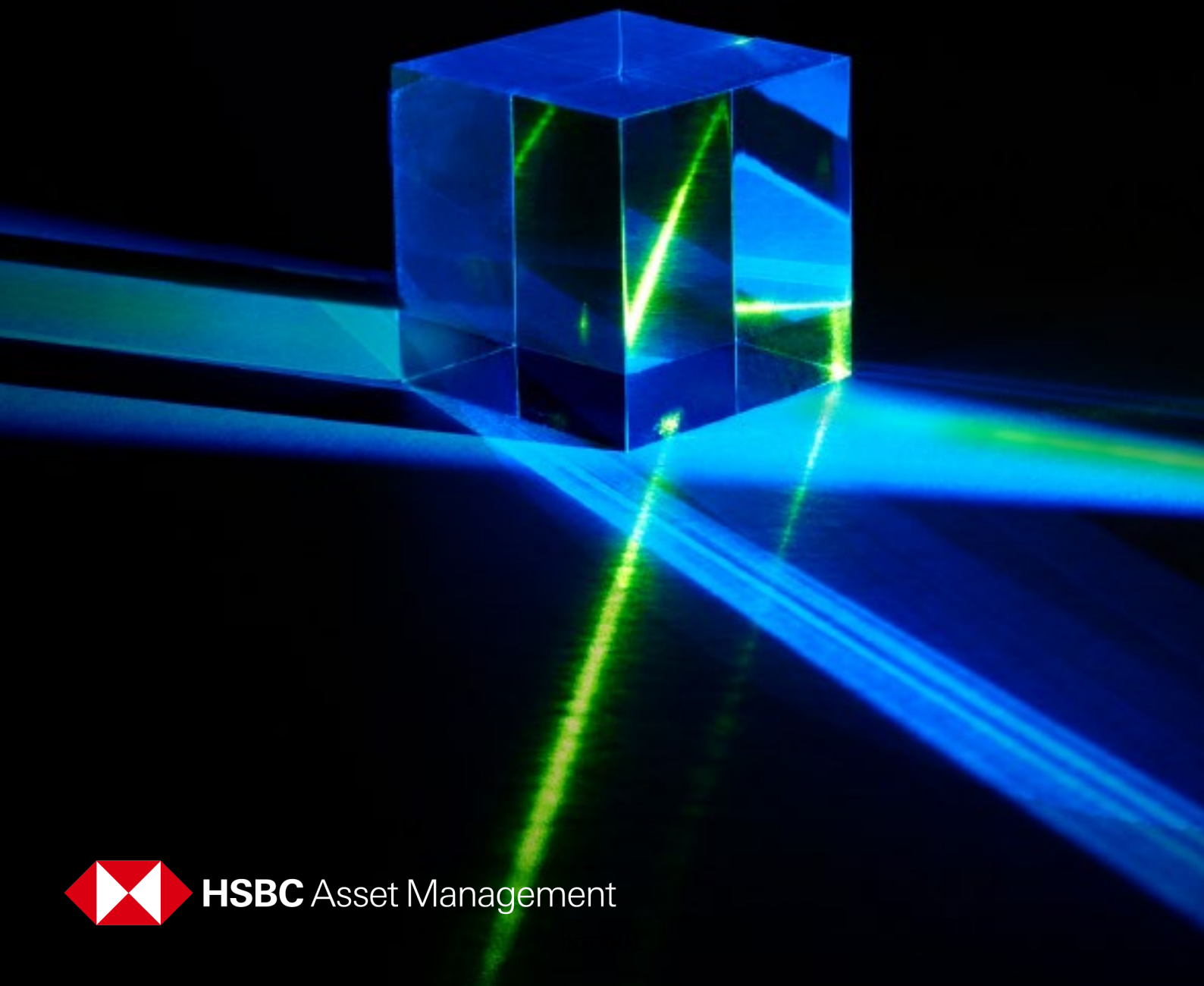
# The Evolution of the North American Energy Infrastructure Business Model

September 2024



HSBC Asset Management

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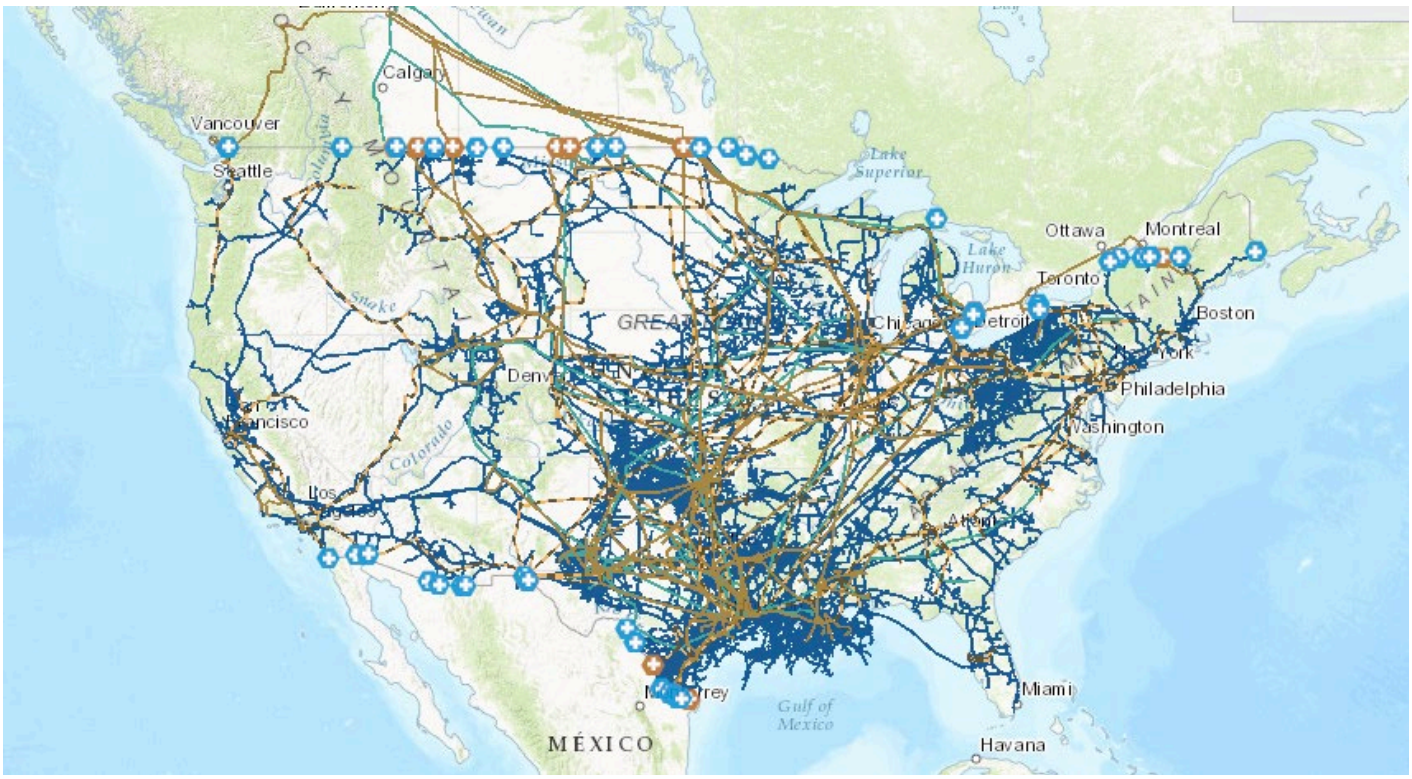
# Introduction

