LONGREACH ENERGY

Monthly Report

Longreach Energy Holdings LLC

July 2024

FIRM INFORMATION

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1.0 Market and Portfolio Commentary

1.1 Macro Industry Commentary

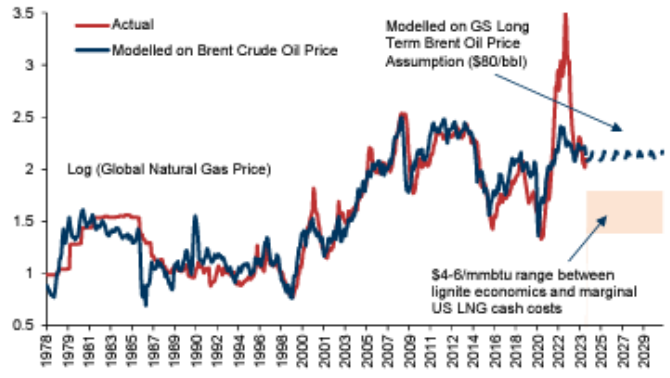
US Henry Hub prompt gas prices fell in July as the weather cooled (reducing air-conditioning demand for power) and Freeport LNG was offline for much of the month following Hurricane induced damage to its electricity supply. The prompt was $2.60/mmbtu at close on 28 June and finished at $2.03/mmbtu at close on 31 July. Calendar 2024 was also down, beginning July at $2.90/mmbtu and closing at $2.51/mmbtu.

Oil prices also fell. The prompt began June at $81.45/bbl and closed the month at $77.91/bbl. Calendar 2024 started the month at $79.48/bbl and closed at $76.29/bbl.

While short term US weather effects mean that there is low statistical correlation between Henry Hub gas prices and WTI oil prices, the competition between natural gas and oil as energy sources for a variety of end-users has, for a long time, delivered inter-relationship between global gas prices and global oil prices (Figure 1). Historically global oil prices have been the driver with global gas prices moving in response to oil.

Figure 1: Long-run model of Log (global gas price) on Brent oil price (Source: various, via GS)

Global oil and natural gas prices have long been inter-related as they compete as energy sources for a variety of end-uses
Cointegrating (long-run) model of Log (global natural gas price) on Brent oil prices



Global gas calculated as simple average of US (Henry Hub), EU (TTF/NBP), and Japan (JKM). Backcast using IEA end-use price data. Model uses Brent crude prices and seasonality as independent variables.

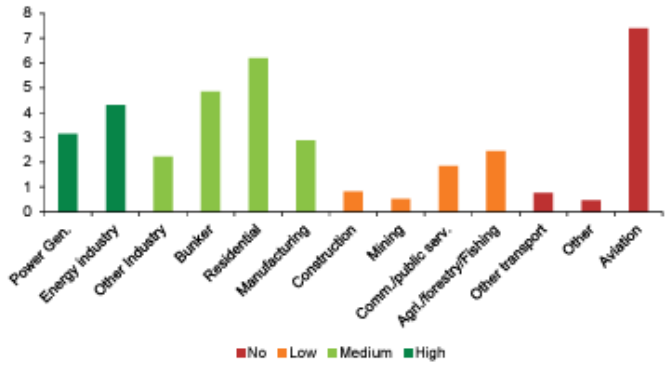
Source: ICE, CME, IEA, Goldman Sachs Global Investment Research

LHS Figure 2 shows global oil demand by end-use and the ease of substitution with natural gas. Importantly for future oil demand, the largest end-users of oil, petrochemicals and road, cannot be supplied by natural gas (RHS Figure 2).

Figure 2: Oil Demand by End-Use and Ease of Substitution by Nat Gas (Source: IEA via GS)

Exhibit 3: Many end-use sectors could see natural gas compete against oil as a source of energy

Oil demand by end-use (excluding non-energy use/petrochemicals and road demand) and ease of substitutability with natural gas (mb/d)

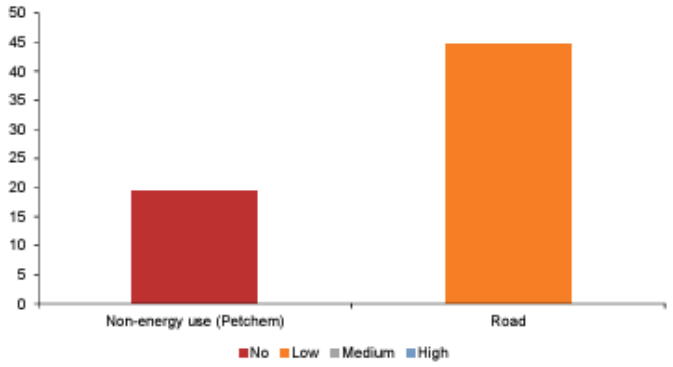


2021 numbers except aviation, which uses 2019 figures

Source: IEA, Goldman Sachs Global Investment Research

Exhibit 4: Although the largest end-uses are arguably the most well protected from this competition

Oil demand for non-energy use/petrochemicals and road end-use and ease of substitutability with natural gas (mb/d)



The vast majority of non-energy use is petrochemicals, but this also includes c.5mb/d of asphalt, bitumen, lubricants, petcoke, waxes, etc

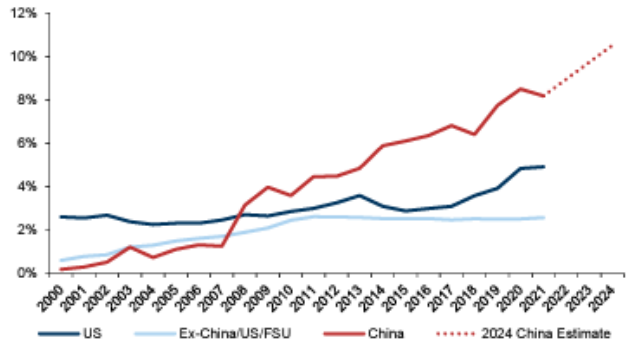
Source: IEA, Goldman Sachs Global Investment Research

While it is generally hard for natural gas to replace oil for road fuel, in China government support for compressed natural gas (CNG) commercial vehicles is starting to have an impact (LHS Figure 3). Globally approximately 40% of road demand is generated by commercial vehicles (c. 17 mmbbl/d), more than 20% of this sector's demand is in China (RHS Figure 3).

