

➤ On the Minds of Investors

Is AI running out of compute?

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As AI usage shifts from training models to using them (inference), compute demand is exploding. Agentic AI, models that handle increasingly complex, multi-step work autonomously, has rewritten the compute math. A single user could demand 10-100x more compute with the latest tools and use cases. As adoption diffuses across the economy, supply is hitting a wall, exhibited by increased outages at cloud providers and model labs.¹

Supply shortages now span chips, power and data center infrastructure:

- **Chips:** Orders for Nvidia GPUs have grown to \$1 trillion through 2027, double a year ago, with lead times across GPU and custom silicon stretching to nearly a year. Memory is another chokepoint, with all three HBM suppliers sold out for 2026.
- **Power:** A modern data center can be permitted and built in 2-3 years, but the power to run it could take 5-7 years for natural gas, 10+ years for nuclear and 2-4 years even for solar—while grid interconnection queues stretch beyond five years in many U.S. regions.²
- **Data center infrastructure:** Vacancy sits at 1% for a second consecutive year, and 92% of capacity under construction is already pre-leased.³

The economics of scarcity

We are unlikely to “run out” of compute, but market conditions will increasingly reflect a supply-constrained environment.

As demand exceeds supply, pricing power accrues to the providers of scarce inputs, whether that is advanced semiconductors, power generation and transmission or data center capacity. For the hyperscalers and model labs, capacity is the biggest concern, which is why they are racing to lock in multi-year compute agreements and moving upstream into power generation. Access to infrastructure is becoming as strategically important to AI competitiveness as the models themselves.

That pressure eventually reaches end users. Many AI services today are priced well below cost, subsidized by companies incentivizing adoption and competing for market share, but rising compute expenses could force a rethink.⁴ For businesses deploying agentic AI, unconstrained usage could speed adoption but drive an unsustainable hike in compute costs, biting into margins before productivity gains show up. Corporate discipline, in response, could delay those gains further. And with very little slack in supply chains, modest disruptions can cascade, let alone larger geopolitical ones (consider helium).

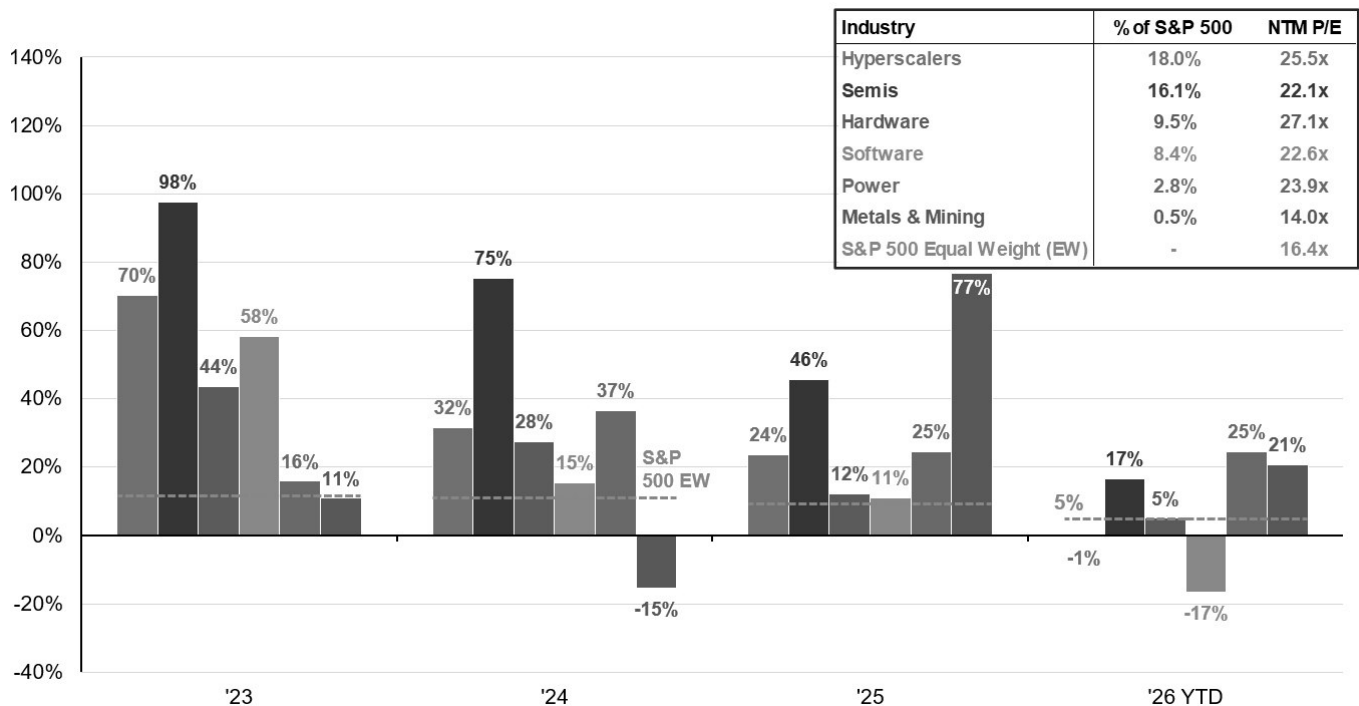
Positioning across the buildout

So long as compute remains supply-constrained, and it likely will for at least the next several years, the sectors providing scarce inputs remain well positioned. The S&P 500 Power and Materials sectors have outperformed the equal-weight index by roughly 20 percentage points year-to-date. The hyperscalers spending hundreds of billions on infrastructure still have the means and the strategic imperative to do so, with the goal of building the toll roads through which massive demand flows will pass. But markets have increasingly framed this buildout as zero-sum, one company's margin being another's cost of goods sold, a skepticism reflected in the hyperscalers' recent underperformance. That framing may fade as the addressable market expands and valuations look more reasonable.

For investors whose portfolios were heavily concentrated in the names now lagging the market, the broadening of AI's beneficiaries presents an opportunity. Rebalancing that exposure, toward infrastructure providers and the growing set of companies poised to benefit from AI adoption, can help position portfolios for a broad range of outcomes.

The "picks and shovels" for AI are outperforming

AI-related industry performance, price return



Source: FactSet, MSCI, Standard & Poor's, J.P. Morgan Asset Management.

Hyperscalers is a market weighted composite of AMZN, GOOGL/GOOG, META, MSFT and ORCL. The remaining categories are based on GICS Industries: Semis = Semiconductors & Semiconductor Equipment (Info. Tech.); Hardware = market weighted composite of Communications Equipment (Info. Tech.), Electronic Equipment Instruments & Components (Info. Tech.) and Technology Hardware Storage & Peripherals (Info. Tech.); Software = Software (Info. Tech.); Power = market weighted composite of Electrical Equipment (Industrials) and Electric Utilities (Utilities); Metals & Mining = Metals & Mining (Materials). Past performance is no guarantee of future results.

Guide to the Markets – U.S. Data are as of April 16, 2026.

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