



Data Centers:

Financing the AI Buildout

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Markus Academy – March 19, 2026

Three Main Points

1. AI is driving a wave of physical capital formation unusual in scale and composition.
2. Ownership and financing of AI buildout are changing the DC space.
So are the economic risks: follow the capital stack.
3. Financing architecture increases leverage and makes risks opaquer, while preserving financial flexibility, high equity multiples and credit ratings for the hyperscalers.

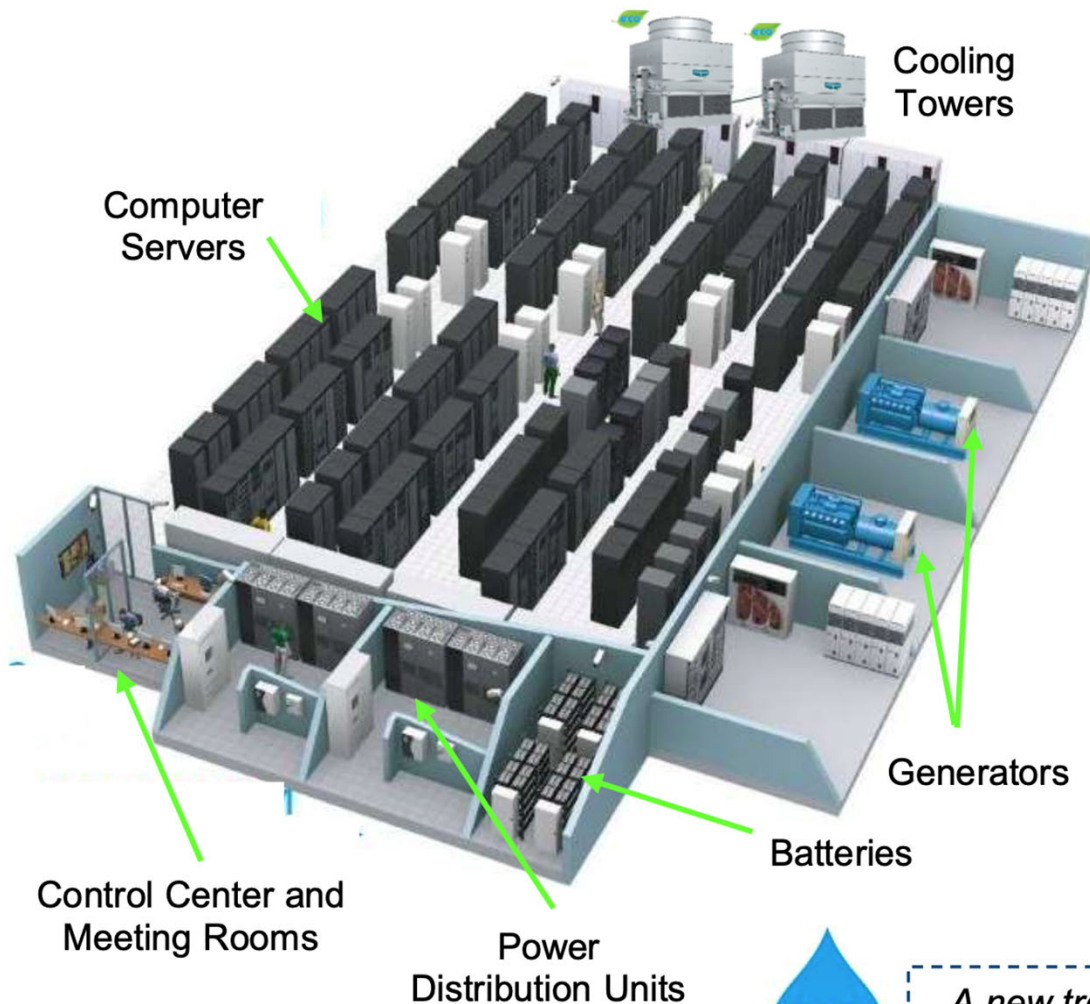
Key question: not only how much is being invested but also **how the revenues, costs, and risks of the AI build out are distributed across the ecosystem**

1. Why AI Changed the Economics of Data Centers



What is a Data Center?