Figure 3: Regional Nat Gas Share of Petroleum Transport Demand (Source: IEA via GS)

Exhibit 5: LNG trucks in China are challenging oil's mainstay consumption bucket: road demand

Regional natural gas share of petroleum demand in transportation

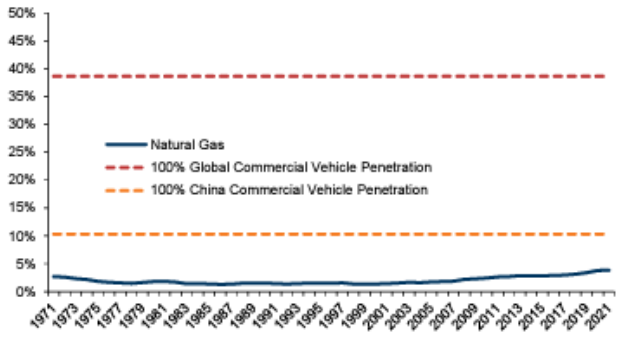


Transport is majority road but also includes air, bunker, rail, and pipeline. China is rapidly expanding use of LNG in trucks (heavy-duty vehicles). Brazil meanwhile has long used compressed natural gas (CNG) in many light-duty vehicles due to strong state incentives.

Source: IEA, Goldman Sachs Global Investment Research

Exhibit 6: c.40% of road demand is used in commercial vehicles (c.17 mb/d), with China accounting for more than 20% of this

Global (ex-FSU) road transportation natural gas share of petroleum (oil and natural gas) demand. Dashed lines show share of China and global commercial vehicle shares.



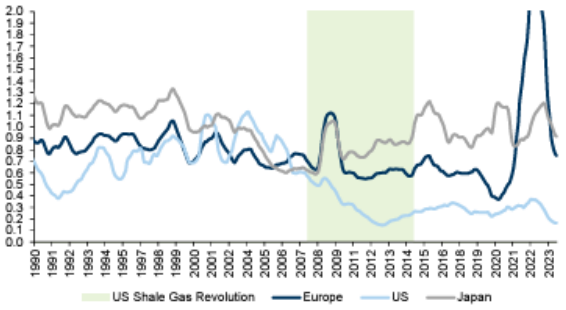
Source: IEA, Goldman Sachs Global Investment Research

The independence of US natural gas prices from oil prices accelerated as shale gas development grew in the mid-late 2000's (LHS Figure 4). As the availability of natural gas increased, gas's share of industrial and residential energy use grew sharply (RHS Figure 4).

Figure 4: Natural Gas Prices divided by Brent and Nat Gas share of Sector Petroleum Demand (Source: IEA, via GS)

Exhibit 7: Natural gas prices decoupled from oil in the mid-late 2000s in the US

Local benchmark natural gas prices divided by Brent crude adjusted for energy content (12mma)

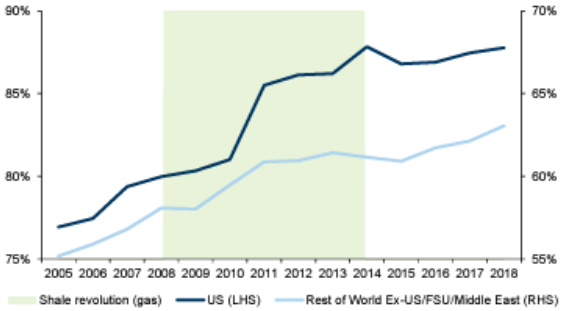


Shale oil revolution progressed from 2014, as oil prices collapsed.

Source: IEA, ICE, Goldman Sachs Global Investment Research

Exhibit 8: Natural gas penetration in the US increased sharply around the shale revolution as local gas prices decoupled

Natural gas share of industrial and residential petroleum demand by region (%)



Rest of world excludes Middle East and Former Soviet Union (FSU) regions who have cheap abundant gas.

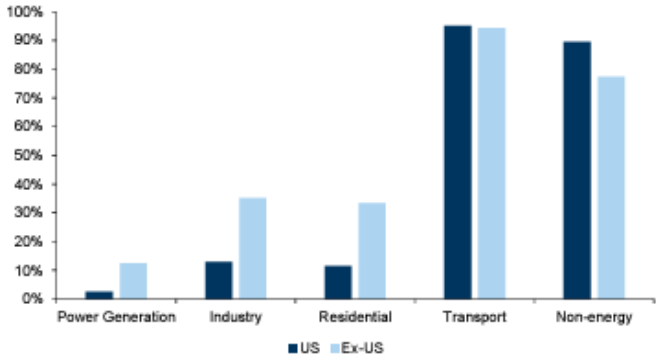
Source: IEA, Goldman Sachs Global Investment Research

Today, the US is significantly more gas intensive (and less oil intensive) across most end-uses than the rest of the world (LHS Figure 5). The trend, if replicated in the rest of the world, would further grow gas demand and subtract up to 0.2mmbbld p.a. of oil demand over the next 15 years (RHS Figure 5).

Figure 5: Oil Share of Petroleum-Powered End-Use (Source: IEA, via GS)

Exhibit 9: The US is significantly more gas intensive (and less oil intensive) across most end-uses than the rest of the world

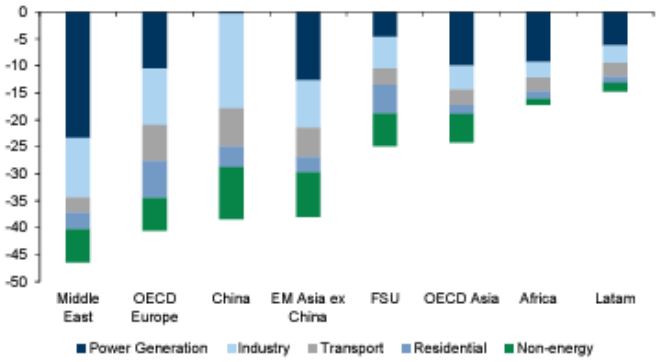
Oil share of petroleum-powered energy demand by end-use (2021)



Source: IEA, Goldman Sachs Global Investment Research

Exhibit 10: This would subtract c.0.15-0.2 mb/d per year over the next 15 years should the US experience be replicated (versus current trends)

Annualised demand loss by region and by end-use of replicating US growth in natural gas intensity (kb/d)

