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Asset Management

The next AI bottleneck:
power, capital formation and the utility financing cycle

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> "Physical supply constraints and regulatory approval delays could constrain the scale of capital required to meet utility financing needs."

In our paper at the start of 2026 on AI data center financing (AI Data Center Boom), we noted that power supply constraints could become the next bottleneck. This paper explores the credit market implications as that prediction materializes.

Key takeaways:

- **For much of the last two years, investors have focused on the first bottleneck of the AI era: compute.** The launch of ChatGPT in November 2022 triggered an unprecedented buildout of AI infrastructure. Demand for semiconductors, data centers, networking equipment and cloud capacity surged.
- **The focus is moving from compute to powering the compute:** today, attention is shifting to AI-era power demand. However, physical supply constraints and regulatory approval delays could constrain the scale of capital required to meet utility financing needs.
- **The financing of AI infrastructure:** a prolonged utility financing cycle would have implications not only for utility credit spreads, but also for broader investment grade market technicals. For fixed income investors, active issuer selection will be key.

The end of the flat power demand era

From 2005 through 2020, U.S. retail electricity sales grew by <0.5% annually on average[1]. Economic growth expanded, population increased, cloud computing emerged and digitalization accelerated. Yet overall power demand remained surprisingly stable because efficiency gains offset incremental consumption.

These gains are likely to persist, and combined with increased usage of "off-grid" power sources will provide some offset to power load growth. But they are unlikely to keep pace with the sheer size and scale of expected power demand that is forecast to grow between 3-5% (versus 0.5-1%) annually over the next five years.

The result could be the first sustained period of U.S. electricity-demand growth in over a decade.

[1] IEA Short Term Energy Outlook, as at May 2025.

Importantly, while data center demand growth is a large driver – likely contributing ~50–55% of increased load demand growth (Chart 1) – there are other structural shifts occurring simultaneously, including manufacturing reshoring and electrification. These are expected to be meaningful contributors, ~45%, to forecasted growth[2].

The utility investment cycle, therefore, rests on a broader foundation than AI alone, leading us to believe we may be at the beginning stages of a structural build out rather than a cyclical fluctuation.

The question then becomes: can the power industry provide the capacity needed to support the next phase of the AI build out or will power demand growth expectations turn into the next AI boom forecasting error?

> **"The path to meeting AI-era power demand faces two critical constraints that will determine the pace and scale of buildout"**

Our view is that the answer lies somewhere in between. While the utility sector has fundamental strengths – strong balance sheets, stable cash flows, and diverse demand-management tools – the path to meeting AI-era power demand faces two critical constraints that will determine the pace and scale of buildout.

Ability versus willingness

The bottleneck is not just driven by a willingness for utilities to build capacity, but by their ability, which is constrained by two key factors: physical supply constraints and regulatory approval delays.

Physical supply chain constraints

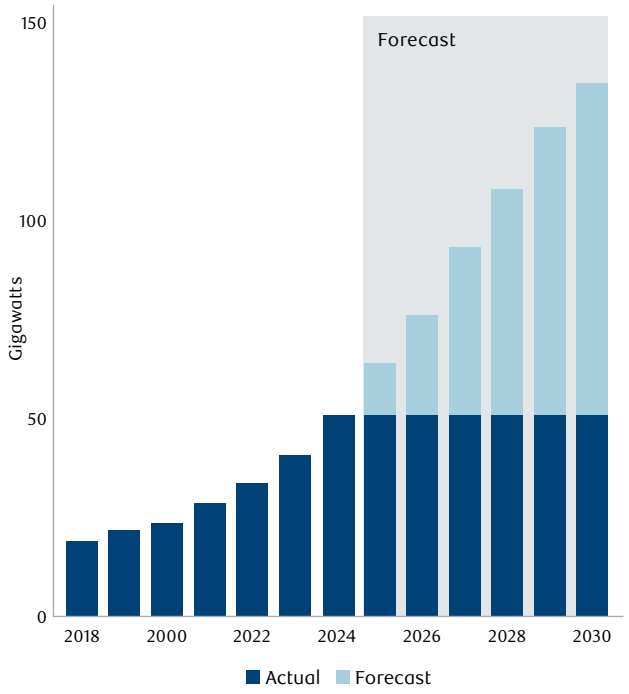
Critical equipment availability is quickly becoming one of the biggest constraints – particularly turbines, switchgear and transmission components as lead times for these have stretched from months to years. As an example, turbine manufacturers are reporting backlogs extending into early 2030, delaying actual capex deployment. This impacts both regulated and unregulated utility companies.