The energy infrastructure industry, particularly in North America, is well-established, deeply entrenched in the economy, and has been developed over decades of investments. Energy infrastructure companies play a crucial role in the energy value chain, providing stable cash flows through long-term contracts with fixed fees. Typically structured as C-Corps or Master Limited Partnerships ("MLPs"), these companies build and operate pipelines, storage facilities, processing and fractionation plants to transport natural gas, crude oil, and other products from wells to end-use and export markets. The recent shift in the midstream model towards self-funded growth, high-return capital investment, and enhanced contractual agreements has significantly strengthened the financial position of the sector. This transformation has led to reduced business risk, improved valuation multiples, and greater resilience to market volatility, making these companies less correlated with fluctuations in commodity prices. In recent years, energy infrastructure companies have also become pivotal in facilitating the energy transition, supporting growth in LNG exports, petrochemical feedstock, power consumption for AI applications and data centers, as well as opportunities in new technologies such as carbon capture and storage ("CCS").

**Figure 1: Map of North American energy infrastructure**

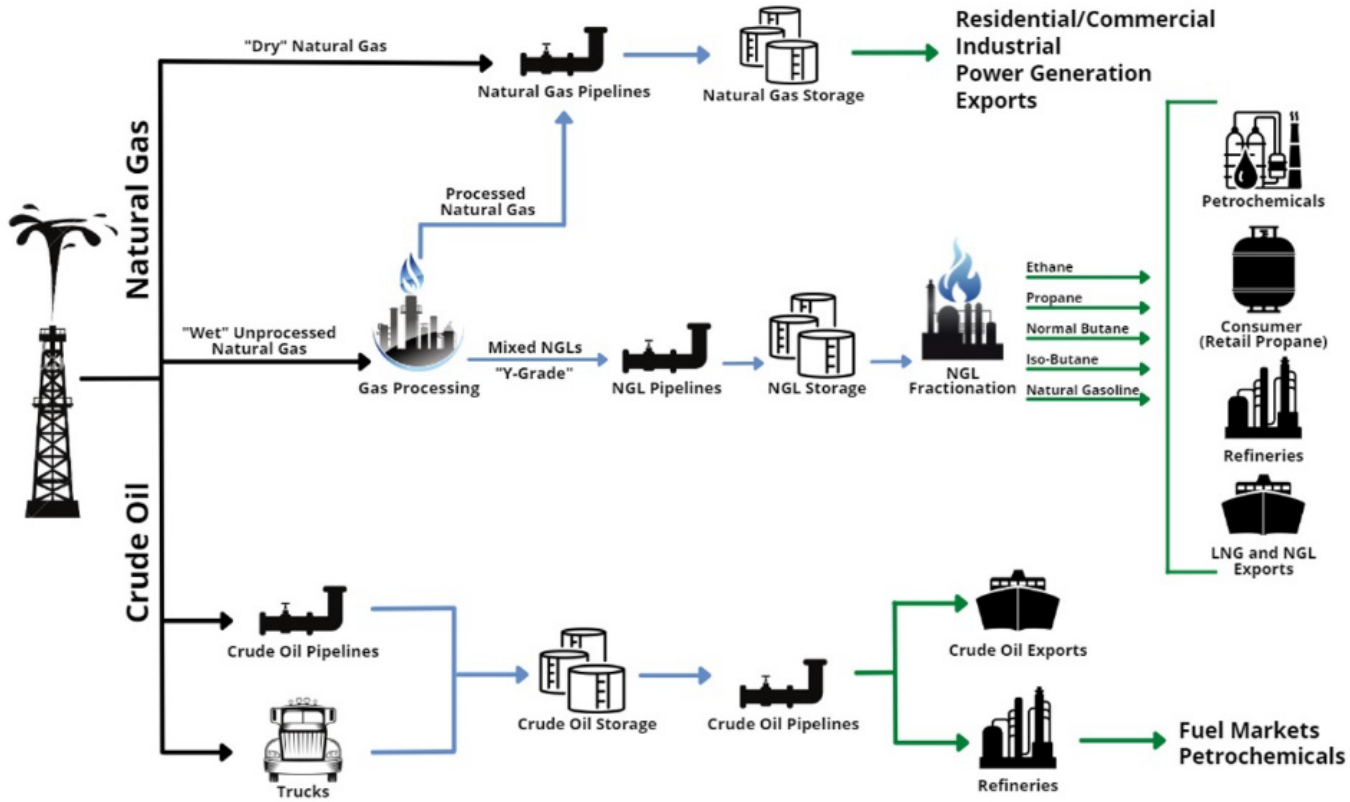



Source: American Petroleum Institute.

# What is Energy Infrastructure

Value Chain Overview: Energy infrastructure companies are integral to the energy value chain. They build and operate pipelines, storage, processing, and extraction facilities to transport natural gas, crude oil, and other products from wells to end-use and export markets. Typically structured as C-Corps or MLPs, these companies enjoy stable cash flows underpinned by long-term contracts with fixed fees, making them relatively indifferent to the price fluctuations of commodity prices. Moreover, they are pivotal in facilitating the energy transition by also pursuing opportunities in biofuels and new technologies such as CCS and hydrogen. Energy infrastructure companies, often referred to as "midstream" (*Fig. 2*), connect exploration and production companies ("upstream"), which extract oil and gas, to refiners, utilities, and chemical companies ("downstream"), which convert hydrocarbons into useful products for distribution to end markets.

**Figure 2: Energy infrastructure value chain**




Source: RBN Energy.