Inside a Data Center



Landlord Owns

- Land, building, and shell
- Long-lived infrastructure (e.g., generators, batteries, liquid/air cooling equipment, power equipment)

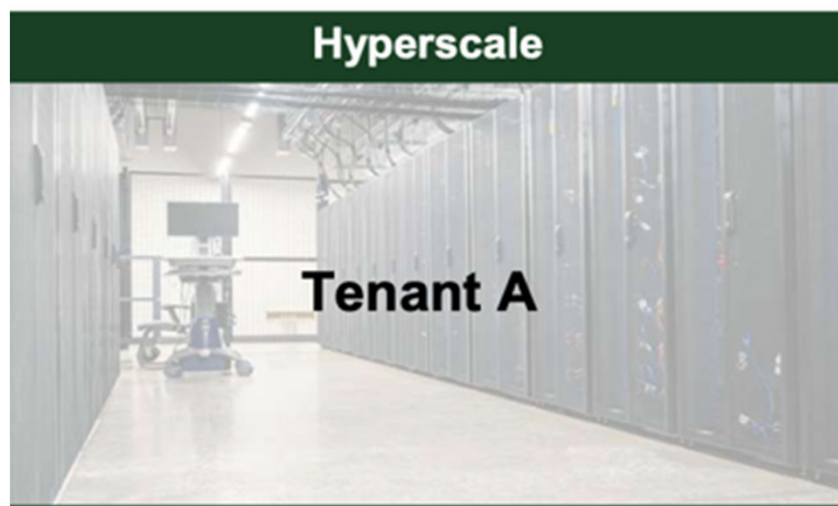
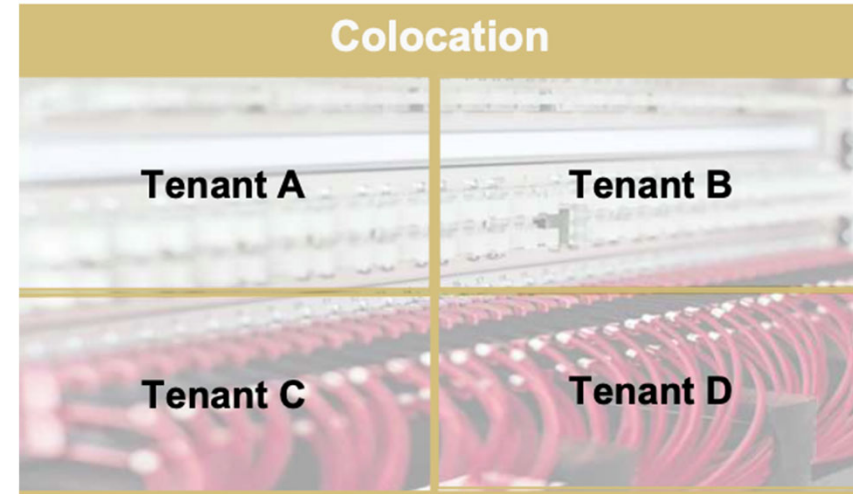
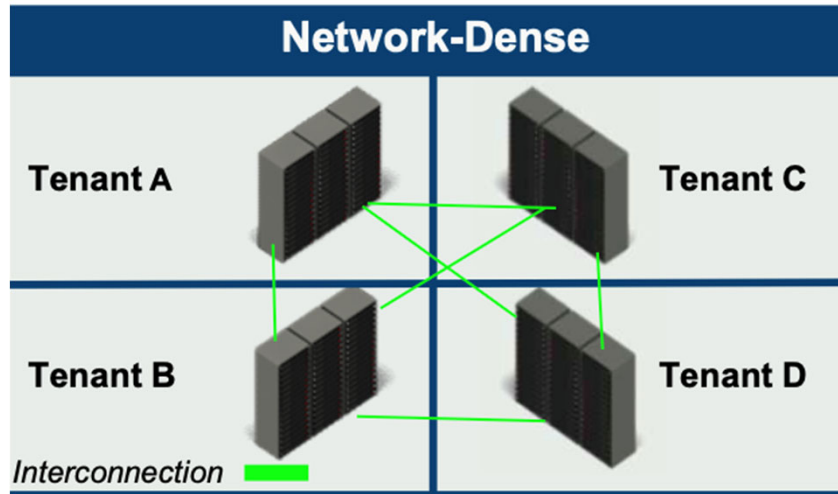
Tenant Owns

- Short-lived infrastructure (e.g., computer servers, networking equipment, storage)



A new trend is liquid cooling (in addition to traditional air cooling) to support power-intensive artificial intelligence.

