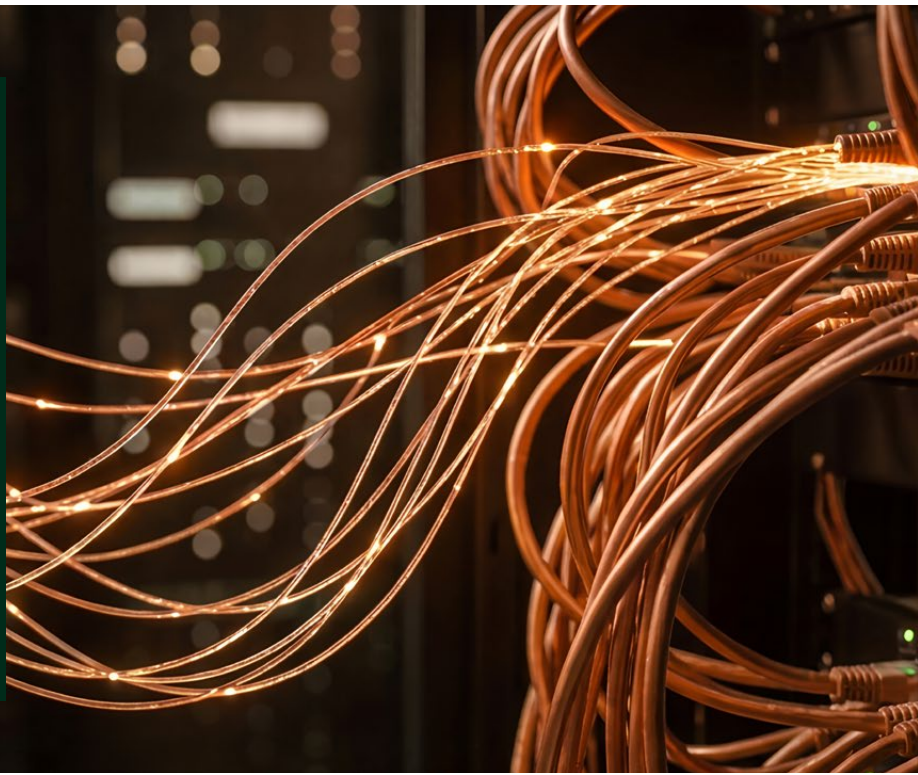




Fuel Metal Jacket: The Commodities Within the Data Centre Power Boom



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Artificial intelligence (AI) and the data centres that support AI are driving a major infrastructure investment cycle and significantly expanding demand for commodities. For commodity investors, the key questions are: where is the buildout of AI infrastructure already visible, how could it evolve, and what does that mean for energy and materials consumption?

At a glance:

- AI data centres are a large and accelerating source of power demand, but there is significant uncertainty in their ultimate impact on markets.
- Electrical load growth, power generation mix, and material intensity may prove more important than the data centres themselves in terms of sources of growth.
- While copper and natural gas are the most exposed commodities, their supply and demand equilibrium are also affected by larger thematic trends and forces such as electrification and Liquefied Natural Gas (LNG).

Executive Summary

AI data centres are emerging as a meaningful source of commodity demand because they require large amounts of reliable power, electrical infrastructure, cooling equipment, construction materials, and grid investment. For investors, the buildout of data centres and supporting infrastructure could contribute to demand pressure in electricity, metals, equipment,

and energy markets, although the magnitude varies widely across forecasts. Copper and natural gas are the two most directly exposed commodities: copper is essential to the construction of data centres and the broader grid, while natural gas could play an important role in providing reliable dispatchable power as AI-driven electricity demand grows.



Background

AI is driving one of the largest private-sector infrastructure investment cycles in modern history. Major technology firms have collectively spent more than \$700 billion USD in 2026 alone, up from \$150 billion USD in 2023,¹ and more than all mining exploration in the previous 20 years combined.² As investors seek exposure to AI, the opportunity extends beyond software and semiconductors to the broader ecosystem of electricity generation, transmission, real estate, industrials, and commodities required to support the global expansion of data centre capacity.

The U.S. is leading the North American buildout because of its vast domestic markets, established players, deeper power and fibre networks, and more mature permitting and interconnection ecosystem, while Canada has advantages from abundant clean power and a more favourable climate, though provincial grid and transmission constraints have limited the pace of expansion.

Why AI Matters for Power Demand?