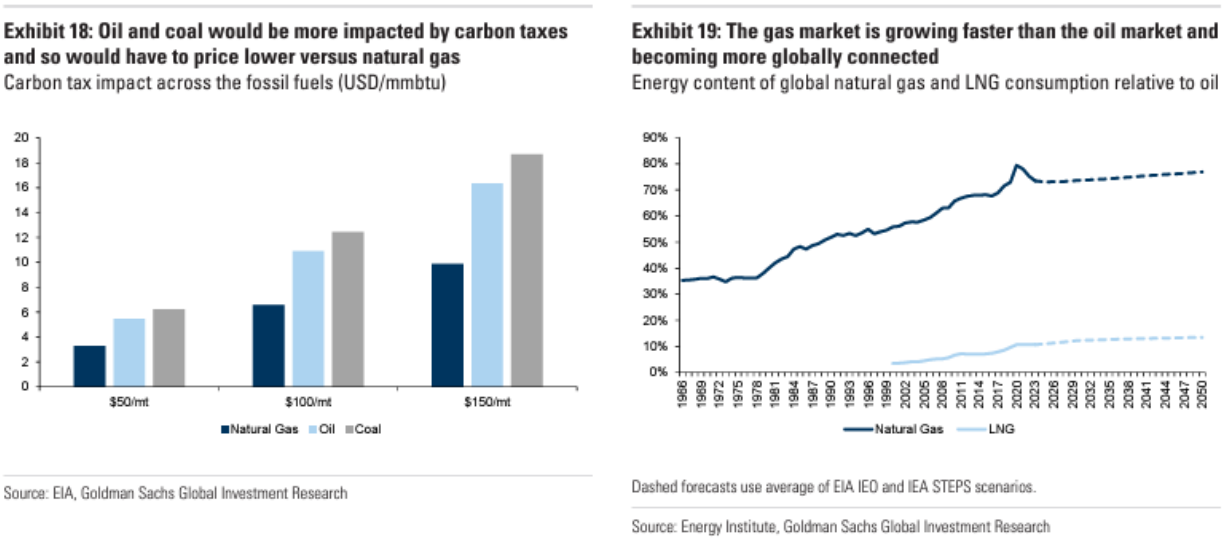


Calculations are taken by comparing the 15 year reduction in oil share of petroleum-powered energy use by sector and controlling this loss for ex-US oil share loss trends observed over the last 15 years. In our stated impacts we ignore the contributions of the non-energy sector. FSU = Former Soviet Union/Non-OECD Europe

Source: IEA, Goldman Sachs Global Investment Research

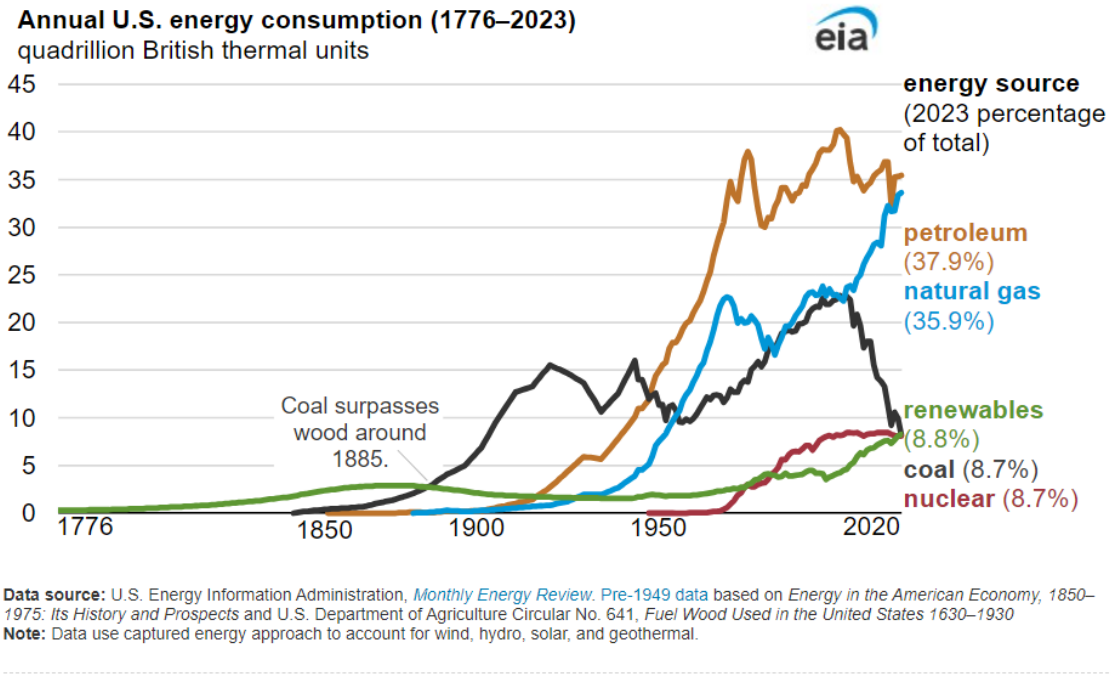
Future carbon taxes would impact oil and coal prices more than those of natural gas , as a consequence those commodities would have to lower their prices relative to natural gas for consumer prices to match (LHS Figure 6). Globally, the natural gas market is now 75% of the size of the oil market and forecast to grow in relative importance in the coming decades. As gas markets become more globally connected, US Henry Hub is likely to develop as a global pricing benchmark (RHS Figure 6).

Figure 6: Carbon Tax Impact and Energy Content of Global Gas relative to Oil (Source: various, via GS)



According to the EIA, in 2023, 94 quadrillion British thermal units (quads) were consumed in the United States, a 1% decrease from 2022. Fossil fuels – petroleum, natural gas and coal – accounted for nearly 83% of total US energy consumption in 2023. In 2023, petroleum remained the most consumed fuel in the United States, as it has been for the past 73 years, and renewables (hydro, biomass, wind and solar) exceeded coal for the first time in about 140 years (Figure 7).