The Physical Evolution of Data Centers



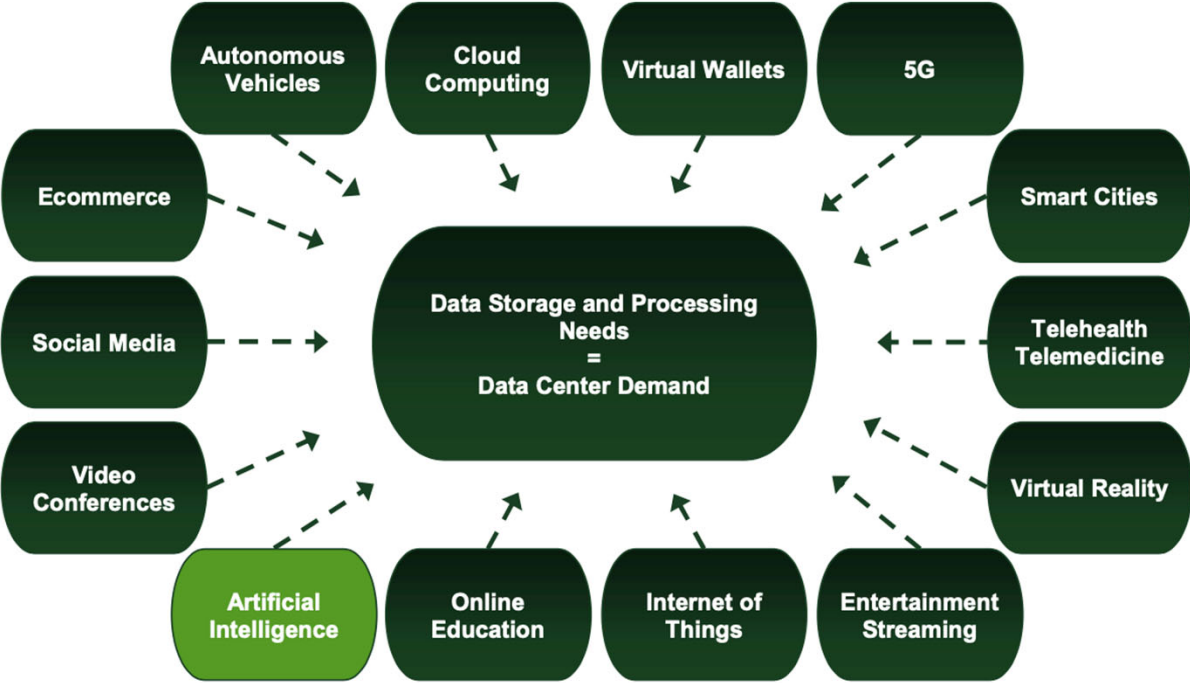
AI: Increasing Power Density and Cooling Needs

Workload	Energy Consumption Per Rack (of 72)
Standard Enterprise/Cloud	5-10 KW
Generative AI (Hopper/Blackwell Clusters)	60-80 KW
Next-Gen AI (Vera Rubin)	130-250+ KW

Method	How It Works	Max Rack Density	Status
Air Cooling	Cold air via floors/hot aisles	~10-15 KW	Legacy standard
Rear-Door Heat Exchangers	Water-cooled panels at rack exhaust	~20-30 KW	Transitional/life-extension
Direct Liquid Cooling	Coolant circulates through cold plates on CPUs/GPUs	~100 KW	Current mainstream for AI
Closed-Loop Refrigerant	Refrigerant piped directly to cold plate on chip	200 KW+	Frontier/next-gen
Immersion Cooling	Servers submerged in dielectric fluid	200 KW+	High-performance, niche