For crude oil, midstream assets include a network of small-diameter gathering lines that transport oil from wells to central facilities. These central facilities feed large-diameter long-haul pipelines to storage terminals, refineries, and export facilities. Refineries use various processes to convert crude oil into refined petroleum products such as gasoline. Long-haul refined pipelines then transport these products from refineries to end markets. In the context of natural gas, midstream assets consist of small-diameter gathering lines that transport raw ("wet") natural gas from wells to gas processing (or treating) facilities. These facilities remove water, natural gas liquids (“NGLs”), and other impurities from the raw gas stream. The purified ("dry") natural gas is then compressed and moved into gas

transmission pipelines. In order to optimize efficiency and capacity, compressors along these pipelines increase the pressure, which is then reduced for local storage or delivery through smaller distribution pipelines to LNG export facilities, as well as industrial, commercial, and residential customers. The extracted NGLs ("Y grade") are sent to fractionators via dedicated long-haul NGL pipelines or trucks. These facilities separate the NGL stream into higher-value purity products, such as ethane, propane, butane, and condensate, which are ultimately used as feedstock for petrochemical plants and refineries, or as heating fuels.

Contract Types: The contracts for midstream assets vary in their cash flow stability, reflecting exposure to volume and commodity price fluctuations. Natural gas transmission pipelines offer the most stable cash flows due to their fully regulated rates by the Federal Energy Regulatory Commission ("FERC") for interstate assets or by state agencies for intrastate assets. Pipeline operators contract the asset, selling capacity to shippers on a long-term fixed-fee basis, which often includes minimum volume commitments under "take-or-pay" contracts. These contracts ensure shippers are obligated to pay for a predetermined amount of capacity per day throughout the contract's duration, regardless of actual usage, eliminating both volume and commodity price risk.

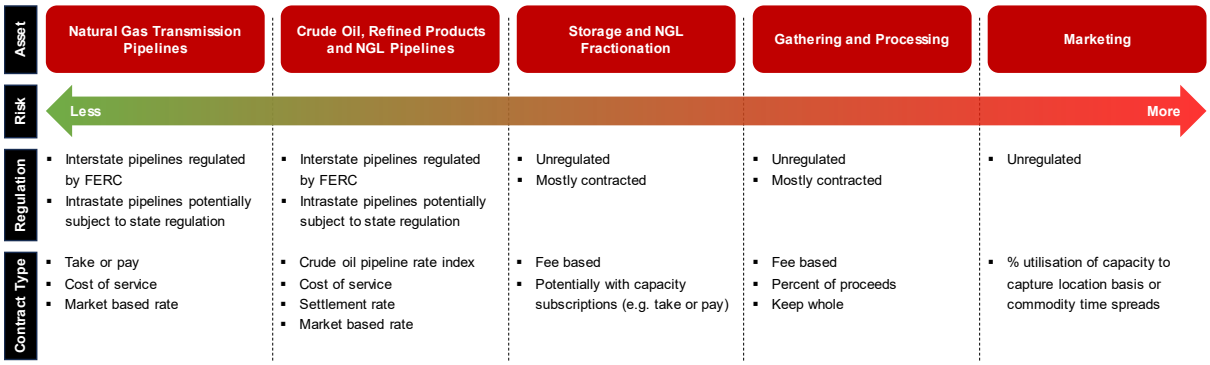
Crude oil, refined products, and NGL pipelines are also regulated by FERC or state agencies, providing access to shippers on a toll-road basis where shippers pay a distance-based tariff on the actual volume shipped. Shippers usually nominate the capacity they require, and once the pipeline operator allocates this capacity, each allocation is pro-rated accordingly. In recent years, the construction of new liquid pipelines has been supported by long-term take-or-pay contracts to mitigate the upfront capital investment risks.

Beyond long-haul pipelines, storage and NGL fractionation assets are supported by fee-based contracts with unregulated rates. This implies that the operator charges a fee based on volumes shipped, which may vary depending on factors such as volume and price ceilings set by regulators, though generally, these contracts do not have commodity price risk. Instead, fee-based revenues carry volumetric risk, with contract durations generally ranging from one to five years.

Closer to the wellhead are gathering and processing ("G&P") assets, which tend to exhibit significant variability with volumetric sensitivity to commodity prices and underlying well depletion. As wells decline, volumes flowing through G&P assets decline unless new wells are connected, necessitating greater maintenance capital to support cash flows. Certain contracts are fixed-fee, while others, such as percentage-of-proceeds or keep-whole contracts, contain an in-kind payment with commodity and volumetric risk, including a percentage of the energy content shipped.

Additionally, some larger midstream companies maintain internal marketing or optimisation groups that use a portion of the pipeline or storage capacity to arbitrage pricing differentials, regional pricing, or time spreads. These cash flows represent opportunistic spread capture, which is fully hedged and not speculative, but they are the least stable and transparent.

**Figure 3: Energy infrastructure value chain**

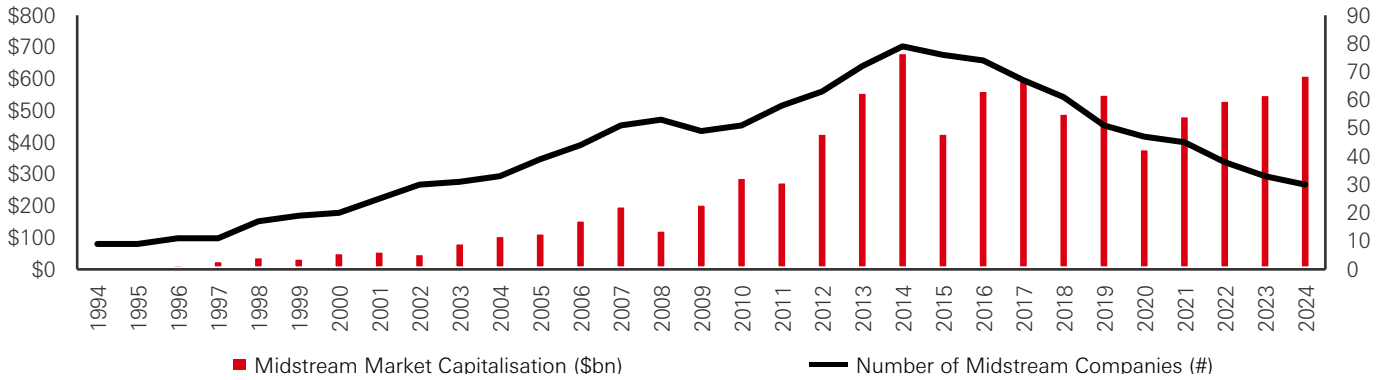



Source: RBN Energy.