Figure 7: Annual US Energy Consumption (Source: EIA)

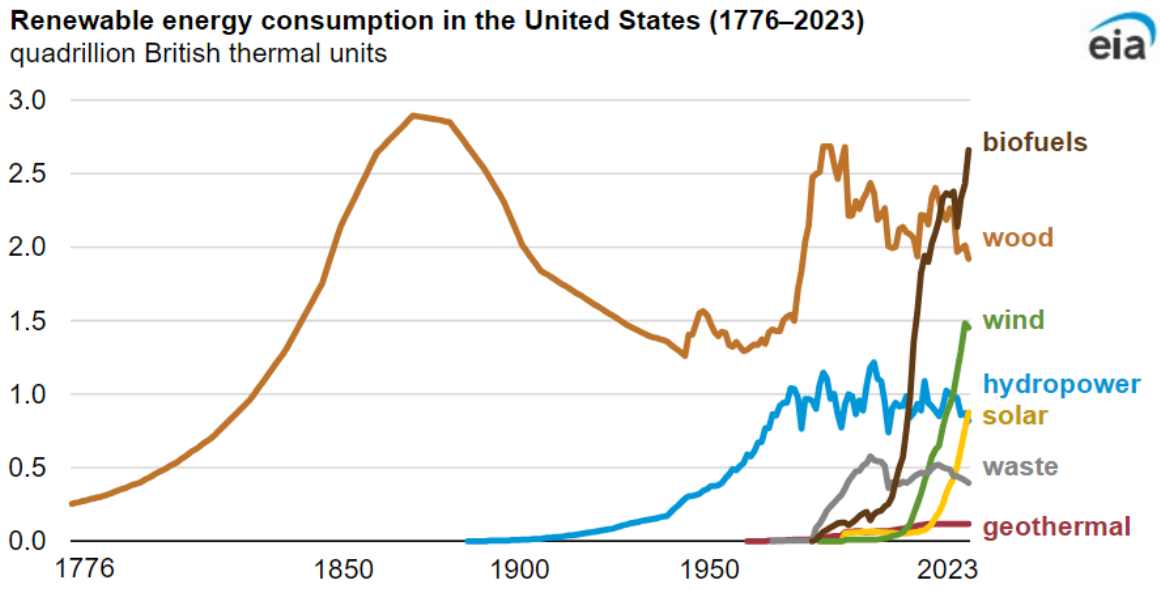


When the Declaration of Independence was signed in 1776, wood, a renewable energy source, was the largest source of energy in the United States. Used for heating, cooking, and lighting, wood remained the largest US energy source until the late 1800's, when coal surpassed it.

The first industrial use of hydropower to generate electricity in the US was to power lamps at a chair factory in Grand Rapids, Michigan, in 1880. The world's first hydroelectric power plant to sell electricity to the public opened on the Fox River near Appleton, Wisconsin, in 1882.

Renewable energy has only recently become a more significant source of US energy. Renewable energy supply today is dominated by wood and biofuels (biodiesel and renewable diesel), followed by wind, hydro and solar (Figure 8). In aggregate wind and solar in 2023 supplied about 3% of total US energy needs.

Figure 8: Renewable Energy Consumption in the US (Source: EIA)



Data source: U.S. Energy Information Administration, *Monthly Energy Review*. Pre-1949 data based on *Energy in the American Economy, 1850–1975: Its History and Prospects* and U.S. Department of Agriculture Circular No. 641, *Fuel Wood Used in the United States 1630–1930*
Note: Data use captured energy approach to account for wind, hydro, solar, and geothermal.

While most fossil fuels consumed in the US and elsewhere are combusted to produce heat and power, some are used directly for non-combustion use as construction materials, chemical feedstocks, lubricants, solvents and waxes. For example, coal tars from coal coke manufacturing are used as feedstock in the chemicals industry, for metallurgical work, and in anti-dandruff shampoos; natural gas is used to make nitrogenous fertilisers and as chemical feedstocks; asphalt and road oil are used for roofing and paving; hydrocarbon gas liquids are used to create intermediate products that are used in making plastics; lubricants, including motor oil and greases, are used in vehicles and various industrial processes; and petrochemical feedstocks are used to make plastics, synthetic fabrics, and related products.

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The latest Baker Hughes rig count data follows. In July, US total land rigs rose by 5 from 561 to 566. Total oil rigs rose by 4 from 478 to 482 while gas rigs fell from 100 to 98. Oil and gas rig totals include 20 offshore rigs working in June.