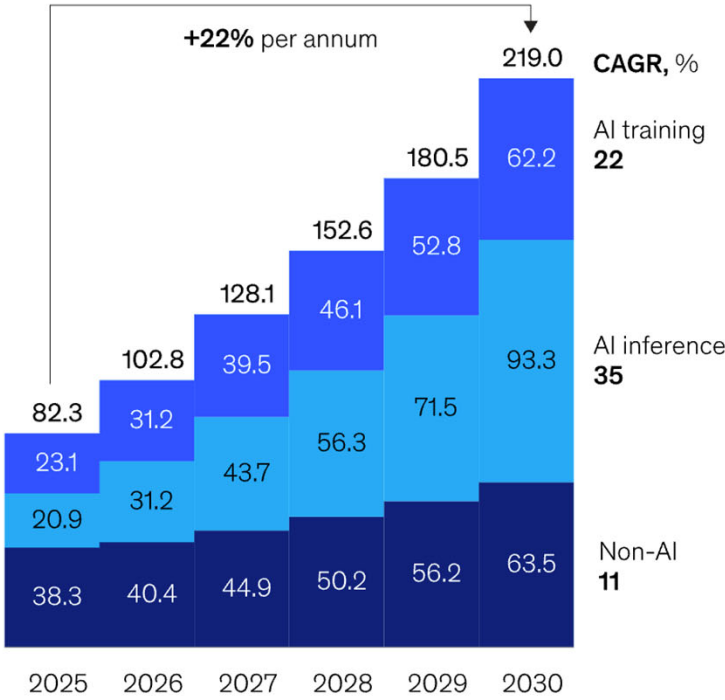
Scarce AI input: MW of reliable power, dissipate heat, and support fast-evolving hardware

Data Center Demand Drivers: AI Workloads



Global data center demand by workload, 2025–30

Global data center demand, gigawatts



Note: Includes all provider types.
Source: McKinsey Data Center Demand Model



The biggest technology boom ever?

The capex needs for datacenters and the IT that goes in them are breathtaking

Cost of Building a DC: \$11M per MW

Data Center Construction Cost Breakdown

LCs and TIs (~2%)



- Most leasing costs are immediately expensed and captured in NOI
- Tenant improvements are minimal due to standardized design

Land (~8%)



- Though a small portion of total build costs, land prices can vary widely depending on market and range from low single digits to low double digits as a percent of construction costs

Soft Costs (~5%)



- Inclusive of numerous fees / taxes before operations can commence (e.g., design and construction fees, building permits, local taxes)

Hard Costs (~85%)



- Required items to make a data center operational
- Industry participants often underestimate total costs by only quoting hard costs

Cost of Building a DC: \$11M per MW

Cost per square foot*: ~\$1,500

Cost per MW: ~\$11M

Hard Costs Breakout (% of Total Hard Costs)

Building / Shell

~20%: Outer exterior, similar to office / industrial building

Building Fit-Out

~10%: Lobby, meet-me-room (i.e., where networks connect), shipping / receiving areas, furniture

Cooling / Mechanical

~25%: Water storage, HVAC, computer room air conditioning (CRAC) units, piping

Electrical

~45%: Uninterruptible power supply (UPS) systems, generators, power distribution units (PDUs), batteries

*Given rising power densities within data centers, square footage metrics are becoming less useful across the sector. The prior industry rule of thumb assumed ~7,000 sq. ft. per MW, though specific sites, especially those supporting AI deployments, can vary widely.

Source: Green Street.

A Modern 200 MW DC for AI training

- Datacenter facility: **\$2.2B** (200 x \$11M per MW)
- Incremental power infrastructure: **\$0.4B**
 - substations, high voltage transmission upgrades, grid interconnection
- IT equipment AI cluster: **\$5.6B** (200 x 70% x \$40M per MW)
 - 70% of this is GPU servers (inc. accelerator-attached HBM memory)
 - 15% is networking fabric
 - 7% is data storage systems
 - 3% is CPUs/control nodes
 - 5% is racks + integration

