	-8.12
DE	95.88	39.876	14.72	7.27	-14.42
IT	115.10	38.500	36.74	29.54	7.60
NL	99.08	39.313	19.06	11.72	-10.07
SK	104.00	38.870	24.88	17.62	-4.25
ES	86.26	37.645	9.64	2.60	-19.50
UK*	106.02	39.056	26.52	19.22	-11.15
Average			21.18	13.91	-8.90

		Dark Spread		Clean Dark Spread	
		EFFCY	35%	35%	
Power Futures	Coal Futures	Dark Spread	Dark Spread	Dark Spread	Dark Spread
Nation	Eur/MWh	Eur/MWh	Eur/MWh	Eur/MWh	Eur/MWh
BE	100.54	116.10	56.61		-12.89
CZ	100.92	116.10	56.99		-12.51
FR	95.65	116.10	51.72		-17.78
DE	95.88	116.10	51.95		-17.55
IT	115.10	116.10	71.17		1.67
NL	99.08	116.10	55.15		-14.35
SK	104.00	116.10	60.07		-9.43
ES	86.26	116.10	42.33		-27.17
UK*	106.02	116.10	62.09		-27.78
Average			56.45		-15.31

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

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companies in and around the Haynesville have been powering through the current **North American supply glut** with an eye on keeping production levels elevated in preparation for more Gulf Coast liquefaction capacity that's expected to come online at the end of 2024.

NGI's Forward Look shows Henry Hub spot prices peaking at \$4.226/MMBtu in January 2025 from current levels at just above \$2.70.

Meanwhile, **NGI data** shows Gulf Coast LNG netback prices from Asia could average around \$12.483/MMBtu

...cont'g pg. 8

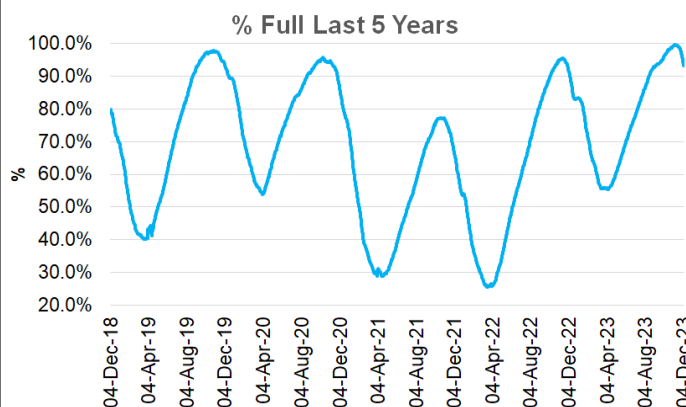
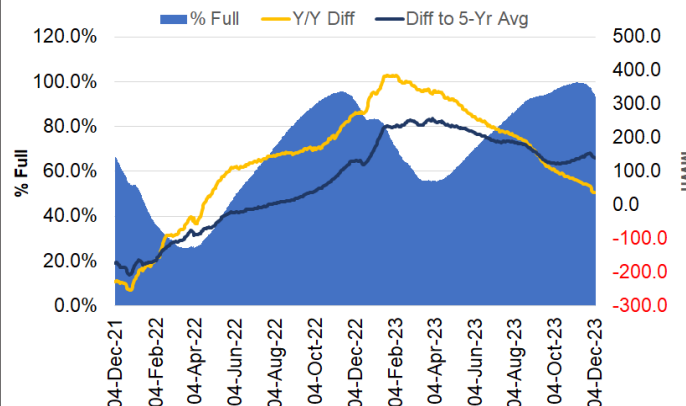
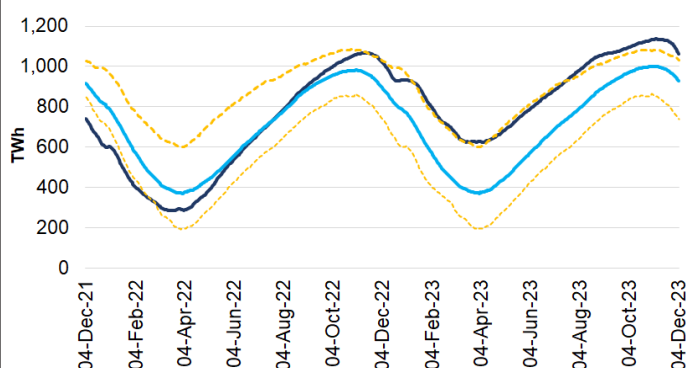
European Union Gas Storage