Baker Hughes

NORTH AMERICA Rotary Rig Count

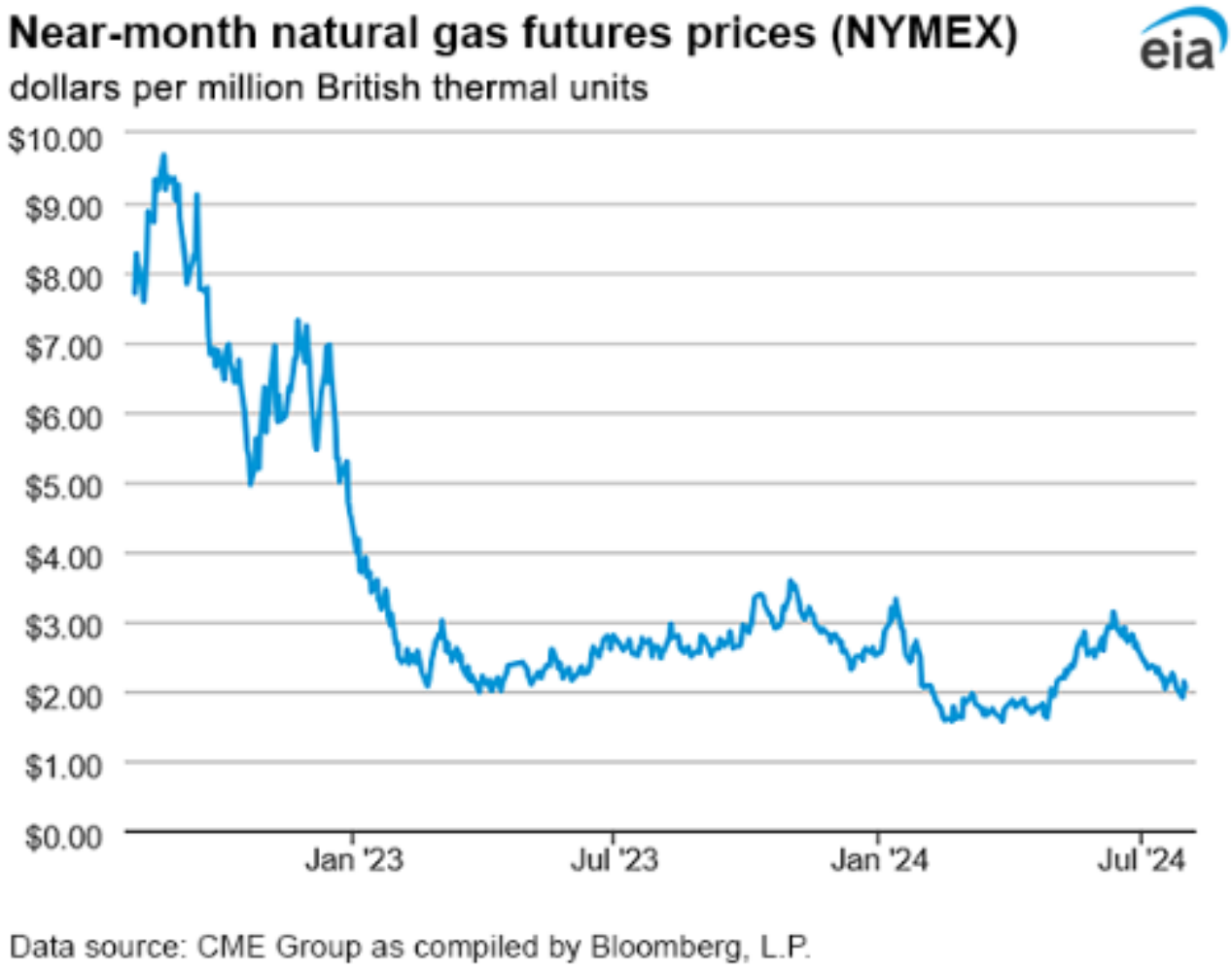
2/08/2024

Location	Week	+/-	Week	+/-	YearAgo
Inland Waters	0	0	0	-5	5
Land	566	-2	568	-69	635
Offshore	20	-1	21	1	19
United States Total	**586**	**-3**	**589**	**-73**	**659**
Gulf of Mexico	**18**	**-1**	**19**	**0**	**18**
Canada	**219**	**8**	**211**	**31**	**188**
North America	**805**	**5**	**800**	**-42**	**847**
U.S. Breakout Information	**This Week**	**+/-**	**Last Week**	**+/-**	**Year Ago**
Gas	98	-3	101	-30	128
Oil	482	0	482	-43	525
Miscellaneous	6	0	6	0	6
Directional	49	0	49	-4	53
Horizontal	520	-3	523	-65	585
Vertical	17	0	17	-4	21

Gas Market

Henry Hub prompt prices fell in July as cooler weather forecasts were anticipated to reduced air-conditioning demand through August and September and Hurricane Beryl disrupted operation of the Freeport LNG facility (Figure 9).

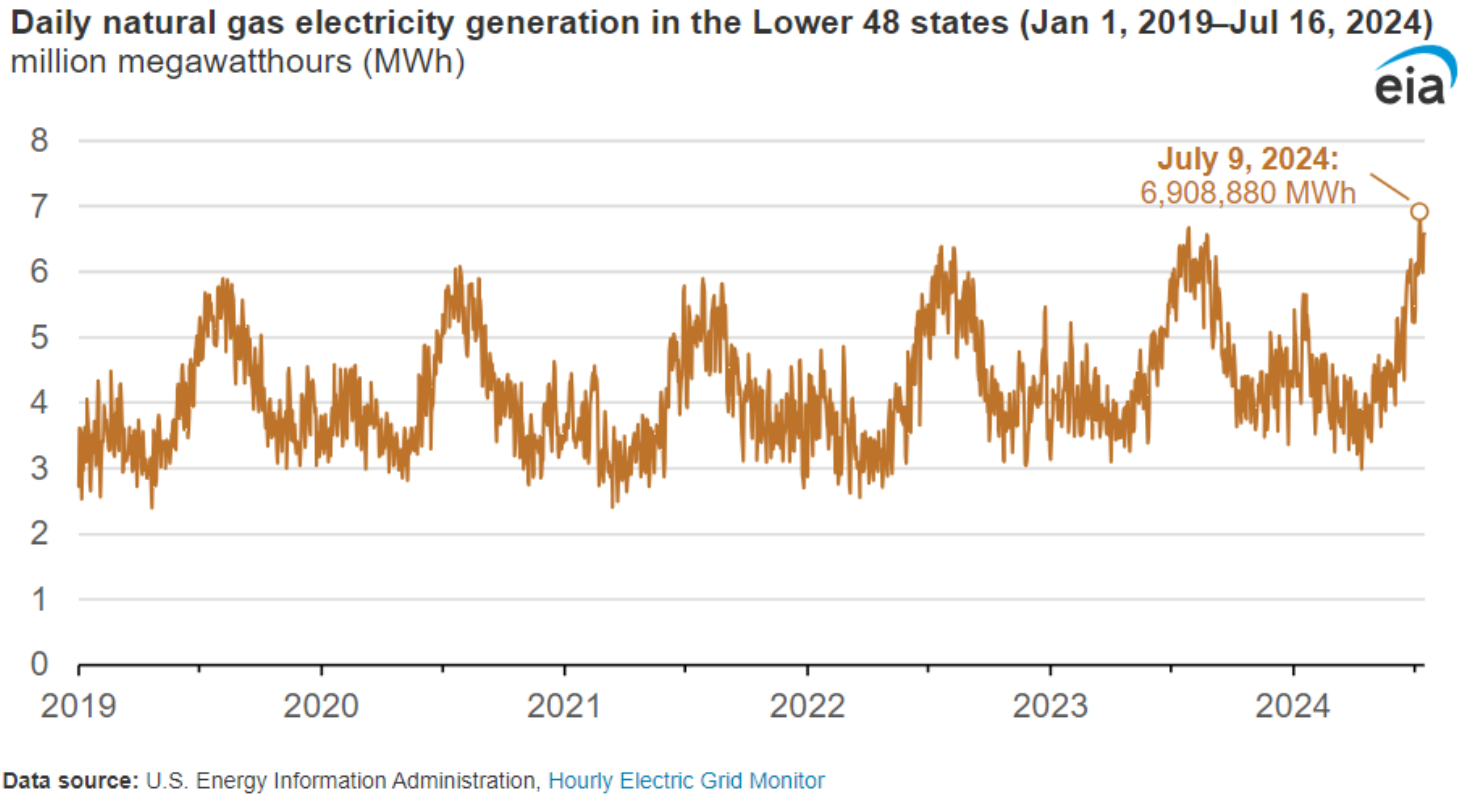
Figure 9: Near Month Henry Hub Futures (Source: EIA)



High temperatures across most of the US and a steep drop in wind generation saw 6.9 million MWh of electricity generated from natural gas on 9 July. This is probably the most in history and definitively the most since the EIA began to collect hourly natural gas electricity generation data on 1 January 2019 (Figure 10).