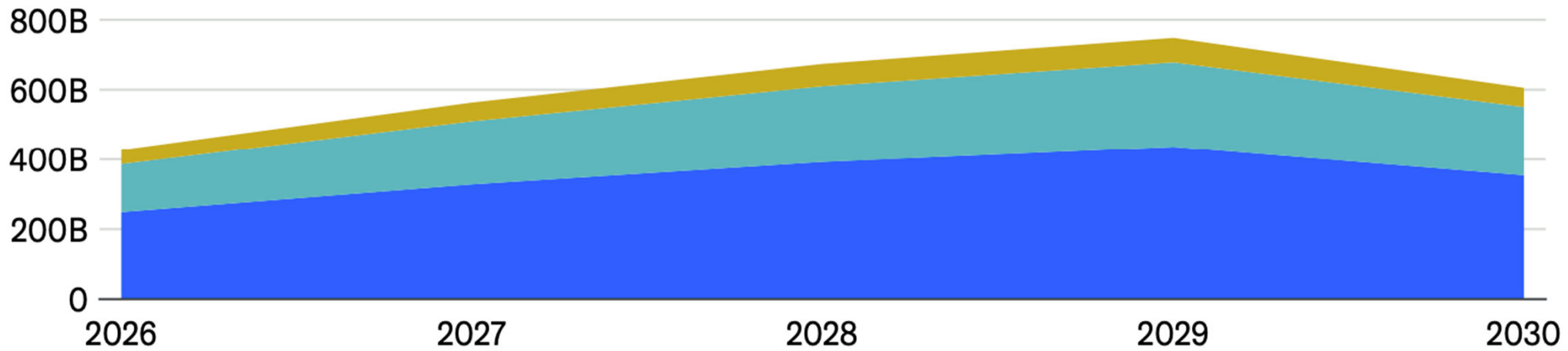
Total cost: **\$8.2B** ~1/3 is the DC real estate + power infrastructure

U.S. plans to add **one thousand** of these (200 GW) => **\$8.2T**

Cost of DC + IT + Power Infrastructure

Investments totaling at least \$3 trillion to keep pace with projected data center capacity growth
Our global forecast for data center related investments

■ Internal servers and computing equipment ■ Data center facility incl. mechanical, electrical, etc.
■ New power capacity



Uses US costs to build for generation, excludes transmission costs and assumes incremental power needs will be met with 50% from new natural gas combined-cycle gas turbines.

Source: Moody's Ratings

Capex as % of GDP: AI boom



Railroads (1865-90): 2.4%

Electrification (1905-25): 1.1%

Highways (1956-73): 1.6%

Telecom/fiber (1996-03): 0.8%

AI (2025-32): 2.8%

In 2025.Q4, AI buildout
accounted for

100% of U.S. GDP growth

Source: Apollo

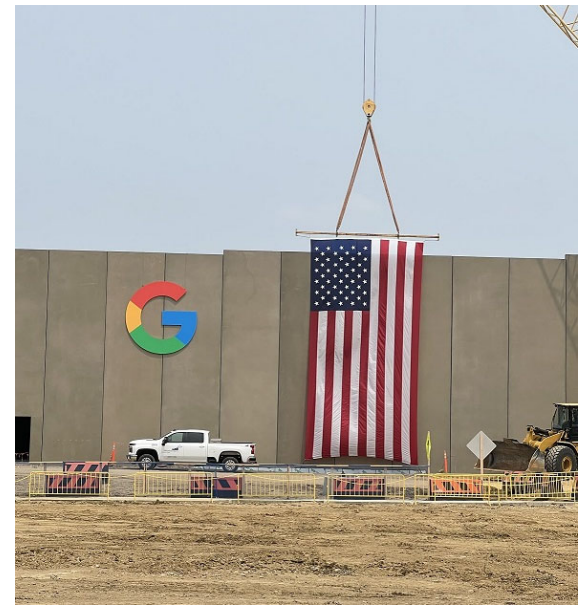
Note: Hyperscaler companies include Oracle, Microsoft, Meta, Amazon, Google and Telecom companies include Level 3 Communications, WorldCom, Global Crossing, Nortel Networks, Verizon, AT&T, Nokia, Cisco Systems, Williams Companies and XO Communications. Sources: Bloomberg, FactSet, Apollo Chief Economist

