Brookfield

Infrastructure: The Foundation for Scaling AI

Today, artificial intelligence (AI) and advances in "compute" (computational power) mark the next major inflection point, enabling machines to perform cognitive tasks and driving a new era of innovation and growth.

For AI to reach its true promise—unleashing economic growth and powering breakthroughs in healthcare, finance, science and knowledge work—it must be scaled with robust and expansive infrastructure.

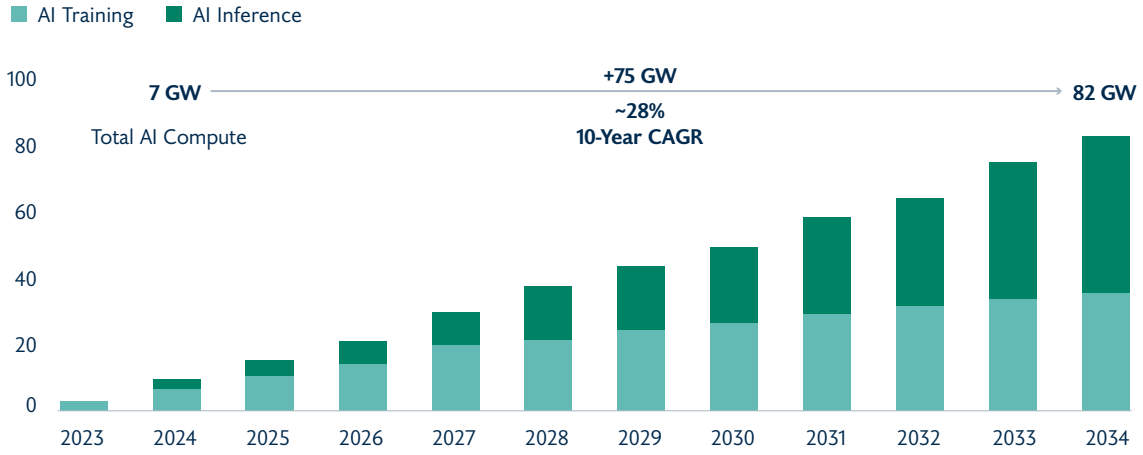
While the AI value chain has many components, Brookfield has focused on opportunities in the critical infrastructure layer—the physical assets and services that enable AI at scale. These include AI factories, power & transmission, compute infrastructure and strategic adjacencies & capital partnerships—adding up to an investment opportunity of over $7 trillion within the next decade.[1]

AI Factories: Compute Powerhouses

The rapid adoption of Generative AI (GenAI)—AI that generates new content like high-quality text and images—has accelerated data center demand at an unprecedented pace. Although cloud data centers are predominant in the market today, AI factories are emerging as another notable piece of the infrastructure puzzle. These modern digital hubs incorporate advanced cooling systems and specialized networking to cluster thousands of chips, providing the computing power needed to train and deploy AI models.

By the end of 2025, we expect that AI factories will expand to ~15 gigawatts (GW) of power capacity online, up from only ~7 GW at the end of 2024. Over the next 10 years, we believe AI factories will help bring total AI data center capacity to ~82 GW.[1] This trend represents more than a tenfold increase over the period as AI inference (i.e., running models in production) takes up a greater share of compute capacity (see **Figure 1**).

Figure 1: AI Data Center Capacity to Increase 10x by 2034
Global AI Factories Installed Base (GW)



Source: Brookfield internal research. There is no assurance that such events will occur, and actual outcomes may be significantly different than those shown here.

Such exponential growth has led to rising capital requirements for building AI hubs and acquiring compute hardware. The user base for intense compute is also expanding beyond just AI labs to include enterprise research and development (R&D) groups and governments. Together, these trends have created attractive entry points for infrastructure investors.