Data as of 4-Dec-23

Chart Last Updated 6-Dec-23

	Gas in Storage	Working Gas		Gas in Storage		Prev	5-Yr
Volumes in TWh	04-Dec-23	Volume	% Full	04-Dec-22	Y/Y Diff	5-Yr Avg	Avg Diff
Europe	1063.51	1139.78	93.3%	1021.13	42.4	924.84	138.7

— Gas in Storage — Prev 5-Yr High — Prev 5-Yr Low — Prev 5-Yr Avg



% Full As of 4-Dec-18 79.8% 4-Dec-19 93.2% 4-Dec-20 85.5% 4-Dec-21 66.2% 4-Dec-22 91.3% 4-Dec-23 93.3%

Source: NGI calculations, GIE

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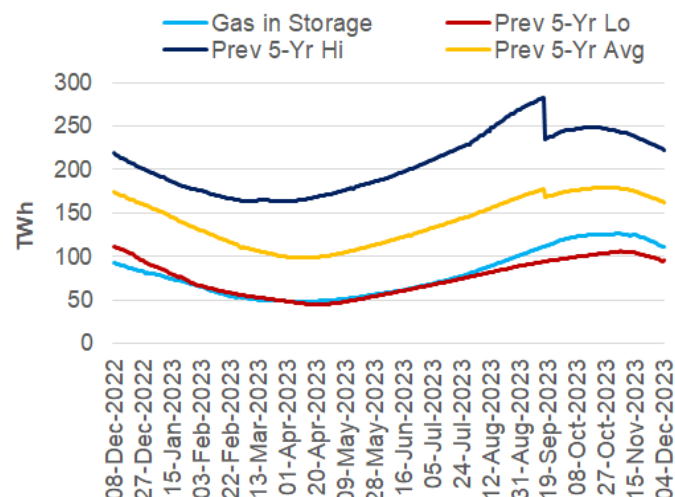
Ukraine Gas Storage

Data as of 4-Dec-23

Chart Last Updated: 6-Dec-23

Volumes in TWh

Working	Gas Vol	% Full	4/12/22	Y/Y Diff	Est Prev	5-Yr
4/12/23	320.92	34.5%	95.16	15.48	162.58	-51.94



Source: NGI calculations, GIE

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European Union LNG Regas Terminal Storage