Regulatory approval delays

Regulation often creates a structural lag in power capacity build as new generation projects often require years of permitting, environmental review, and regulatory approvals. On top of that, for regulated utilities, government regulators are likely to become increasingly focused on electricity affordability as utility bills rise, potentially extending the approval timeline further as financing becomes a more complicated negotiation between governments and companies.

[2] GridStrategies, as at May 2026.

Chart 1: Data center demand growth – forecast and actual



Source: S&P Global Market Intelligence; 451 Research Data Center Services & Infrastructure Market Monitor and Forecast – U.S.-focused, released 24 September 2025.

For unregulated utilities, this becomes less of a concern and potentially could be a bigger opportunity for continued outperformance of these providers over regulated ones, but they are still subject to lengthy approval and permitting processes.

These constraints – physical and regulatory – shape not only the timeline for capacity additions, but also the scale of capital required to meet demand. To understand the potential magnitude of utility financing needs, it's instructive to look at the recent hyperscaler experience, which offers both a precedent and a cautionary tale.

The capex conundrum

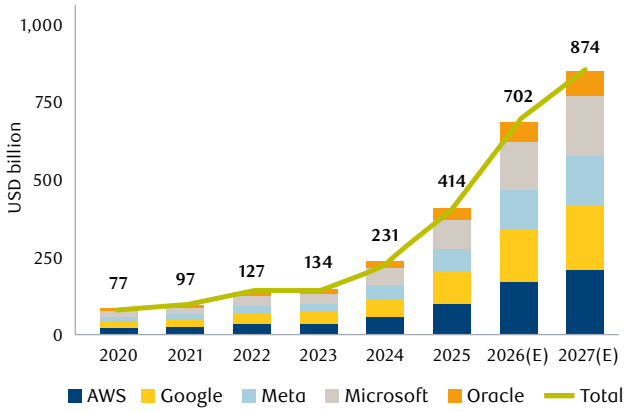
The AI era has already produced one major forecasting error: compute demand, and the capital required to finance it. Since the launch of ChatGPT, hyperscaler capex has risen from roughly USD150 billion annually to an estimated USD700-800+ billion (Chart 2), with nearly every forecast revision moving higher rather than lower over the last year. Investors initially viewed AI as a software opportunity; it quickly became one of the largest infrastructure buildouts in modern history. The investment cycle reshaped capital spending plans across the technology sector, altered debt issuance, free cash flow generation and balance-sheet utilization among the world's largest hyperscalers.

It is not simply that spending increased, or even by how much, but that demand consistently exceeded expectations, forcing repeated upward revisions to capital plans, data center capacity and supporting infrastructure requirements. The result was an explosion in debt issuance (Chart 3).

Now the story is moving from building the compute to powering that compute, and investors will need to assess whether the resulting power demand could be the next forecasting error – in other words, could we see a similar exponential capex trajectory akin to the hyperscalers in recent years? The answer is: yes, but likely not in the same order of magnitude.

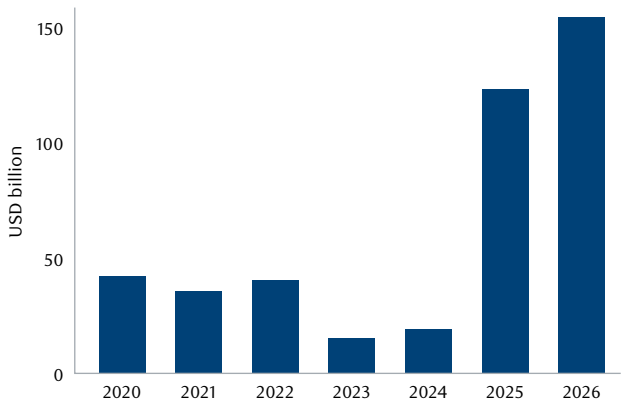
Unlike hyperscalers, utilities, one of the most capital-intensive industries, are starting from a structurally higher and less cyclical capex base, driven by reliability requirements, regulatory mandates, and ongoing infrastructure replacement rather than discretionary growth investments. However, the recent hyperscaler experience demonstrates how sustained demand surprises can drive repeated upward revisions to capital plans, ultimately resulting in a much larger financing cycle than initially anticipated. If AI-driven electricity demand proves similarly durable, utility capex may follow a comparable trajectory –not from a low base, but through successive increases to an already elevated level of investment (Chart 4).