> "Just as electricity generation plants powered the last one, AI factories are driving a new industrial revolution. AI is the infrastructure to advance society, and the time to build it is now."
>
> — JENSEN HUANG, FOUNDER AND CEO OF NVIDIA (JULY 2025)

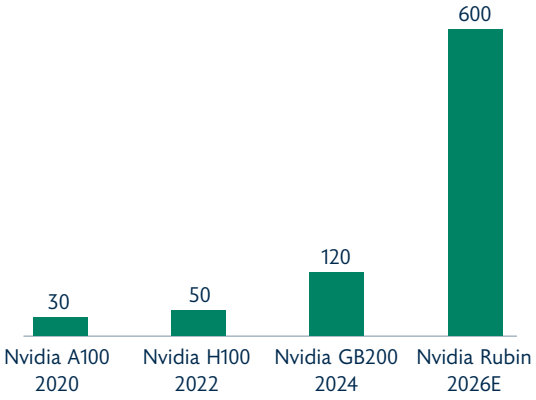
Investments in infrastructure to support AI growth involve substantial risks, including uncertain demand, rapid technological change, and the potential for significant capital losses.

Power & Transmission: Energy Bottleneck & Opportunity

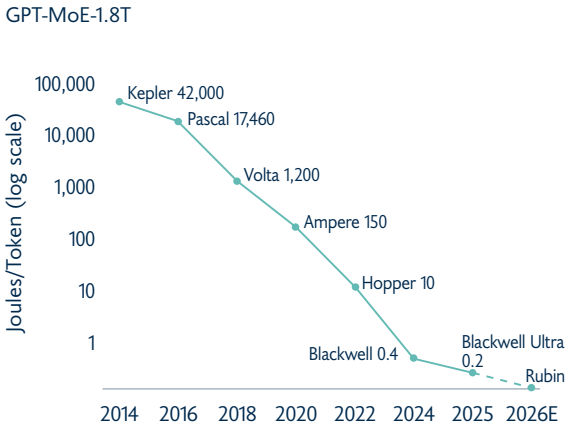
Supplying reliable power has become a top priority, especially as large-scale AI models consume far more electricity than traditional IT. The power density of AI chips is ~10x higher than that of typical servers and is expected to rise another 5-10x in the coming years. A high-density AI rack can draw over 120 kilowatts (kW) per rack, whereas a standard data center rack draws 10-15 kW. At the same time, new chips have become more efficient in their energy use (see **Figure 2**).

Figure 2: Powering Advanced AI Chips

Advanced AI Chips Have Growing Power Needs



LLM Inference Continues to Get More Energy-Efficient



Source: Nvidia. There is no assurance that such events will occur, and actual outcomes may be significantly different than those shown here.

Even with greater chip efficiency, aggregate power must continue to surge to meet rising workloads and industry demand. This means that power and cooling infrastructure are just as vital as the chips themselves for scaling AI.

As a result, the energy and utility sectors face unprecedented pressure and opportunity—AI-driven power generation and transmission buildout could represent over $0.5 trillion in capital investment over the next decade.[1,2] Strategic coordination between AI infrastructure developers, utilities and regulators will be key to unlocking this next wave of digital growth.