Figure 10: Daily Natural Gas Generation in Lower 48 States (Source: EIA)

Natural gas electricity generation in the United States spiked with July heatwave

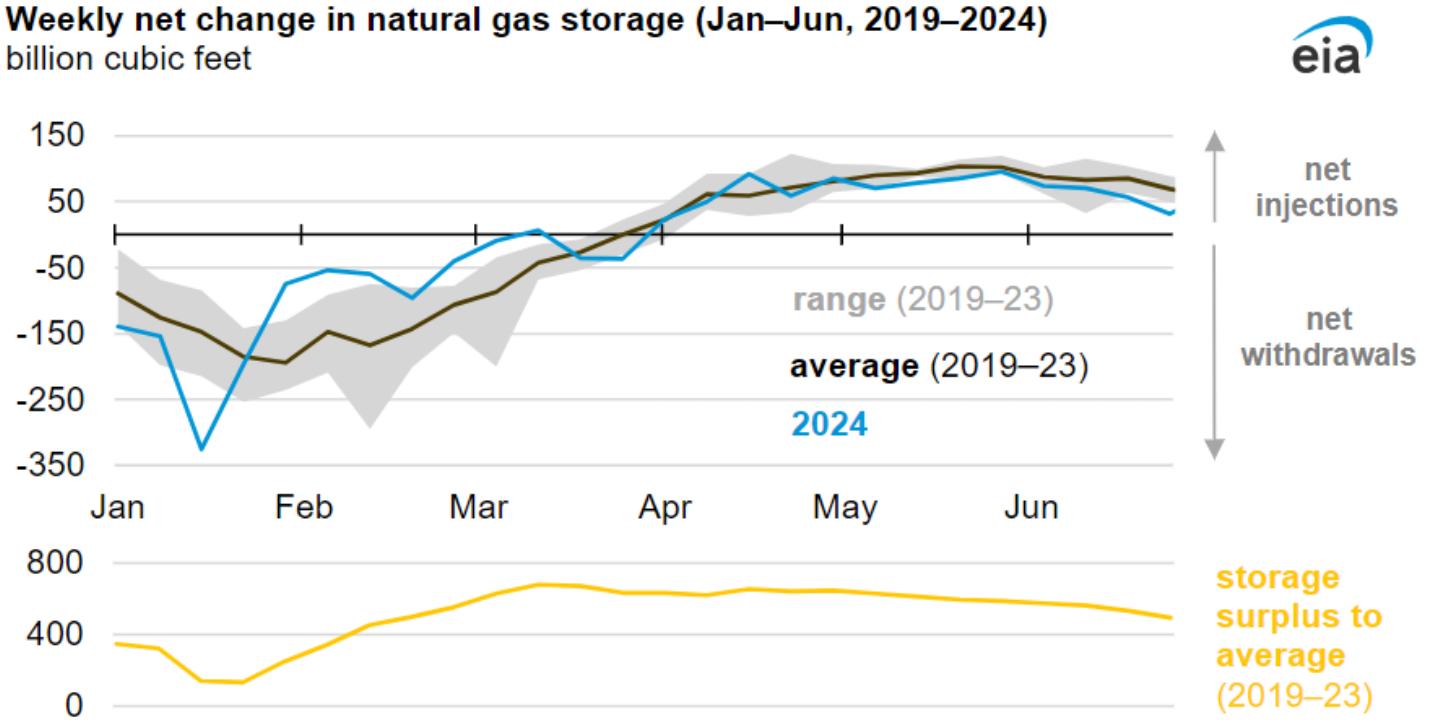


Data source: U.S. Energy Information Administration, Hourly Electric Grid Monitor

After ending winter with very high storage levels, lower-than-usual injections during summer have been slowly returning storage levels toward the five-year average. So far this injection season (April 1 – October 31), the net amount of natural gas injected into storage is 15% (166 bcf) less than the previous five-year average for the same period and 15% (172 bcf) less than the same time last year (Figure 11).

Figure 11: Weekly Net Change in Natural Gas Storage (Jan – Jun, 2019-2024) (Source: EIA)