2. The Changing Ownership and Financing of the AI Buildout

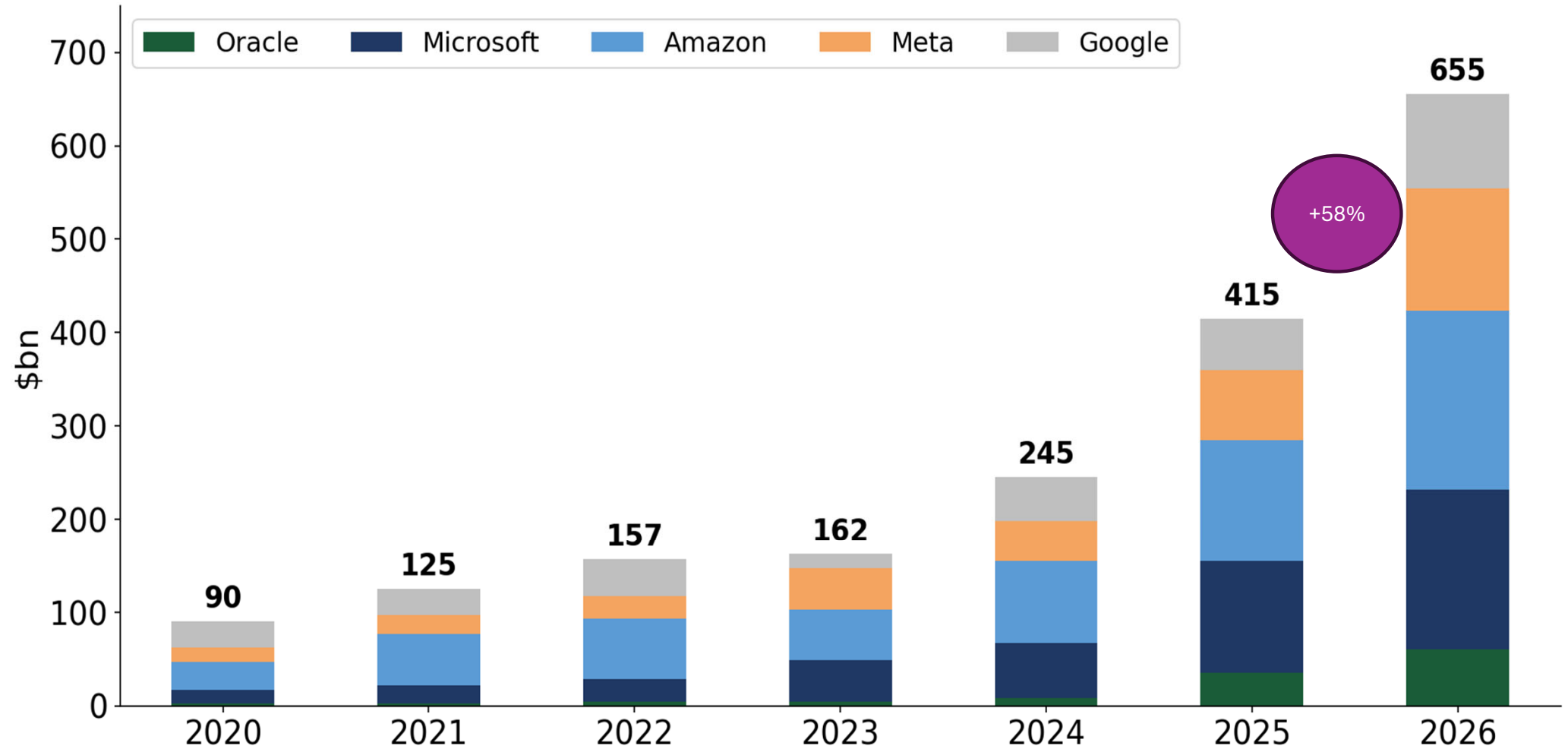


To Own or To Rent?

- Hyperscalers used to self-build: **own** their data centers
- This is **shifting to renting** due to
 - Huge capex needs: running out of operational cash flow
 - Faster to lease existing capacity
 - Preserve financial flexibility for future IT capex
 - Hedge uncertainty of future compute needs and architecture
- Third-party landlords as residual claimants on hyperscalers' demand for compute
- Hyperscaler **IT capex** may go a similar route becoming increasingly leased rather than owned.