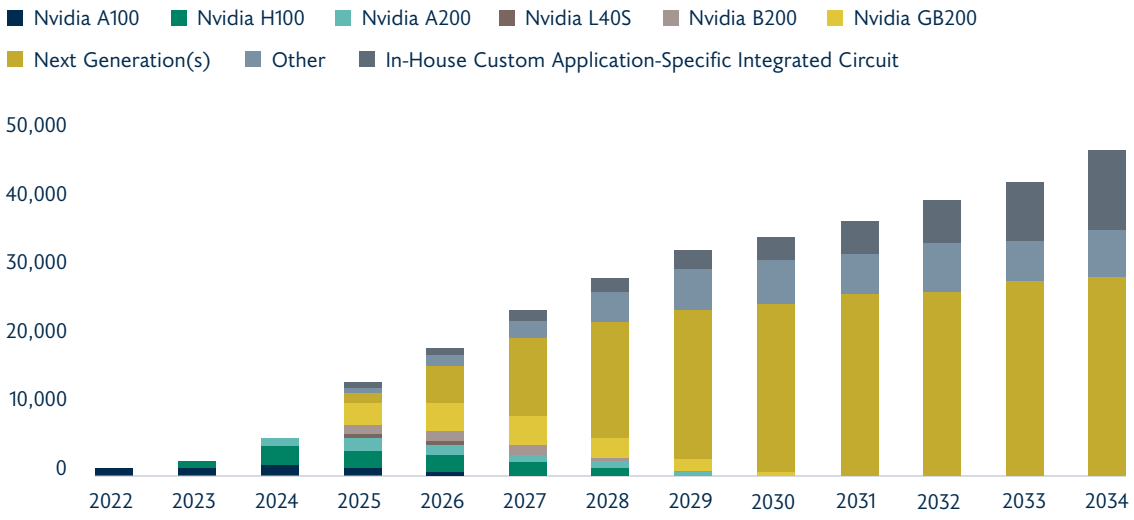
Compute Infrastructure: GPU Expansion

AI compute relies on highly specialized graphics processing units (GPUs) that are more specialized than the general central processing units (CPUs) associated with legacy cloud and software applications. GPUs perform many operations simultaneously, and their ability to execute numerous complex calculations at the same time has been essential for AI training and deployment.

With growing AI power needs, GPU partnerships as well as the design and manufacturing of chips have become increasingly important. Companies like Nvidia have developed state-of-the-art designs to power ever-larger AI supercomputers. And in 2024 alone, Microsoft reportedly acquired ~500,000 Nvidia GPUs and Meta acquired over 200,000.[3]

Given GenAI's potential for expansive economic gains, GPUs have become one of the largest and fastest-growing tech markets. We project the installed base of GPUs will grow about 7x, from ~7 million in 2024 to ~45 million by 2034, representing over $4 trillion in cumulative GPU hardware sales over the period (see **Figure 3**).

Figure 3: Installed Base of GPUs to Grow 7x by 2034
GPU Installed Base (000s)



Source: Brookfield internal research. There is no assurance that such events will occur, and actual outcomes may be significantly different than those shown here.

Over the last decade, GPU performance improved 1,000x[3], effectively outpacing Moore's Law (which states that the number of transistors on an integrated circuit doubles roughly every two years). Additionally, the total available compute for training AI models has increased more in the past 10 years than in the previous 40[3], further demonstrating the need for more compute infrastructure.

Strategic Adjacencies & Capital Partnerships: Support Beams

As AI workloads grow in complexity and scale, they drive demand for supporting infrastructure, including dedicated fiber connectivity, liquid cooling and circular economy networks. These adjacent sectors are crucial enablers of sustained AI growth and represent compelling opportunities for infrastructure-oriented capital.

Additionally, the onshoring of supply chains in Western markets—accelerated by shifting geopolitical views and industrial policy—has sparked a new wave of investment in semiconductor fabrication, robotics manufacturing and model training hubs.

Projects like Intel's and TSMC's U.S. fabrication facilities and new robotics production hubs in North America and Europe highlight the physical infrastructure needed to secure AI competitiveness. We believe capital partnerships driving projects like these may support the AI value chain, seek to offer resilient, long-duration investment opportunities and may align with national priorities and technological sovereignty.

Brookfield's Infrastructure Advantage: On the Frontlines

As AI becomes more deeply integrated in real-world applications, the task of building and operating the requisite infrastructure at scale stands as both a tremendous challenge and the defining investment opportunity of our time.

We believe Brookfield's experience in digital and energy infrastructure positions us well to participate in the buildout of critical AI-related infrastructure. Just as we have done for decades in building the railways, power grids and communication networks that enabled the breakthroughs of past industrial revolutions, we are building the systems that will power the AI age.

Infrastructure investments related to AI are speculative, may lack liquidity, and are subject to risks including project delays, cost overruns, and changing market conditions. Investors may lose all or a substantial portion of their investment.

ENDNOTES

[1] Source: Brookfield internal research. There is no guarantee that projected opportunities or returns will be realized.

[2] These projections are based on current assumptions and may change as market conditions, technology, and regulatory environments evolve.

[3] Source: Financial Times, as of December 2024.

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