Corporate Structure: Historically, most energy infrastructure assets were owned by integrated oil and gas producers, refiners and utility companies. Over the past two decades, these assets have gradually migrated into independent, publicly traded energy infrastructure companies structured as C-Corps and MLPs. The MLP structure was the primary vehicle used to hold midstream assets and experienced significant growth through 2014 due to two key tax advantages: (i) MLPs do not pay corporate income taxes, instead pass all their income to investors, similarly to Real Estate Investment Trusts ("REITs"). Investors receive a K-1 tax form, rather than a 1099 form, which reflects their allocated proportional share of income and losses, thus increasing or decreasing their basis; (ii) MLPs pay distributions rather than dividends, and these are treated as tax-deferred returns of capital. These distributions are not taxed when received and contribute to lower the investor's basis.

Regarding the organizational structure, the ownership of an MLP is divided between a General Partner (GP) with a 2% ownership stake and Limited Partners (LPs) with a 98% ownership stake. The GP interest is typically owned by the management team or the corporate sponsor and holds effective control of the partnership. Historically, the GP would also have carried interest economics on the distributed cash, referred to as Incentive Distribution Rights (IDRs), which could be as high as 50% of all incremental distributed cash above a certain threshold. Many of these IDRs have been eliminated due to investor pressure. Since 2014, there has been a notable shift away from the MLP structure towards converting or merging MLPs into C-Corps (*Fig. 4*), resulting in a significant decrease in the number of midstream companies, from a peak of 79 in 2014 to 30 today.

**Figure 4: Midstream Market Capitalisation and Number of Companies**



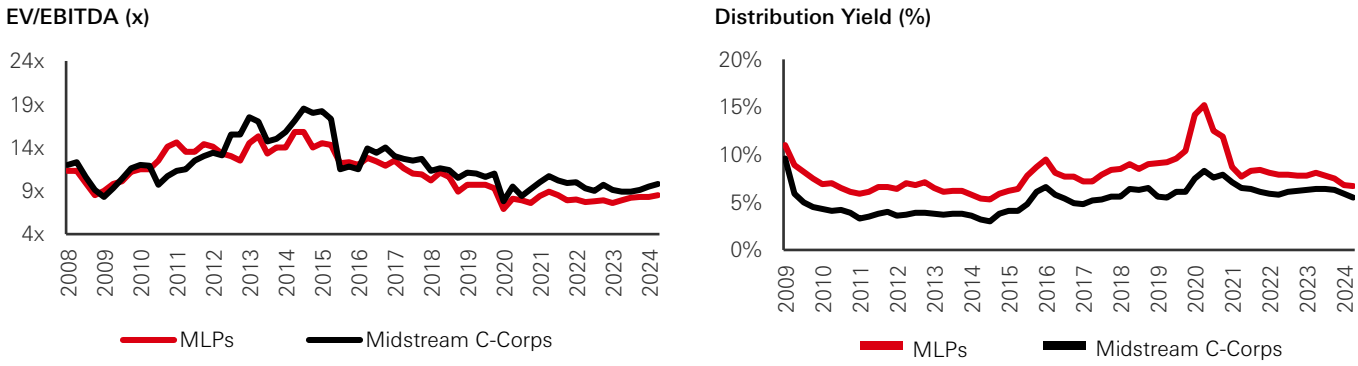

Source: Bloomberg, Wall Street research.

This shift has been driven by several factors. Investor pressure has highlighted the suboptimal governance protections that LPs have within an MLP structure, where GPs retain full control and have limited fiduciary obligations. Additionally, the exclusion of MLPs from many large equity benchmark indices, such as the S&P 500, has triggered a shift to the C-Corp structure to better capture the significant growth in passive fund flows. Finally, converting to a C-Corp structure eliminates the cumbersome K-1 tax filing, which can be an issue for many investors. This industry consolidation has facilitated economies of scale, enabling larger companies to streamline operations, improve efficiencies, and enhance their negotiating power with oil and gas producers. This has resulted in a higher proportion of take-or-pay and fixed-fee contracts.

# How the Midstream Model Has Evolved

Historically, the traditional midstream model relied on asset dropdowns into the MLP structure, either through the construction of new assets or the acquisition of existing assets, to enhance distributable cash flow ("DCF"). DCF is defined as EBITDA minus interest expense and maintenance capital expenditures, and represents effectively recurring cash flows. MLPs were fast-growing companies that the market rewarded with high EV/EBITDA multiples. Therefore, asset dropdowns created significant value through multiple re-rating. Valuation multiples peaked in late 2014 (*Fig. 5*) and have been stabilising in the 8-10x range post Covid.

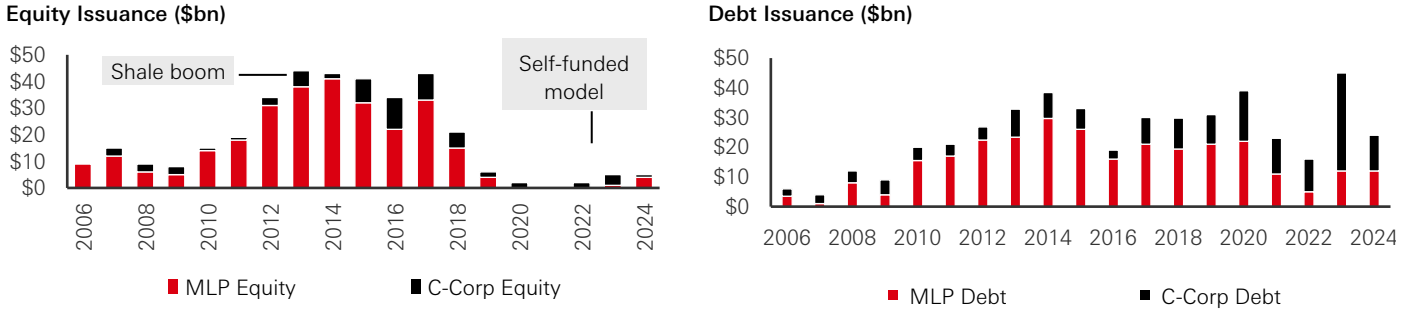
**Figure 5: Valuation multiples and distribution yield**




Source: Bloomberg, Wall Street research.

Over the past decade, the emergence of North American shale basins has facilitated a significant expansion of energy infrastructure, resulting in robust DCF growth for publicly listed MLPs. These infrastructure investments allowed the connection of new supply to demand and export markets, which also benefitted end markets with low-cost and more secure supplies. The MLP model was characterized by high DCF payout (or low distribution coverage) ratios, with most recurring cash flows being distributed to investors. To finance the substantial pipeline of growth investments, MLPs accessed debt and equity markets (*Fig. 6*), reaching a peak of over $40bn in annual equity issuances in 2013-14. Companies were ultimately valued based on the growth of their distributions, considering the stability of their cash flows and the sustainability of their payout ratios.