AI data centres are transforming electricity demand from a mostly stagnant end market into a new source of growth, with implications for investment portfolios as the exact numbers are far from finalized. For much of the past two decades, efficiency gains in lighting, appliances, motors, and industrial processes helped offset economic and population growth, keeping North American power demand relatively muted. The U.S. Energy Information Administration (EIA) notes that U.S. electricity demand, measured as net energy for load, grew by only about 0.1% per year between 2005 and 2019, but accelerated to about 1.7% per year between 2020 and 2025, with data centres identified as an important driver of that increase.³ AI changed the equation because training and running large models requires extensive amounts of reliable electricity, and meeting that demand may

require new generation, transmission, transformers, cooling systems, construction materials, and backup fuel infrastructure. If demand for power and industrial inputs rises faster than supply can respond, the imbalance could be higher costs across electricity, equipment, metals, and energy markets.

For investors, the wide range of potential outcomes creates opportunity. For illustration, below is a list of estimates from select third-party entities. Note the average estimate for Terawatt-hours (TWh) of data centre consumption is 633 TWh with a standard deviation of 173 TWh or almost 27% of the forecasted average. For perspective, the entire U.S. end-use electricity consumption (residential and commercial, industrial, transportation, etc.) was around 4,200 TWh in 2025.⁴

Figure 1: Range of projected U.S. data centre electricity demand

Source	2030 estimate midpoints (TWh)
Lawrence Berkeley National Laboratory (LBNL), United States Data Centre Energy Usage Report: 2025 Update	649
Electric Power Research Institute (EPRI), Powering Intelligence 2026	590
McKinsey / Visual Capitalist summary of McKinsey data	606
International Energy Agency (IEA), Energy and AI	420
Boston Consulting Group (BCG) U.S. Data Centre Power Outlook	900
Mean	633
Standard Deviation	173

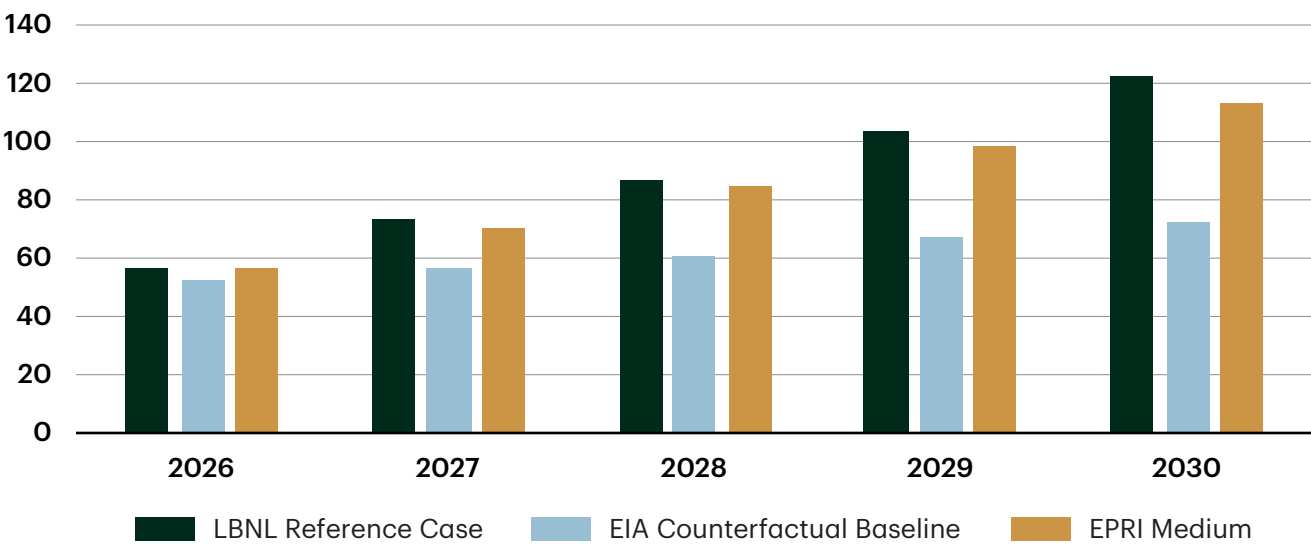
Source: TD Asset Management Inc. LBNL, United States Data Centre Energy Usage Report: 2025 Update, June 2026. EPRI, Powering Intelligence 2026, February 2026. McKinsey / Visual Capitalist summary of McKinsey data, Charted: The Rising Share of U.S. Data Centre Power Demand, September 2025. IEA, Energy and AI, April 2025. BCG, Solving the U.S. Data Centre Power Crunch, March 2026.