Data as of 4-Dec-23

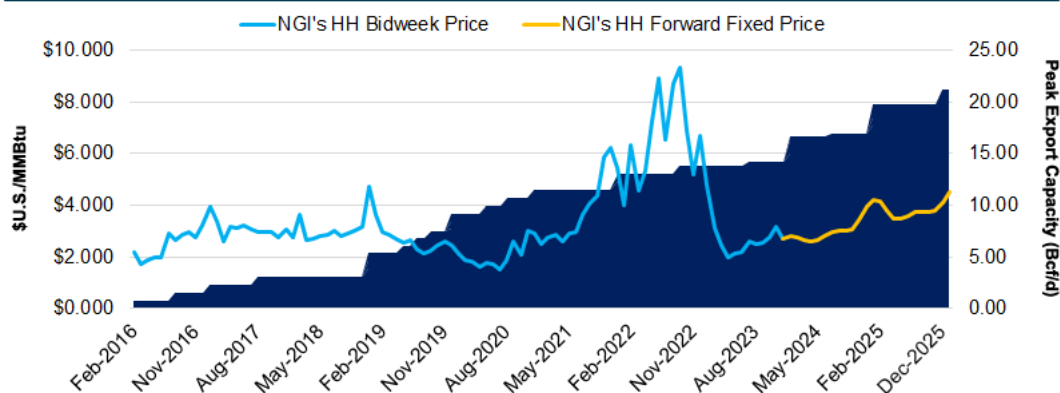
Chart Last Updated: 6-Dec-23

Country	Terminal	Inventory (10 ³ m ³)	Chg	Max Cap (10 ³ m ³)	% Util
Belgium	Zeebrugge	193.6	-66.5	566.0	34.2%
Croatia	Krk	29.7	-11.2	140.0	21.2%
France	Dunkerque	409.5	-60.7	570.0	71.8%
	Fos Tonkin	18.5	-4.8	80.0	23.1%
	Montoir	287.7	-69.1	360.0	79.9%
	Fos Cavaou	175.2	92.9	330.0	53.1%
Germany	Brunsbüttel	163.2	117.8	167.6	97.4%
	Wilhelmshaven	119.7	-23.7	167.6	71.4%
	Ostsee	146.8	-4.2	176.2	83.3%
Greece	Revythoussa	217.8	0.0	225.0	96.8%
Italy	Rovigo	179.5	106.8	250.0	71.8%
	Panigaglia	25.8	0.0	75.0	34.3%
	Piombino	28.5	-21.3	154.4	18.4%
	Toscana	76.0	69.7	137.2	55.4%
Lithuania	Klaipėdos	76.9	-14.6	166.7	46.1%
Netherlands	Eemshaven	193.8	31.2	155.2	124.9%
	Gate	408.0	44.7	540.0	75.6%
Poland	Swinoujście	169.0	117.6	320.0	52.8%
Portugal	Sines	282.0	8.7	390.0	72.3%
Spain	Barcelona	677.9	-14.5	760.0	89.2%
	Bilbao	240.2	-19.6	450.0	53.4%
	Cartagena	412.1	-90.9	587.0	70.2%
	Huelva	440.5	-28.2	619.5	71.1%
	Mugardos	28.9	-12.5	300.0	9.6%
	Sagunto	531.5	-9.2	600.0	88.6%
Total		5532.1	138.3	8287.5	66.8%

Source: NGI calculations, GIE

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NGI's Bidweek & Forward Fixed Henry Hub NatGas Price vs U.S. & Mexico LNG Peak Export Capacity

NGI


Source: NGI's Bidweek Survey, NGI's Forward Look, Compiled by NGI from Energy Information Administration documents, NGI calculations

through next year. The netback to the Gulf Coast from Europe could average slightly higher at \$12.586.

Agreements And Acquisitions

In the long term, Chesapeake plans on gradually exposing 20% of its net natural gas production to the international LNG trade. Brady said that goal is based on the runway Chesapeake has for its current assets to meet growing LNG demand over the next two decades, but also factors in the company's plan to keep boosting production numbers.

"If we were to go make another large acquisition or merger of some sort, then you would see that 20% share scale," Brady said. "Regardless of what the overall volume is, it's not a fixed number strictly based on where we're at right now."

Chesapeake disclosed Thursday that it has exited the Eagle Ford Shale after completing the sale of its remaining assets in the play to SilverBow Resources Inc. for \$700 million. The company started [marketing its Eagle Ford assets](#) late last year as part of a broader shift in focus from oil to natural gas.

Chesapeake hasn't been the only large U.S. gas player to strike direct deals with LNG buyers and producers in what has become another big year for U.S. LNG supply agreements.

Late last month, one of Canada's largest natural gas producers, [Arc Resources Ltd.](#) disclosed an agreement to supply natural gas to Cheniere Energy Inc. for liquefaction at prices linked to the Dutch Title Transfer Facility in Europe. EQT Corp. has also [signed tolling agreements](#) for 2 million metric tons/year of liquefaction capacity at the Lake Charles and Commonwealth LNG projects in Louisiana.

Other companies like Devon Energy Corp. have plans to invest

in proposed LNG projects. Along with a tentative tolling agreement for up to 2 mmt of LNG, Devon took a stake in the [Delfin LNG project](#) and signed a frame-work agreement to gain possibly more equity in the future.

While Chesapeake has invested in projects like [Momentum Midstream LLC's](#) Haynesville system that could deliver more gas to Gulf Coast terminals, Brady said the overall investment cost in liquefaction projects doesn't align with its focus on natural gas production.

"Most of our capital is always going to go into the drill bit and producing more gas,"

Brady said. "Maybe over time we'll see an opportunity to develop and move further down that value chain, but staying closer to the wellhead makes sense for us right now." ■

Jacob Dick

MEXICO

Mexico Pacific Nears Sold-Out Capacity for Saguaro LNG with Woodside SPA

Woodside is further diversifying its LNG portfolio with more U.S.-sourced gas from a new supply agreement with Mexico Pacific Ltd. (MPL), tallying another major offtaker for the proposed Mexican terminal.

Woodside has inked a 20-year, 1.3 million metric ton/year (mmt) sales and purchase agreement (SPA) for offtake from the Saguaro Energia LNG terminal on a free-on-board basis. Prices are to be linked to U.S. indexes.

MPL President and Chief Commercial Officer Sarah Bairstow said Woodside's addition as a foundational offtaker for Saguaro's third train further validates "the value of West Coast Mexican LNG."