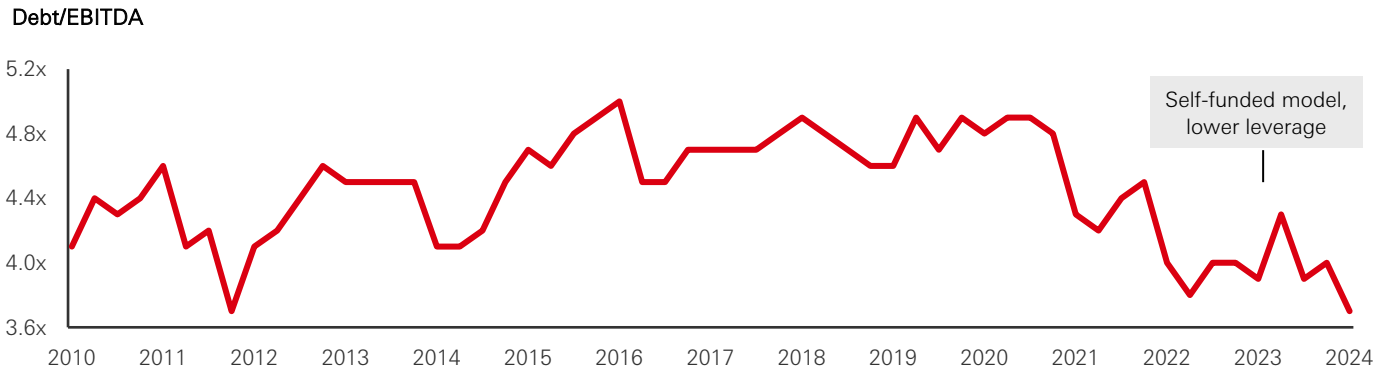
**Figure 6: Equity and debt issuance**




Source: Bloomberg, Wall Street research.

Following the increased volatility in commodity prices during 2014-15 and an unfavourable federal tax ruling in 2018, the midstream model had to adapt to investors' changing expectations. These expectations included a higher cost of capital and a push toward more sustainable, self-funded cash flow generation that was less reliant on capital markets. This revised approach led to distribution cuts, lower payout ratios, and reduced leverage levels (*Fig. 7 and 8*) as access to equity capital markets for funding new growth investments vanished. Furthermore, with lower growth prospects, investors demanded the elimination of IDRs, as the sharing of cash flows between GPs and LPs became disproportionate, leading many MLPs to convert to C-Corps.

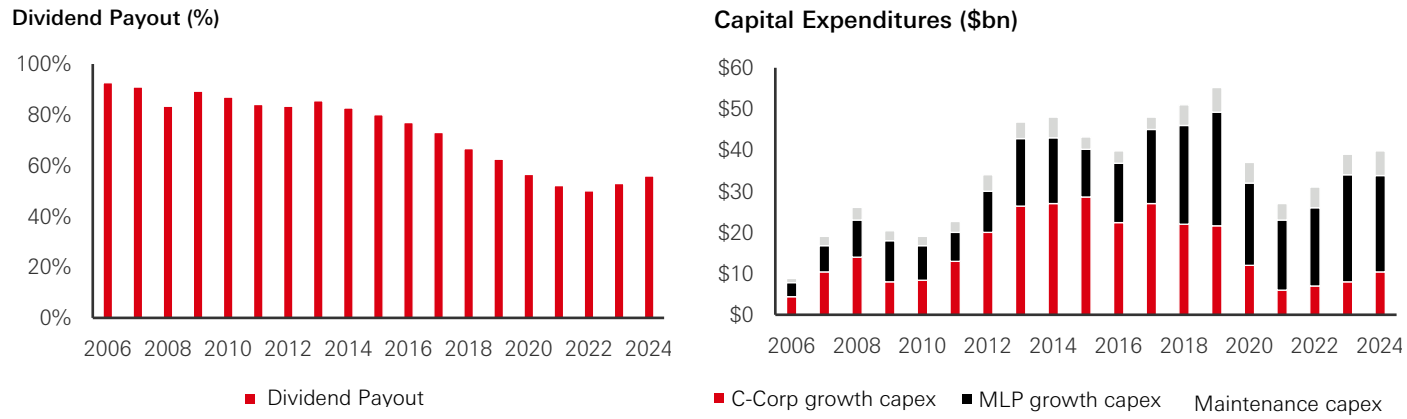
**Figure 7: Leverage evolution**




Source: Bloomberg, Wall Street research.

Investors also urged management teams to reduce capital expenditures due to increased scepticism about project returns, to focus on positive free cash flow generation with less emphasis on DCF, and to prioritise healthier balance sheets with lower leverage.

**Figure 8: Dividend payout and capital expenditures**




Source: Bloomberg, Wall Street research.

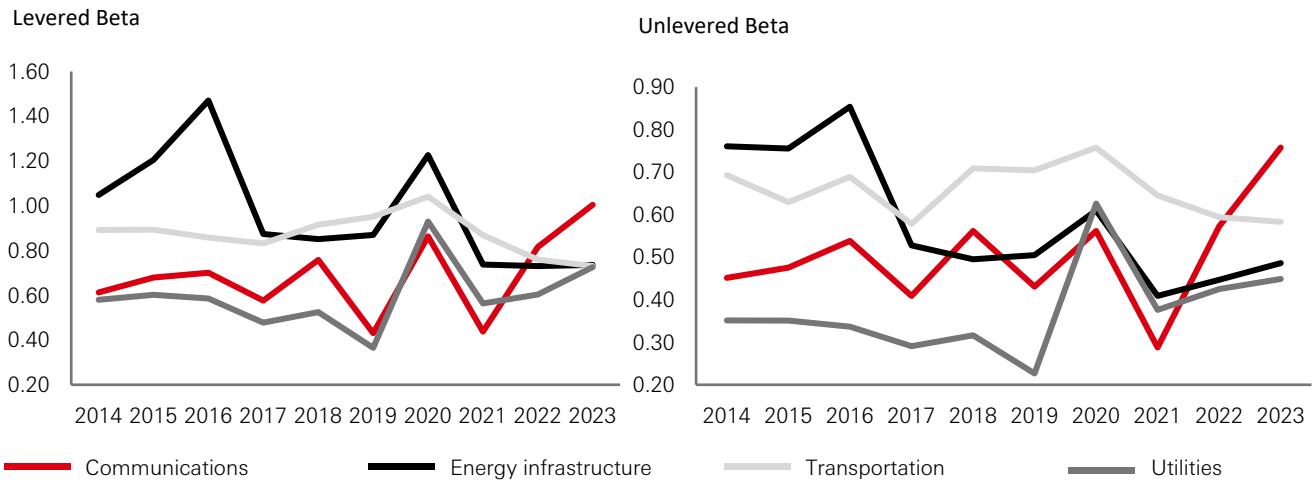
Considering the rise of environmental, social, and governance ("ESG") factors and the transition to less carbon-intensive energy sources, investors began to express greater conservatism regarding terminal value risk. This shift forced an adjustment in capital allocation towards share repurchases, which increase equity investors' residual claim on cash flows. Effectively, the sector shifted from a focus on rapid cash flow and distribution growth to a strategy emphasizing visible and above-average cash return through a combination of dividend yield, share repurchases, and deleveraging.