Chart 2: Hyperscaler capex trajectory



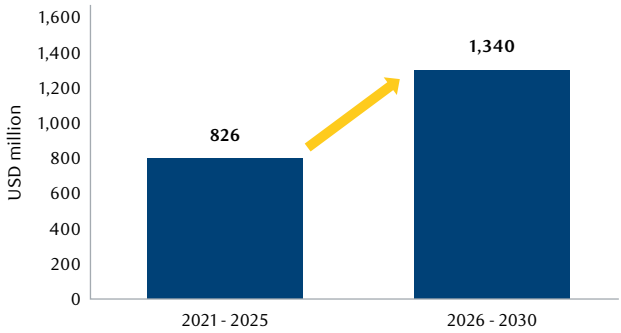
Source: Bloomberg, as of May 2026.

Chart 3: Hyperscaler annual gross new issuance



Source: BofA, as of May 2026.

Chart 4: Utility sector capex trajectory



Source: Bloomberg, utility company filings as of June 2026.

While utility capital spending is unlikely to experience the same magnitude of acceleration, the direction of travel is starting to become clear: sector capital plans have expanded materially with capital expenditures over the next 5 years expected to be more than 60% higher than capital expenditures over the last 5 years[3].

> **"While utilities generate highly stable cashflows, they have never fully self-funded growth"**

Why this matters for fixed income markets

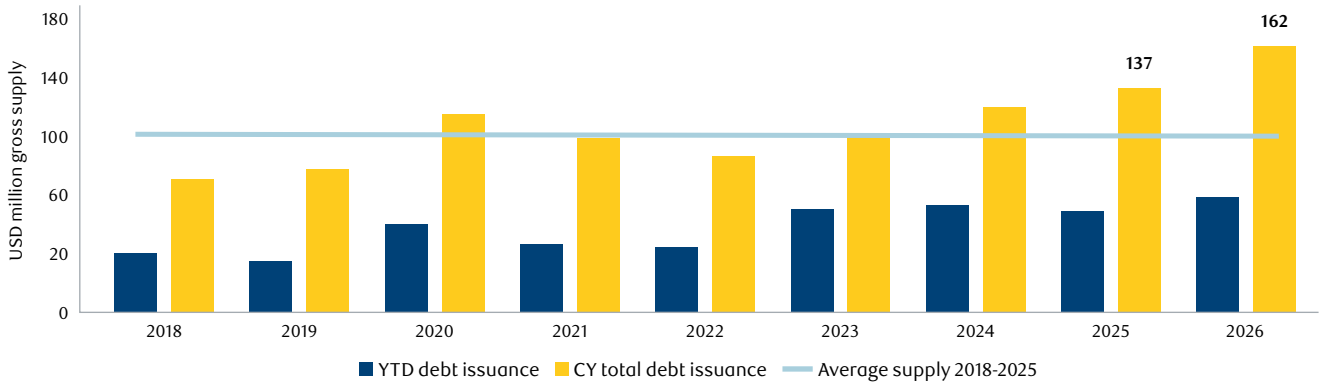
Historically, utility capital expenditure growth has been supported by a combination of operating cash flow, debt issuance, equity issuance, and hybrid securities. While utilities generate highly stable cashflows, they have never fully self-funded growth. Unlike hyperscalers, whose capital spending can be moderated if demand weakens, regulated utilities generally must finance and complete approved infrastructure programs once projects enter rate base.

What this means is, we are likely to see more consistently higher supply of debt from the utility sector, and 2026 is showing early evidence that this may already be starting to occur (Chart 5).

If utility capital spending reaches the levels currently projected, the industry could become one of the largest sources of incremental corporate bond supply over the remainder of the decade. That would have implications not only for utility credit spreads, but also for broader investment grade market technicals.

[3] Bloomberg, utility company filings, as at June 2026.

Chart 5: Utility sector gross supply



Source: BofA Investment Grade Utilities and BofA HG Chartpack, as at May 2026.