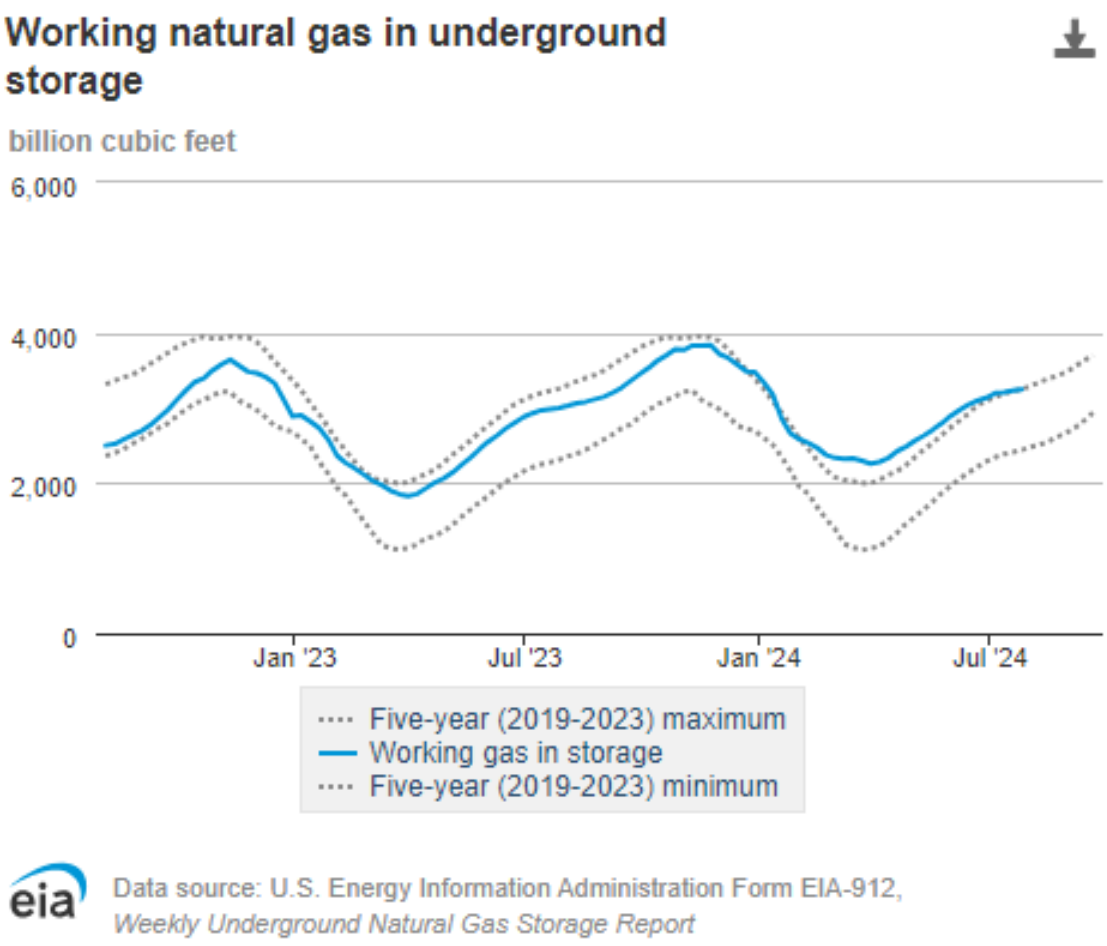
Natural gas storage injections remain below five-year average so far this summer



Data source: U.S. Energy Information Administration, *Weekly Natural Gas Storage Report*

Despite the decrease in injections, the amount of natural gas in storage remains relatively high. Total working gas stocks for the week ended 26 July totalled 3,246 bcf, 411 bcf (16%) more than the five-year average and 252 bcf (8%) more than last year at this time (Figure 12).

Figure 12: Working Gas in Underground Storage (Source: EIA)



Oil Market

Global air traffic passenger flows have now reached 2019 levels. Flight numbers in the OECD have caught up to pre-pandemic trend however Non-OECD international flights are struggling to recover (Figure 13).

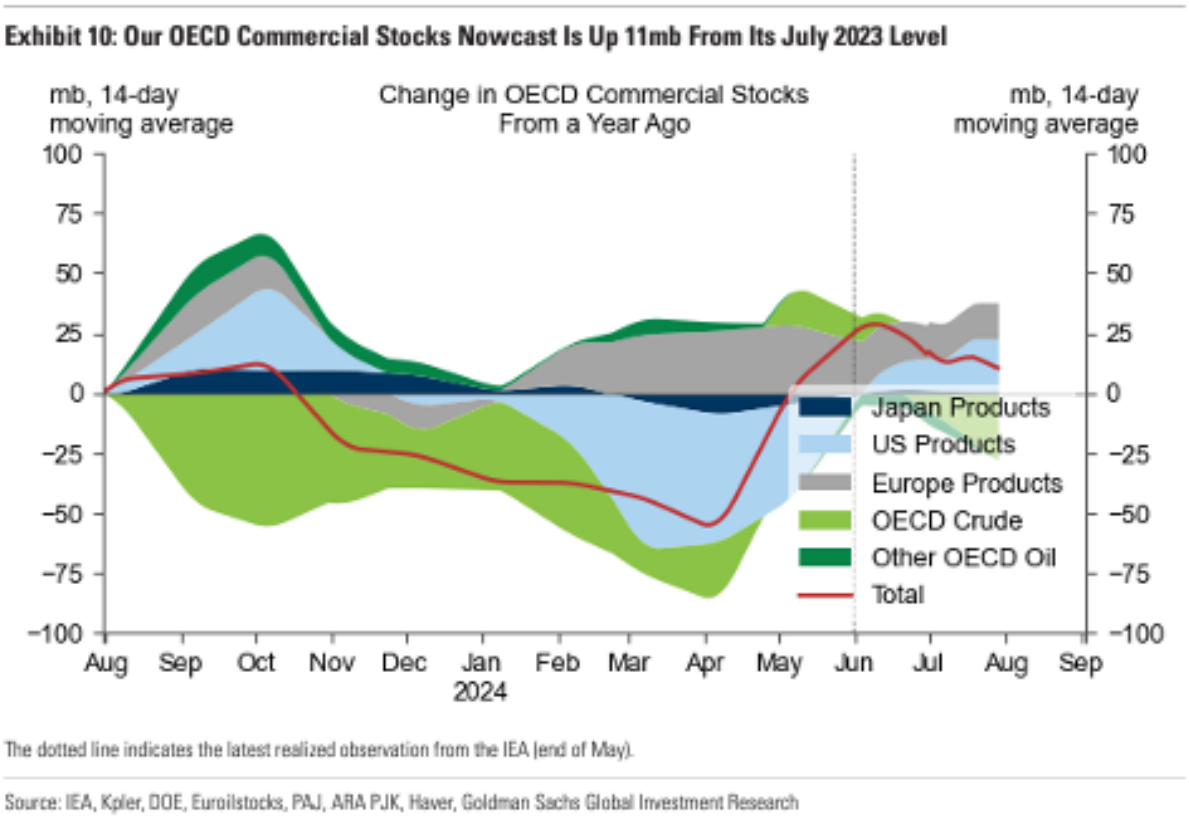
Figure 13: Share of International Flights (Source: GS)

US-China flights are 75% down from five years ago (LHS Figure 14) while Russian international flights have been cancelled and re-routed (RHS Figure 14).

Figure 14: China and Russia Flights (Source: GS)

The global supply / demand balance has been easing, OECD commercial oil stocks are up 11 mmbbls from July 2023 (Figure 15).

Figure 15: Change in OECD Commercial Oil Stocks (Source: various, via GS)



Given this relative looseness in supply it is unlikely OPEC+ will move to restore currently constrained production any time soon.