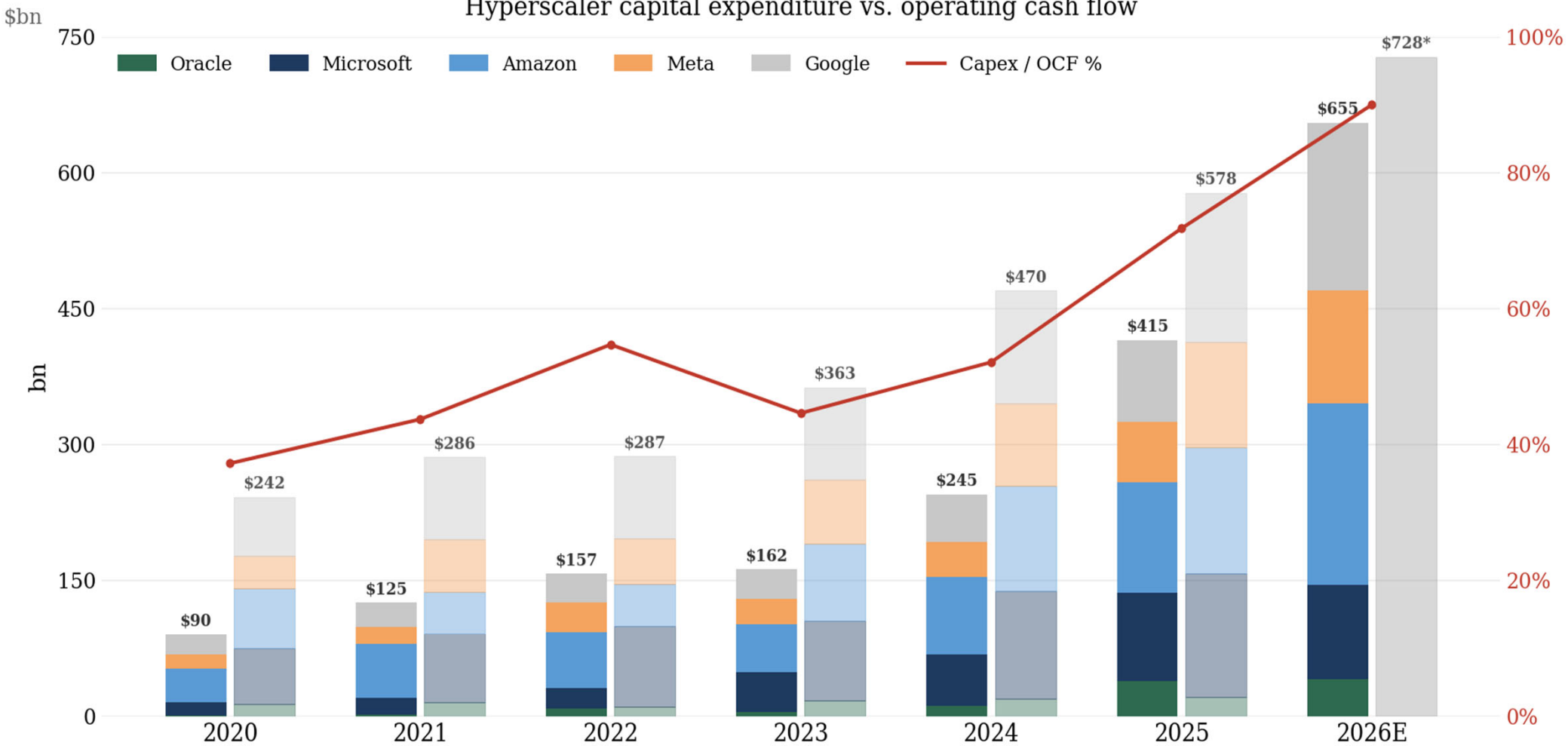
Hyperscaler Capex



Source: FactSet, Apollo Chief Economist

Hyperscaler Capex

Hyperscaler capital expenditure vs. operating cash flow



Source: FactSet, Apollo Chief Economist (capex); Yahoo Finance & company earnings releases (OCF 2020-2025).

*2026E OCF = aggregate estimate only, derived as capex (655bn) / 90% = 728bn, per Bank of America research (Seliger & Lee, ~Nov 2025). Company-level breakdown not available.