# Impact on Business Risk

The transition of the midstream model towards self-funded organic growth, emphasizing lower capital expenditures on high-return projects and moderate payout ratios, has resulted in stronger balance sheets. This strategy involves generating sufficient cash flows to fund new projects rather than relying on external financing. A focused approach on high-return projects ensures selective investments, concentrating on opportunities that offer the best return for the least amount of risk. Moderate payout ratios, with companies returning a balanced portion of cash flows to shareholders while retaining enough to reinvest in the business, further support financial stability. Therefore, companies are less leveraged and can withstand market volatility.

This strategic shift has positively impacted the overall business risk of the sector. According to the trade-off theory of capital structure, while lower leverage has reduced the contribution of the debt tax shield to valuation, this has been counterbalanced by the benefit of lower perceived cost of financial distress. In practical terms, the sector's levered beta (e.g. volatility) has decreased significantly, from a range of 1.2-1.4 during 2014-16 to a current range of 0.6-0.8. This reduction in levered beta implies asset betas lower than 0.50 today, almost comparable to those in the utilities sector (*Fig. 9*). The asset beta, also known as the unlevered beta, measures the risk of a company's assets without considering the impact of debt. It reflects the systematic risk of the company's underlying assets in relation to the overall market, providing a clear assessment of the risk associated with its core activities without the influence of the capital structure. A lower asset beta translates to more stable and predictable performance.

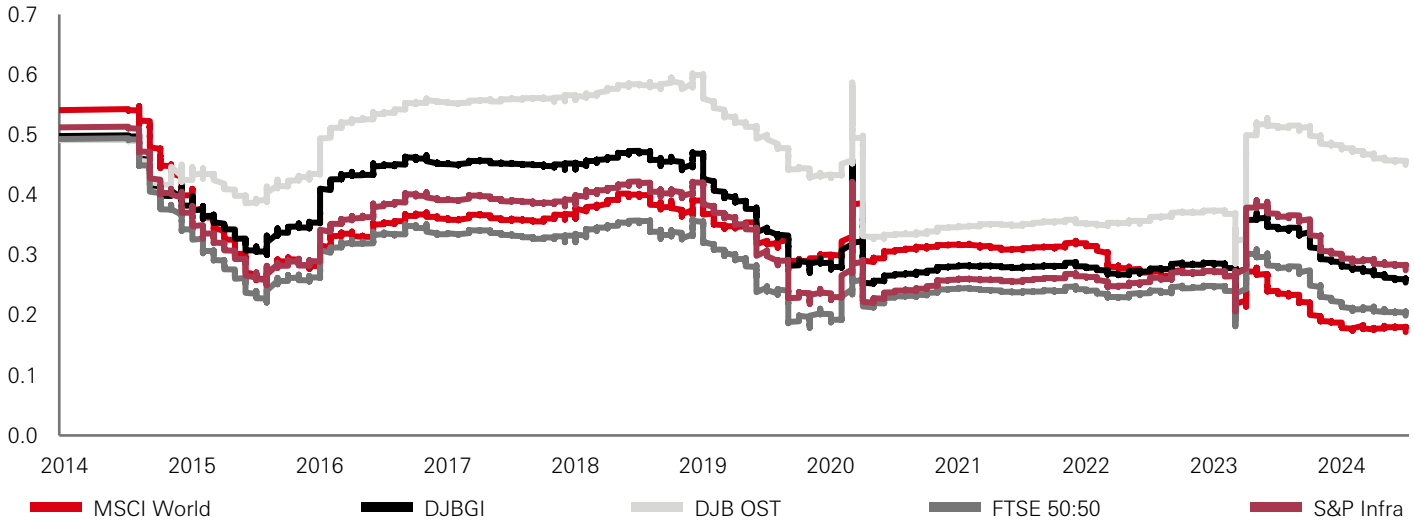
**Figure 9: Levered and unlevered (asset) betas**




Source: Bloomberg,

The reduction in business risk has contributed to stabilizing and even increasing valuation multiples for the sector. Moreover, the correlation with commodity prices has significantly decreased. This is because companies have become more selective about their projects, securing better contracts, and ensuring a higher contribution from take-or-pay agreements, which guarantee revenue regardless of actual usage and reduce the impact of fluctuating commodity prices on the companies' financial performance.