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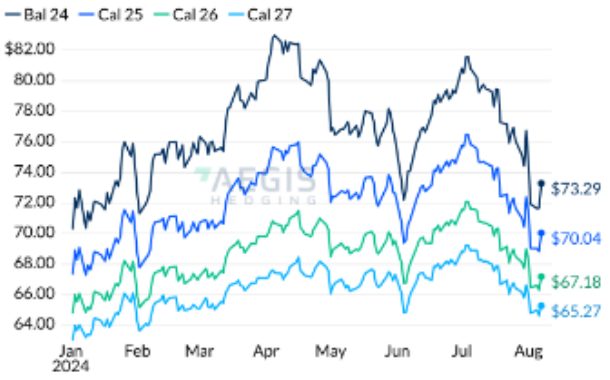
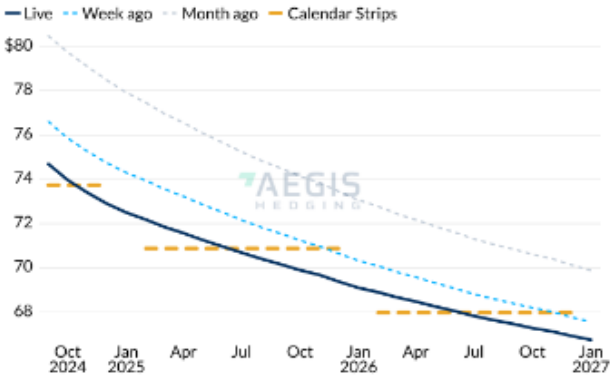
Gas and Oil Prices 1 August 2024

Historical WTI CMA Calendar Strips



As of yesterday's settle

WTI CMA Calendar Strips



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Crude Oil Swap Pricing

	Bal 24	Cal 25	Cal 26
NYMEX WTI	$74.20	$70.87	$67.88
LLS	$76.35	$73.38	$70.79
Mars	$73.66	$70.69	$66.24
Dubai	$76.89	$74.41	$72.12
WCS-WTI	-$16.19	-$14.67	-$15.89
ICE Brent	$78.02	$75.29	$72.59
Dated Brent	NaN	$75.28	$72.59
West TX Sour (WTS)	$74.13	$70.65	$67.49

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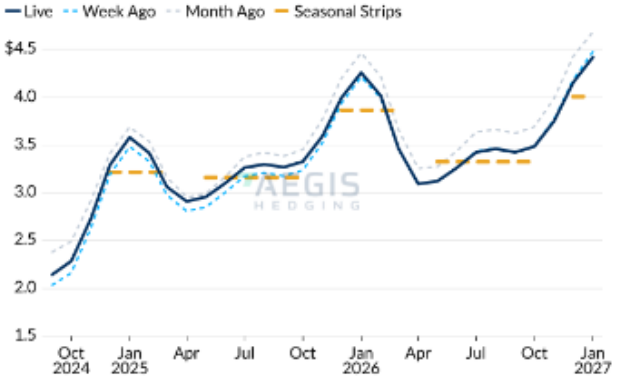
Natural Gas Liquids

Month 1	2024	2025	2026

Historical Natural Gas Strips

As of yesterday's settle

Henry Hub Seasonal Strips



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Natural Gas Basis Swap Pricing

	Month 1	Summer 24	Winter 24/25	Summer 25	Winter 25/26
Henry Hub Fixed	$2.268	$2.313	$3.246	$3.186	$3.811
Panhandle East	-$0.585	$-0.694	$0.119	$-0.595	$-0.134
Eastern Gas South	-$0.785	$-1.004	$-0.753	$-1.059	$-1.009
Waha	-$1.713	$-1.534	$-0.734	$-1.176	$-0.910
TETCO M3	-$0.660	$-0.916	$0.518	$-0.916	$0.095
Houston Ship Channel	-$0.355	$-0.473	$-0.265	$-0.430	$-0.314
Columbia Gulf Mainline	-$0.335	$-0.402	$-0.241	$-0.330	$-0.316
NGPL TXOK	-$0.415	$-0.493	$-0.273	$-0.440	$-0.325
SOCAL	-$1.260	$-0.186	$2.036	$0.504	$1.580
AECO	-$1.700	$-1.658	$-1.328	$-1.409	$-1.437
Chicago City-Gates	-$0.415	$-0.498	$0.332	$-0.380	$0.064

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Gas and Oil Prices 1 July 2024

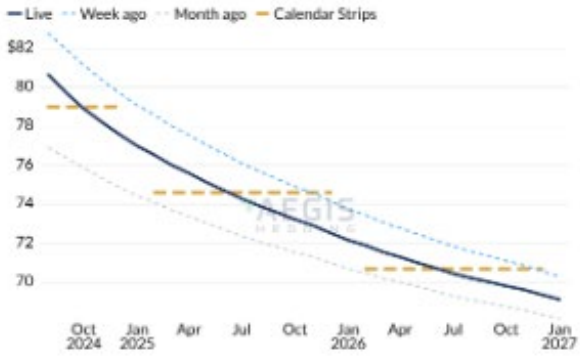
Historical WTI CMA Calendar Strips

As of yesterday's settle

Historical Natural Gas Strips

As of yesterday's settle

WTI CMA Calendar Strips



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Henry Hub Seasonal Strips

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Crude Oil Swap Pricing

	Bal 24	Cal 25	Cal 26
NYMEX WTI	$80.13	$74.90	$70.77
LLS	$82.79	$77.80	$73.58
Mars	$80.60	$75.25	$69.03
Dubai	$83.37	$78.84	$74.95
WCS-WTI	-$16.79	-$15.48	-$15.40
ICE Brent	$83.70	$79.31	$75.49
Dated Brent	NaN	$79.65	$75.67
West TX Sour (WTS)	$80.09	$74.57	$70.38

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Natural Gas Liquids

	Month 1	2024	2025	2026
MBV x-TET C2	$0.169	$0.193	$0.240	$0.269
MBV x-TET C3	$0.819	$0.832	$0.782	$0.728
MBV x-TET C4	$0.920	$0.948	$0.890	$0.825

Natural Gas Basis Swap Pricing

	Month 1	Summer 24	Winter 24/25	Summer 25	Winter 25/26
Henry Hub Fixed	$2.268	$2.313	$3.246	$3.186	$3.811
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Previous Day Settle

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