Data Centres and the Next Wave of Electricity Demand

Data centres’ significance in U.S. power systems continues to grow as AI workloads require increasingly dense and power-intensive computing capacity. The U.S. currently has approximately 50 gigawatts (GW) of operating data-centre capacity, and several estimates suggest that this could double by 2030, denoting a meaningful inflection point for

a power market that saw relatively limited growth over the past two decades.⁵ Future growth spans a wide range of credible scenarios, with the LBNL reference case, EIA counterfactual baseline, and EPRI medium scenario all helping frame the magnitude of incremental power demand and how it could evolve under different assumptions.

Figure 2: Data centre installed capacity forecast (GW)



Source: TD Asset Management Inc. LBNL, United States Data Centre Energy Usage Report: 2025 Update, June 2026. EPRI, Powering Intelligence 2026, February 2026. McKinsey / Visual Capitalist summary of McKinsey data, Charted: The Rising Share of U.S. Data Centre Power Demand, September 2025. IEA, Energy and AI, April 2025. BCG, Solving the U.S. Data Centre Power Crunch, March 2026.

Intelligence

Which Commodities Stand to Benefit?

The AI data centre buildout is expected to drive demand across a wide range of commodities and industrial materials, including steel, cement, concrete, aluminium, plastics, diesel, gasoline, construction aggregates, and electrical equipment inputs, while also reinforcing the broader investment case for commodities as real assets tied to physical economic activity. Commodities are relevant because

they are direct inputs into building and powering AI infrastructure and because they have historically provided diversification and inflation-hedging benefits. Many sectors stand to benefit from this wave of investment; this paper focuses on the two commodities most directly exposed to both the construction and operation of data centres: **copper** and **natural gas**.



From Data-Centre Growth to Commodity Demand

The size of the AI and data centre buildout is the first part of the story. For commodity markets, what ultimately matters is how those projects translate into actual electricity and materials consumption. Not every announced data centre will be built.

In 2026, a major data centre developer withdrew from a proposed \$30 billion USD campus in Virginia after years of litigation, permitting disputes, and local opposition.⁶ Furthermore, facilities that are completed may take years to reach full utilization: A Pennsylvania data centre campus is 1.2 GW in total, but only 250-350 megawatts (MW) will be available in 2027 with a ramp up period of several years.⁷ In addition, electricity demand depends on factors such

as server density, cooling requirements, operating intensity, and overall efficiency, meaning two facilities of similar size can have very different power needs. Higher power demand can increase the need for new generation, transmission infrastructure, transformers, and other electrical equipment, creating indirect demand for commodities such as natural gas and copper. At the same time, data centres also consume these materials directly through cabling, switchgear, cooling systems, and other electrical components. Understanding these links helps explain how growth in AI can influence commodity markets through both data centres construction and the broader infrastructure required to support ongoing operations.