**Figure 10: Correlation with oil prices**




Source: Bloomberg,

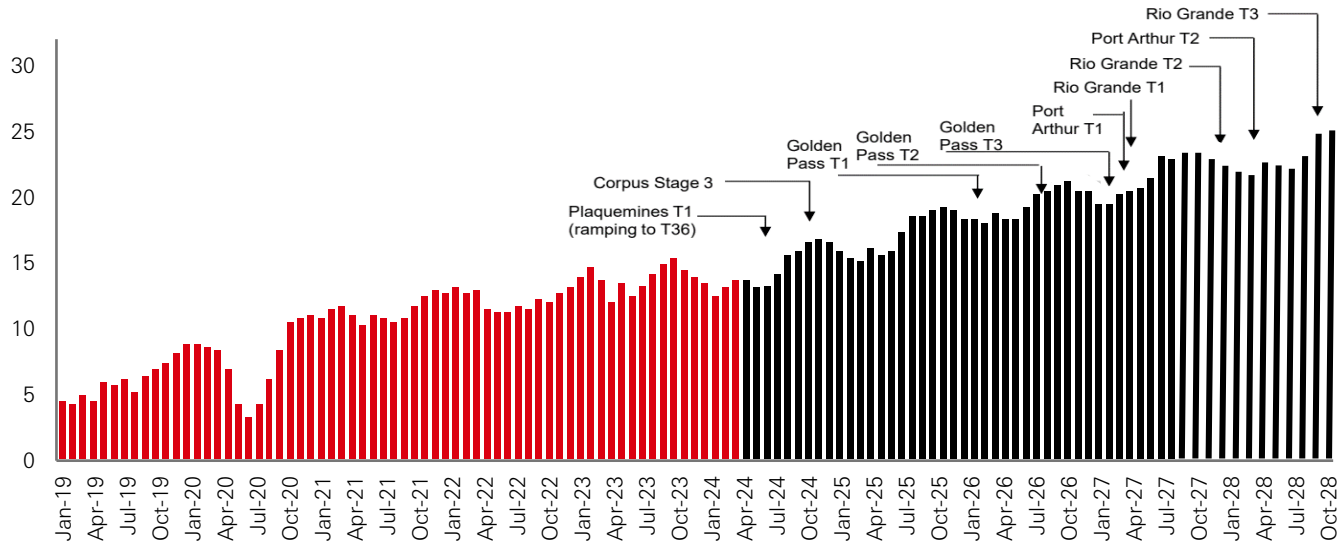
| Correlation | 20 years | 10 years | 5 years | 3 years | 1 year |
|---|---|---|---|---|---|
| MSCI World | 0.34 | 0.28 | 0.26 | 0.17 | 0.01 |
| DJBGI | 0.35 | 0.31 | 0.26 | 0.25 | 0.01 |
| FTSE 50:50 | 0.32 | 0.25 | 0.22 | 0.20 | (0.03) |
| S&P Infra | 0.34 | 0.29 | 0.26 | 0.27 | 0.04 |
| DJB OST | 0.42 | 0.41 | 0.36 | 0.45 | 0.20 |

# What is next for energy infrastructure

Several themes support the growth outlook for energy infrastructure, including LNG exports, growing demand for petrochemicals and NGLs, power demand from data centers and AI deployment, and emerging new technologies such as CCS.

LNG Exports: The long-term demand for liquefied natural gas (LNG) exports continues to be a pivotal factor in shaping the energy infrastructure sector's outlook. The shift towards cleaner energy sources continues to support natural gas consumption, as it is perceived as a transition fuel that offers a balance between environmental considerations and energy security, as well as a backstop to intermittent renewable power generation. Emerging economies, particularly in Asia, increasingly rely on LNG to meet their growing energy demand while aiming to reduce coal dependency. As countries like China and India expand their LNG import infrastructure, US LNG exports are expected to grow (*Fig. 11*). This sustained demand, combined with geopolitical factors driving European countries to diversify their energy sources away from Russian supplies, underscores the strategic importance of long-term contracted midstream infrastructure to support cost-efficient and scalable LNG export/import solutions.

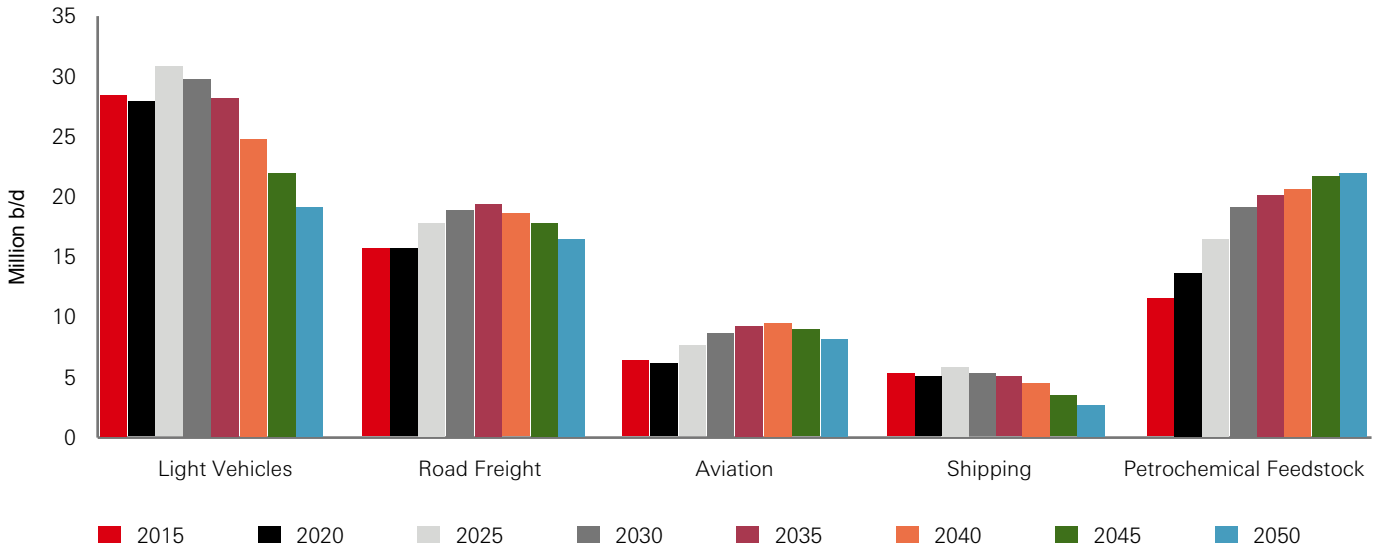
**Figure 11: Feed gas into US liquefaction facilities (bcf/d)**




Source: Wall Street research.

**Growing Petrochemical and NGL Demand**: The supply of NGLs remains crucial for the growing petrochemical industry, where demand is supported by rising income levels and growing population. NGLs represent the feedstock necessary for producing various petrochemicals such as ethylene, propylene, and butadiene. While substitutes and non-fossil fuel-dependent innovations may impact future demand, NGLs are the building blocks of modern society, used in clothing, tyres, packaging, detergents, healthcare, and other plastics. To support this demand, NGL pipelines, fractionation and storage facilities need to be scaled up to ensure reliable supply.