Spread implications: growth story or financing story?

Changes in supply dynamics naturally raise questions about valuation and credit spreads.

The early phase of the cycle is supportive for credit quality. Higher demand growth supports earnings, rate base expansion, and business fundamentals. However, if capital plans continue expanding at their current pace, financing requirements and debt issuance may eventually become the dominant market consideration. In that scenario, improving fundamentals and rising supply could coexist – a combination that often produces stronger equity performance than credit performance, but one that could continue to support utility credit spreads even at higher levels of debt issuance.

A prolonged utility financing cycle could:

- Increase debt, equity, and hybrid issuance
- Re-shape investment grade supply dynamics
- Create significant spread dispersion across utility issuers
- Shift part of the AI financing burden from hyperscaler balance sheets to utility balance sheets
- Determine how infrastructure costs are allocated among consumers, shareholders and bondholders

In our view, the more likely outcome for utilities is not sector-wide widening but spread dispersion.

One reason for spread dispersion is geographic concentration: the financing burden is likely to be concentrated among a handful of issuers as existing data center ecosystems, transmission access, available land, and regulatory support create concentrated geographic demand clusters.

A second factor is execution risk: not all forecasted power demand may materialize. Capacity utilization could fall short of projections for two primary reasons:

- **Compute demand assumptions may be too optimistic**
  Hyperscaler capital spending may be overestimating the speed and scale of future compute demand relative to the speed of real enterprise adoption, monetization and end-user demand. If compute demand ultimately falls short of current expectations, portions of the planned data center, power and financing needed may be scaled back.
- **Contracted utility load is often a fraction of requested utility load**
  Even if compute demand isn't overestimated, historically, the majority of requested utility load does not convert into contracted load. This is because requested utility load often includes speculation projects, duplicate requests, and optionality that may never result in contracted load or utility investment. So, while requested load has surged, the future utility financing burden could be smaller than headline demand projections imply.

Both of those scenarios would likely be the result of a pullback in AI expectations and repricing of future growth. With materially more debt now sitting on balance sheets, this would likely have a much more meaningful impact on credit spreads, particularly for the most indebted issuers.

Therefore, it is not just whether electricity demand will rise. It is which utilities have the regulatory support, balance sheet capacity and financing flexibility to convert that demand into return on investment (ROI). The winners of the next phase of the AI buildout may be defined less by load growth than by their ability to fund it efficiently.

Summary

The market is focused on AI demand, but an equally important point may be that we have entered the first sustained electricity-demand growth cycle in a generation.

AI is creating new ways to access capital, and the financing of AI infrastructure is unlikely to flow solely through traditional corporate debt markets. As capital needs expand beyond hyperscaler balance sheets into utilities, power generation, transmission networks, data centers, and related infrastructure, funding is increasingly being sourced through private credit, asset-backed finance, project finance, hybrid securities, securitized structures, and other bespoke vehicles.

Viewed through this lens, the AI story evolves from a compute story to a power story and ultimately to a financing story, and we are still in the early innings of this megacycle.

As this financing cycle unfolds, capital is likely to flow through increasingly diverse structures – from traditional corporate debt to private credit, hybrid securities, and asset-backed finance. The uneven distribution of benefits and risks across issuers and capital structures will create both opportunities and pitfalls, making issuer-level analysis and active security selection increasingly important for fixed income investors.

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Anne is an Institutional Portfolio Manager at RBC GAM-US, specializing in U.S. Fixed Income. In this role, she leads efforts to position the firm's fixed income capabilities with investors and supports U.S. Distribution teams in engaging with clients, consultants, and prospects. Acting as a representative for the investment teams, Anne manages internal and external engagements and serves as the primary contact for strategy-related inquiries and initiatives. Before joining RBC GAM in 2025, Anne was an Investment Director at Wellington Management Company, focusing on Liability-Driven Investing and U.S. Investment Grade Credit. Prior to her tenure at Wellington, Anne held various positions at J.P. Morgan Asset Management (JPMAM) from 2010 to 2022. As Executive Director and Global Credit Investment Specialist, she managed JPMAM's global credit client relationships. Anne holds an A.B. in Sociology from Princeton University. She is a CFA charterholder and holds FINRA Series 7 and 63 certifications.

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