[Want to know how global LNG demand impacts North American fundamentals? To find out, [subscribe to LNG Insight.](#)]

"We look forward to continuing our collaborative relationship with Woodside to bring additional supply online to address critical energy security and energy transition needs," Bairstow said.

With the latest agreement, MPL has more than 11 mmt of its proposed 14 mmt capacity from the first three trains ...cont'g pg. 9

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of Saguaro under contract. The firm is targeting a final investment decision (FID) by July 2024 and a start-up of commercial operations in 2029.

The deal with Woodside also continues MPL's streak of landing long-term contracts with **major oil and gas players** looking to diversify their portfolios and reach in the Asian market.

Earlier in the year, ConocoPhillips joined majors **Exxon-Mobil** and **Shell plc** in anchoring the project planned for Puerto Libertad in Sonora state. Shell is currently the largest contracted offtaker at Saguaro, with a combined 3.7 mmt/y.

MPL has also signed deals with China's **Guangzhou Development Group Inc.** and Chinese natural gas distributor **Zhejiang Energy International Ltd.**

Woodside, one of Australia's largest LNG exporters, has been looking for more exposure to other gas indexes and additional supply for the Asian market as domestic fields feeding its **Australian facilities decline**. Last year, Woodside **supplemented its U.S. volumes** from Cheniere Energy Inc.'s Corpus Christi LNG with two SPAs for offtake from the proposed Commonwealth LNG project in Louisiana.

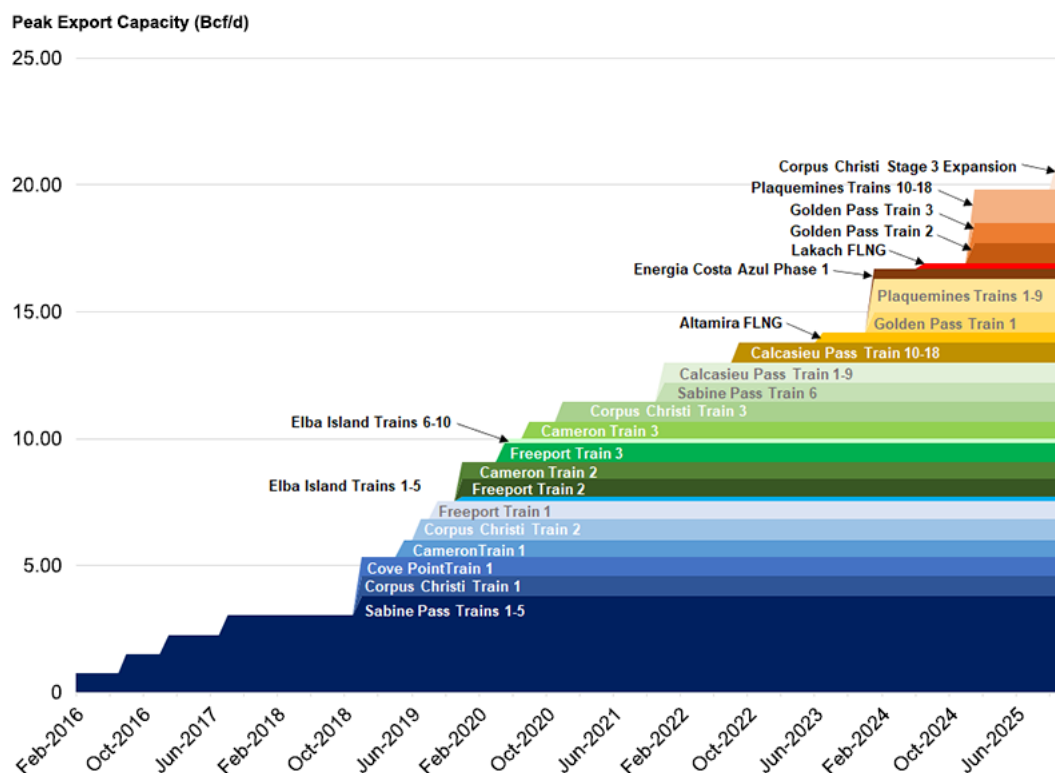
Woodside CEO Meg O'Neill said MPL's strategy to use competitively priced gas from the Waha hub in West Texas to feed LNG exports to Asia was a perfect fit for its own plans.

"This agreement with Mexico Pacific delivers a new source of LNG into our trading portfolio, expands our geographic diversification in the Pacific Basin and builds on our presence in Mexico," O'Neill said.