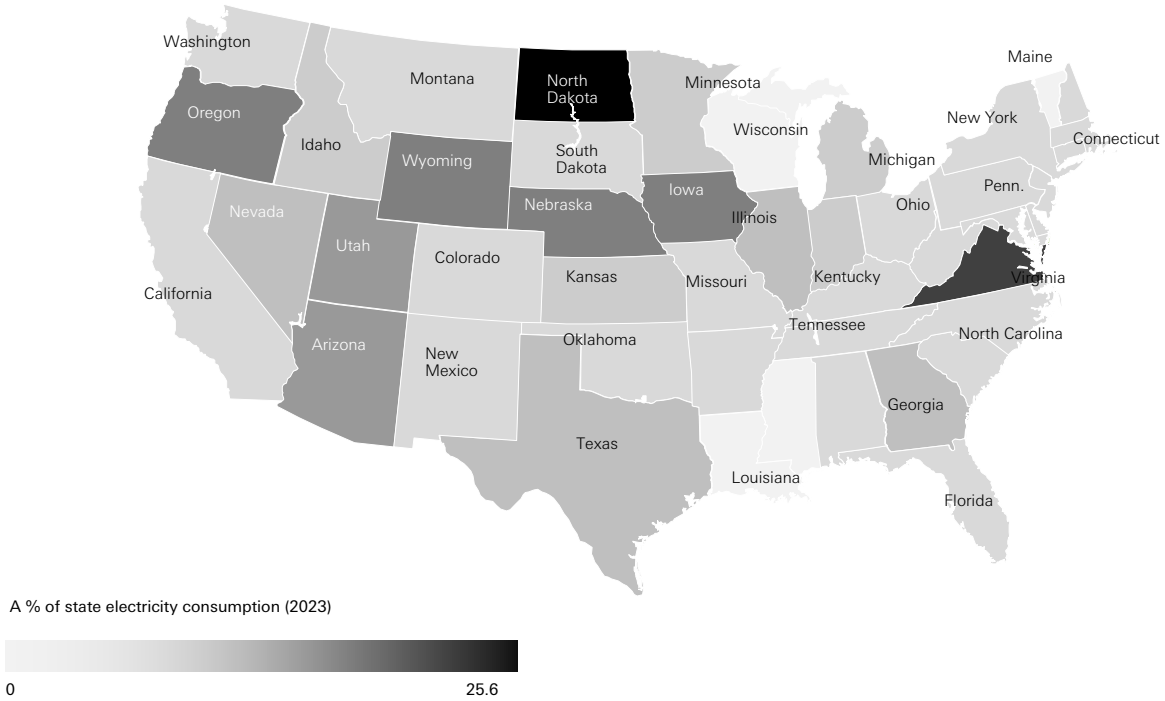
**Figure 12: Petrochemical feedstock (mbpd)**




Source: Wood Mackenzie.

**Power Load Growth from Data Centers and Supply Chain Re-onshoring:** Data centers are expected to be the major driver of power demand growth, reaching ~10% of total US power demand by 2030. Along with the electrification of all things and the re-onshoring of supply chains, power generation demand is expected to grow ~2% per year through the end of the decade. Even with increased intermittent wind and solar power generation, natural gas power plants, which currently represent ~45% of the power stack, will continue to play a critical role in ensuring a stable and reliable electricity supply, as more coal plants continue to shut down due to environmental and regulatory pressures.

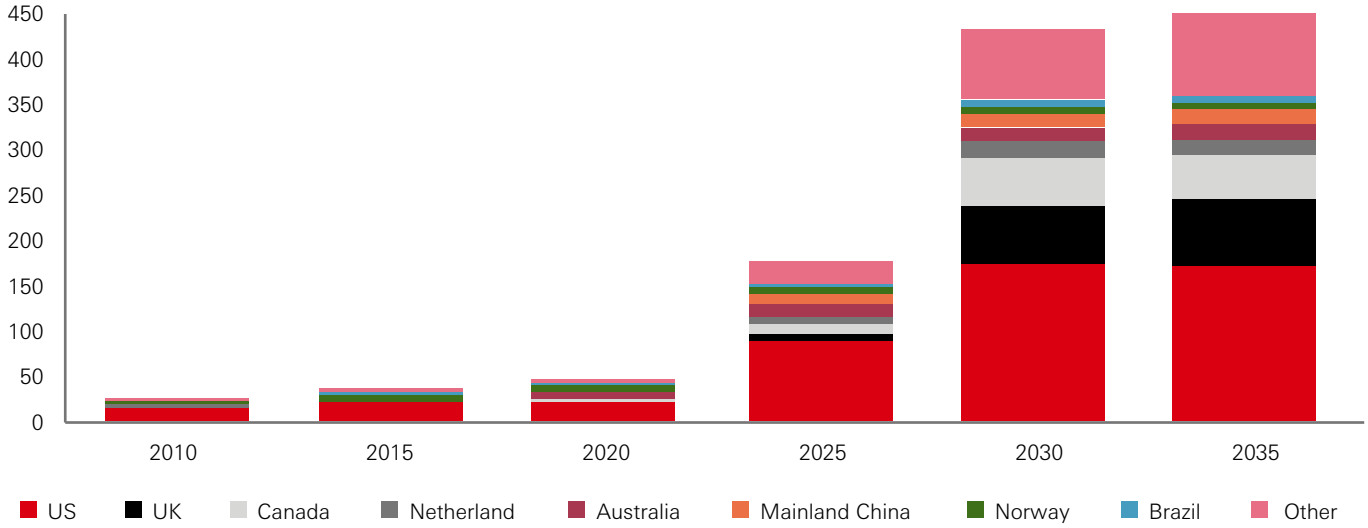
**Figure 13: Data center power demand**




Source: EPRI and Wall Street research.

Carbon Capture and Storage: CCS is becoming an area of growing focus for energy infrastructure, seen as an enabler of the energy transition wherever pipelines can be repurposed for green uses and other emerging low-carbon opportunities, alleviating terminal value concerns. In fact, North America has many disused oil and gas wells that can be repurposed for $CO_2$ injection. Once separated from other exhaust gases in industrial applications, the captured $CO_2$ can be compressed and transported via pipelines to a storage site, where it is pumped and stored deep underground through injection ("Class VI") wells. In August 2022, the US Congress passed the Inflation Reduction Act ("IRA"), which includes a set of renewable energy policies that increased the credit for sequestered CO2 to $85/ton. Unfortunately, initial investments were slowed down by the injection well approval process. The Environmental Protection Agency ("EPA") recently granted Louisiana primacy in the permitting and regulation of injection wells. State primacy should accelerate the approval of the current list of projects - almost 50 – that are currently under review, and progressively increase industry confidence in the outlook for CCS investments as the first projects start construction.

**Figure 14: Proposed carbon capture capacity (mn tons of CO2 per year)**




Source: BloombergNEF.

Energy infrastructure companies provide an essential service to society by building and operating critical assets that face high barriers to entry within a consolidating industry, often exhibiting monopolistic characteristics in many producing basins. Operating under long-term fee-based contracts, these companies benefit from stable, predictable, and growing cash flows that are increasingly insulated from commodity price volatility and economic cycles. Midstream assets also offer substantial diversification benefits within a listed infrastructure portfolio. Their cash flows are less sensitive to interest rate fluctuations compared to other segments of the asset class, ensuring a balanced generation of sustainable and predictable returns over the long term.

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