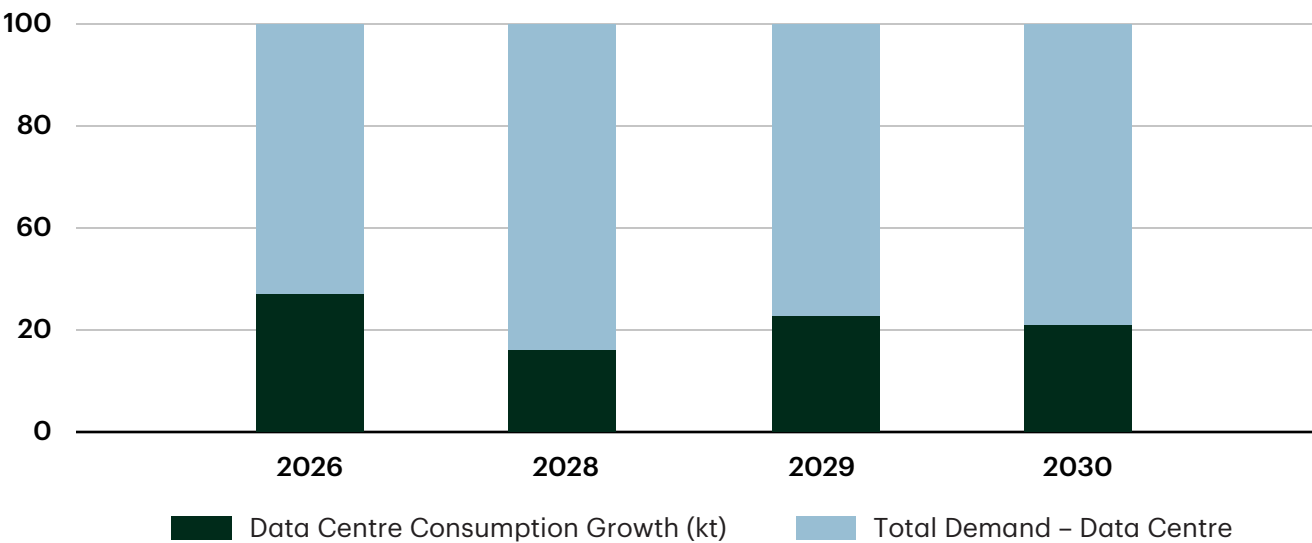
Implications for Copper

Copper is used throughout a data centre because these facilities are essentially dense electrical systems that need to move large amounts of power reliably and with minimal losses. It appears in utility connections, transformers, switchgears, busbars, power distribution units, cabling, grounding systems, and backup power infrastructure that deliver electricity from the grid to individual server racks. As racks become more power-dense, especially for AI workloads, copper becomes an essential component inside cooling systems, including cold plates, heat exchangers, tubing, and other components that help move heat away from high-performance chips. Copper is embedded across the electrical and thermal infrastructure that allows the facility to operate continuously, safely, and efficiently.

A range of estimates exists for how much copper data centres require, but one useful benchmark

comes from a \$500 million USD data centre in Chicago, which consumed 2,177 tonnes of copper, equivalent to roughly 27 tonnes per MW. Applying that type of intensity across different buildout scenarios suggests incremental data-centre capacity could consume roughly 150 to 500 kilotonnes (kt) of copper per year between 2026 and 2030 – a little more than 1% of entire annual global refined copper demand.⁸ That is equivalent to the annual production of a small to medium-sized copper mine, making it material enough to matter for the demand narrative without becoming the dominant market driver. For perspective, the U.S. copper deficit is currently around 700 kt per year.⁹ The larger point is that data centres are only one part of a broader electrification story, with global electric grids, vehicles, and renewables together contributing an additional 600 kt to 1.1 million tonnes per year of copper demand¹⁰: AI infrastructure adds to an already constructive outlook for copper demand.

Figure 3: AI data centres could drive almost one-third of incremental copper demand



Source: Bloomberg Finance L.P. Global Copper Outlook 2025. As at February 2026. TD Asset Management Inc. as of August 10, 2026.

Note: The share of incremental copper demand attributable to AI data centres is calculated by dividing forecast data centre-related copper demand growth by total forecast copper demand growth in a given year. Data centre-related copper demand growth is estimated as projected data centre capacity growth multiplied by copper intensity per unit of capacity. The resulting measure indicates the percentage contribution of AI data centres to overall copper demand growth.