Waha prices averaged \$2.265/MMBtu in December bidweek trading, according to **NGI's Bidweek Survey**, compared with \$2.710 for Henry Hub. Earlier in the year, Waha prices also **dipped into negative territory** as pipeline constraints continue to strand natural gas output from the basin.

While MPL is closing the gap on the contracting side, it is still working to progress its **pipeline projects** to feed the facility. Late last month, the company disclosed it had secured engineering, procurement

U.S. & Mexico LNG Export Facilities Peak Export Capacity

NGI


Note: Calcasieu Pass Trains 10–18 and Golden Pass Trains 1–3 are under construction; Calcasieu Pass Trains 1–9 and Sabine Pass Train 6 are commissioning; and Plaquemines Trains 1–18 and Corpus Christi Stage 3 have reached FID. All dates are in-service dates, not first commercial delivery.

Source: Compiled by NGI from Energy Information Administration documents, NGI calculations

and construction (EPC) contractors for the Sierra Madre project. The 500-mile, 2.8 Bcf/d capacity pipeline could supply Permian gas from the border through the states of Chihuahua and Sonora to Puerto Libertad.

On the U.S. side of the border, Oneok Inc. is awaiting an FID of Saguaro to proceed with the **2.8 Bcf/d Saguaro Connector pipeline**, which would connect the Waha hub with the Sierra Madre pipeline. ■

Jacob Dick

DEMAND

'Stronger Desire' by Customers to Lock in Long-Term LNG Contracts, Says ExxonMobil CEO

Natural gas demand has not slowed, and that's helping to grease the skids for export contracts, ExxonMobil CEO Darren Woods said Wednesday.

During a webcast to discuss capital spending and projected plans, Woods was asked about the company's opportunities in the global LNG export market. The integrated major is a partner in several big gas projects.

Has it become more difficult to secure LNG customers with the plethora of competing projects in the queue?

"You know, it's interesting, I think, that since the Russian invasion of Ukraine, we've seen a much greater recognition ...cont' pg. 10

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around the world of the importance of LNG in many countries,” Woods said.

"I'd say there's a very much stronger desire to lock in long-term energy commitments. And we're using that in the work that we're doing."

[What's Coming? LNG Insight is now offering NGI's North American LNG Project Tracker for clients to quickly see developments across the U.S., Canada and Mexico. [Download the data sheet now.](#)]

ExxonMobil's [Golden Pass](#) export facility, now underway on the Texas coast, was set to begin operations before the end of 2024. However, the company disclosed Wednesday that the schedule has been revised. Golden Pass is now set to be “mechanically complete” by the end of 2024, with first exports in the first half of 2025.

That hews closer to the timeline suggested by Chief Commercial Officer Jeff Hammad in October. Speaking at the Gulf Coast Energy Forum, Hammad said Golden Pass was “still targeting” initial startup “for the latter half of 2024, and we will do whatever we can to meet that schedule.”

Golden Pass is a joint venture with QatarEnergy, which holds a 70% stake in the project. ExxonMobil holds a 30% interest.

ExxonMobil also is partnering in projects that are progressing in Mozambique, Papua New Guinea (PNG) and QatarEnergy's North Field expansion.

There are “still a lot of customers out there who are looking to sign long-term contracts,” Woods told analysts. “We’re using that to

Rendering of Golden Pass LNG Export Project

NGI



Source: ExxonMobil

back up the projects that we're developing... We're growing our equity portfolio of LNG," with the expectation "that we'll have roughly 80% of that under long-term contracts."

The company wants to maintain “roughly 20%” of its LNG sales to the spot market. So far so good, as ExxonMobil has continued to have “the ability to maintain that kind of balance in our portfolio.”

Where Do I Sign?

There remains “a very healthy appetite” for contracts,” the CEO said. On that front, “we’re not challenged...in signing up agreements for the LNG that we’re looking to bring on with these projects.”

As far as operational issues, the Mozambique development “is still in force majeure,” Woods noted. A “critical milestone” will be to establish “adequate security” for the project and the workforce.

To that end, ExxonMobil is working with partner TotalEnergies SE to resolve the security issues. Woods said he has confidence they can be addressed.

“The good news in Mozambique is we’ve used the time associated with the force majeure to continue to develop that project, enhance it and optimize it. So we feel really good about the ability to bring on a very competitive source of LNG...”