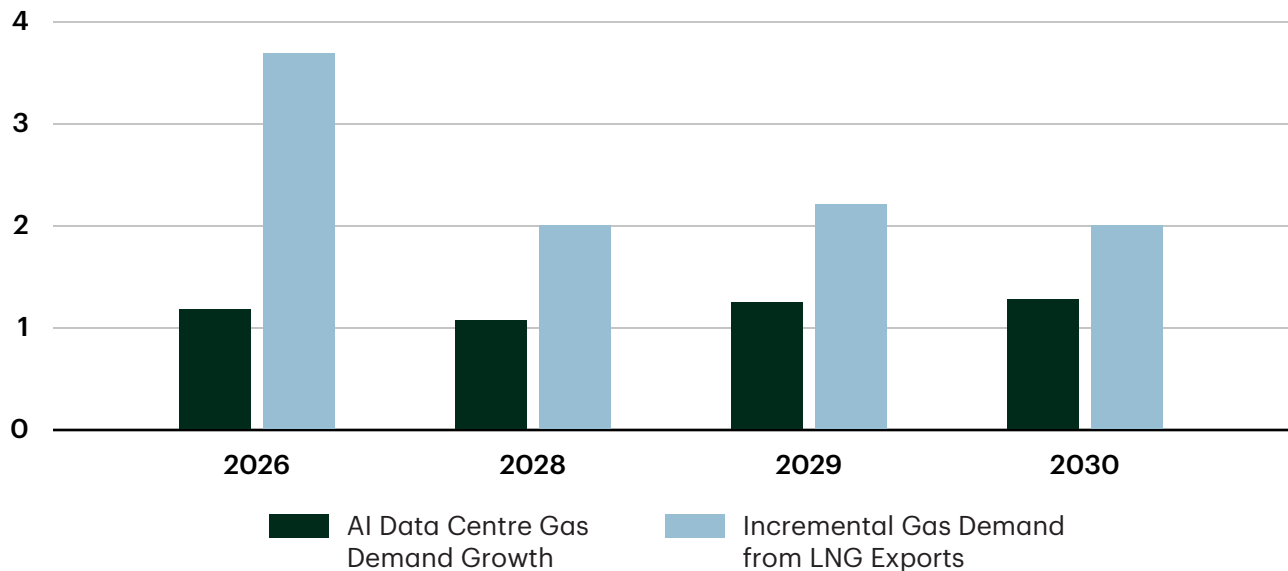
Implications for Natural Gas

Natural gas supports data centres differently than copper: it is typically generated offsite and consumed through the electricity it produces, rather than being used directly within the facility. In a gas-fired power plant, natural gas is combusted to spin a turbine, which drives a generator and produces electricity that can then be delivered through the grid or, in some cases, directly to a data centre through dedicated generation. Combined-cycle plants can also capture waste heat from the first turbine to produce additional power through a steam turbine, improving efficiency and reducing the amount of gas needed per unit of electricity.

For AI data centres, the appeal of natural gas is that it can provide reliable, dispatchable power that is available when renewable generation is intermittent or grid capacity is constrained.

To estimate the impact of this demand, a reasonable working assumption is that roughly 50% of incremental data centre electricity demand will be supplied by new natural gas generation. Using conventional assumptions for utilization, heat rates, and the aforementioned incremental generation mix, this implies roughly 0.1 billion cubic feet per day (bcf/d) of gas demand for each 1 GW of additional data centre capacity installed.¹¹ On that basis, AI data centre growth could add an estimated 0.5 to 2 bcf/d of incremental natural gas demand per year by 2030, which is meaningful against a U.S. market of roughly 110 bcf/d, but still smaller than the more than 2 bcf/d of incremental demand expected from U.S. LNG.¹²

Figure 4: U.S. gas demand growth from AI vs LNG (Billion cubic feet/day)



Source: EIA. Short-term Energy Outlook. As at August 11, 2026. Note: This is an estimate and can vary.

Conclusion

The AI data centre buildout and increased need for AI infrastructure is not yet large enough to overwhelm commodity markets on its own, but it is momentous enough to matter at the margin, especially in markets where supply is constrained, infrastructure lead times are long, and exploitation cycles are already waning. The key takeaway is that the commodity impact will be driven by what ultimately gets built, how quickly facilities ramp utilization, and the mix of power required to fuel them. Copper appears most directly exposed through electrical equipment, power

distribution, cooling systems, and the broader grid investment needed to connect new load, while natural gas may benefit where dispatchable generation is required to meet reliable power demand. At the same time, both commodities also sit within broader demand narratives that include electrification, LNG growth, renewable integration, permitting constraints, and substitution risk. The investment opportunity lies in identifying where incremental demand intersects with constrained supply and where market expectations have yet to fully adjust. ■



¹ Bloomberg Finance L.P. As at July 31, 2026.

² S&P Global, S&P Global World Exploration Trends 2026 Report. Accessed September 8, 2026.

³ EIA: Fossil generation could rise with faster-than-expected growth in data centre power demand, March 12, 2026.

⁴ TD Asset Management Inc. LBNL, United States Data Centre Energy Usage Report: 2025 Update, June 2026. EPRI, Powering Intelligence 2026, February 2026. McKinsey / Visual Capitalist summary of McKinsey data, Charted: The Rising Share of U.S. Data Centre Power Demand, September 2025. IEA, Energy and AI, April 2025. BCG, Solving the U.S. Data Centre Power Crunch, March 2026.

⁵ Utility Dive. 50 GW of data centres online at end of 2025, with MISO seeing strongest growth: FERC. As at March 26, 2026.

⁶ Data Center Knowledge. What QTS' Canceled \$30B Project Reveals About AI Data Centre Development, July 2026.

⁷ Data Center Dynamics. Nebius plans second U.S. gigawatt-scale data centre campus in Pennsylvania, May 2026.

⁸ Bloomberg Finance L.P. As at July 31, 2026.

⁹ TD Asset Management Inc. As at August 10, 2026.

¹⁰ TD Asset Management Inc. As at August 10, 2026.

¹¹ TD Asset Management Inc. As at August 10, 2026.

¹² EIA. Short-term Energy Outlook. As at August 11, 2026.

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Data Centres