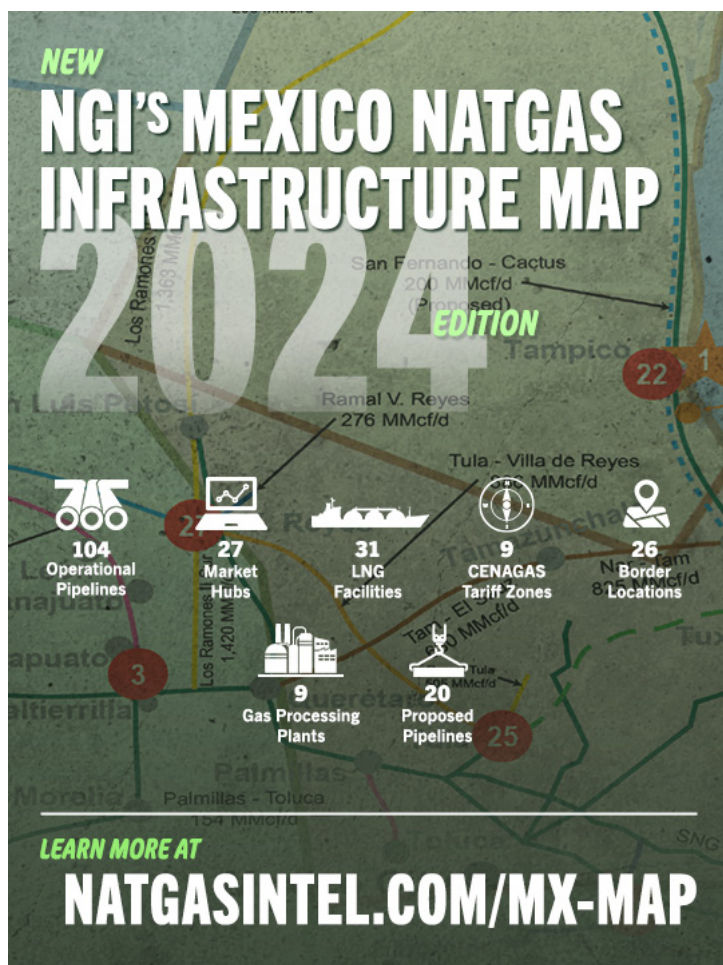
For PNG, pre-development activity continues.

“One of the key challenges is making sure that we’ve got a project concept that is very cost competitive, from a cost-to-supply standpoint,” Woods said of PNG. “All the partners are getting their financing set up. I think that’s going through what I would characterize as the ‘normal’ project development process...

“We don’t see anything getting in the way of that timeline... So PNG looks pretty solid in terms of going forward at this stage. And in Mozambique, our expectation is that we’ll see that move... early next year.”

Meanwhile, Venture Global LNG Inc. told Reuters Wednesday that its **Plaquemines LNG project** under construction

...cont' pg. 11



[See NGI's LNG Glossary Here](#)

in Louisiana could take 24 months to commission when it starts up next year.

The company has had a [prolonged commissioning](#) at its Calcasieu Pass LNG terminal, which has delayed cargoes for long-term contract holders. CEO Michael Sabel told the news agency that Plaquemines' customers would likely start receiving cargoes in 2026 at the earliest.

Venture Global's Calcasieu Pass terminal [loaded its first commissioning cargo](#) early last year. However, due to equipment problems, it has yet to declare that the facility is complete and commercially operable, which would require it to begin supplying cargoes to its long-term offtakers.

Venture Global has said the commissioning process at Calcasieu Pass will take 36 months in all. The company expects it to end late next year, when cargoes would finally be delivered to long-term customers, some of which are in [arbitration proceedings](#) to get shipments sooner. ■

Carolyn Davis

Latin America DES Prices 6-Dec-2023

Country	Terminal	\$US/MMBtu					
		Jan	Chg	Feb	Chg	Mar	Chg
Argentina	Bahia Blanca	13.88	0.50	12.59	0.33	12.56	0.34
Brazil	Pecem	13.12	0.50	11.76	0.33	11.73	0.34
Chile	Quintero	13.99	0.08	12.12	0.33	12.09	0.34
Colombia	Colombia	12.99	0.21	11.12	0.33	11.09	0.35
Mexico East	Altamira	12.72	-0.05	10.85	0.34	10.82	0.35
Mexico West	Manzanillo	13.71	0.09	11.84	0.33	11.81	0.35
Panama	Costa Norte	12.99	0.12	11.12	0.33	11.09	0.35



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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