Hyperscalers Make for Good Tenants

Type	Top Tenants	Equity Market Cap (\$ B)	Moody's	S&P
Hyperscalers	Alphabet (Google)	3,767	Aa2	AA-
	Amazon	2,254	A1	AA
	Meta	1,640	Aa3	AA-
	Microsoft	2,919	Aaa	AAA
	Oracle	432	Baa2	BBB
	Alibaba	349	A1	A+
	ByteDance	Private	-	-
Neoclouds	CoreWeave	50	Ba3	B+
	Crusoe	Private	-	-
	FluidStack	Private	-	-
	Lambda	Private	-	-
	Nebius	27	-	-
	Nscale	Private	-	-

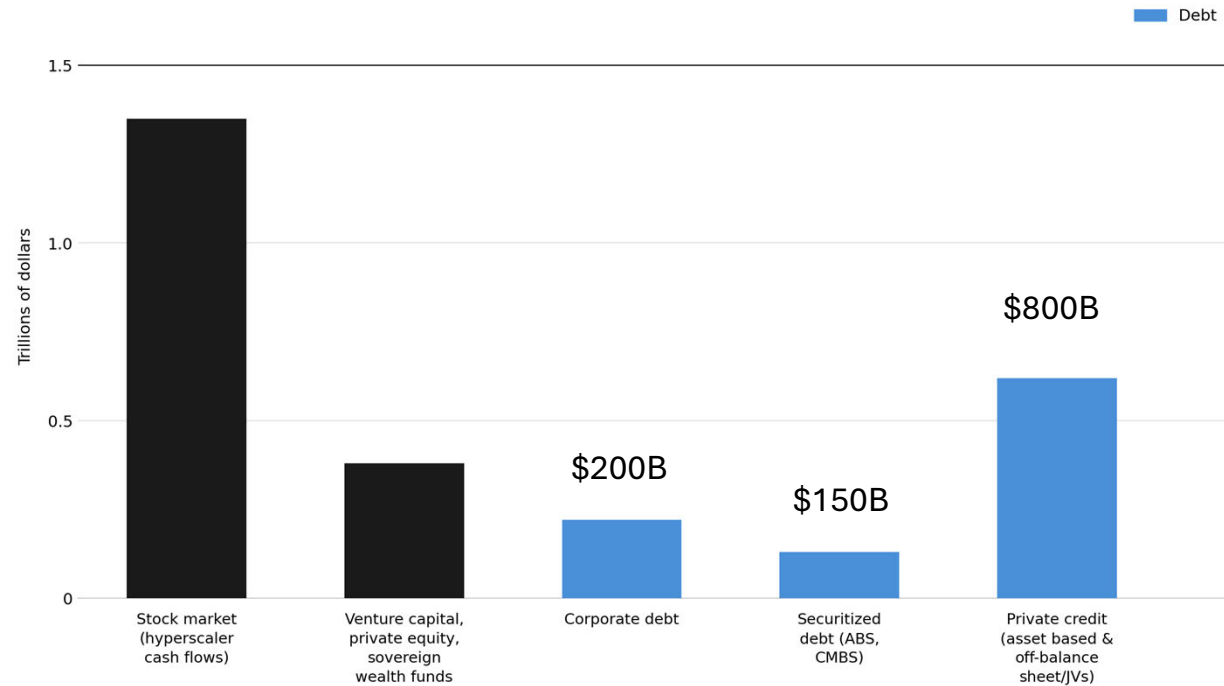
AI model developers go through the Hyperscalers for compute needs, **borrowing their credit rating**

- OpenAI: long-term deal with Microsoft (Azure), Coreweave, Oracle
- Anthropic: long-term deal with Amazon (AWS), Google

Market cap and credit ratings as of Feb 27, 2026

Capital Providers

- Total cost to build the compute that hyperscalers need between 2025 and 2028: \$2.9T
- \$1.3T for DCs, \$1.6T for IT
- 48% financed with hyperscaler equity (FCF),
52% externally financed
- 60% equity, 40% debt: \$800B private credit, \$200B corporate debt, \$150B securitized debt
- Most of the hyperscaler equity is for IT needs, most of the debt is for DC real estate needs

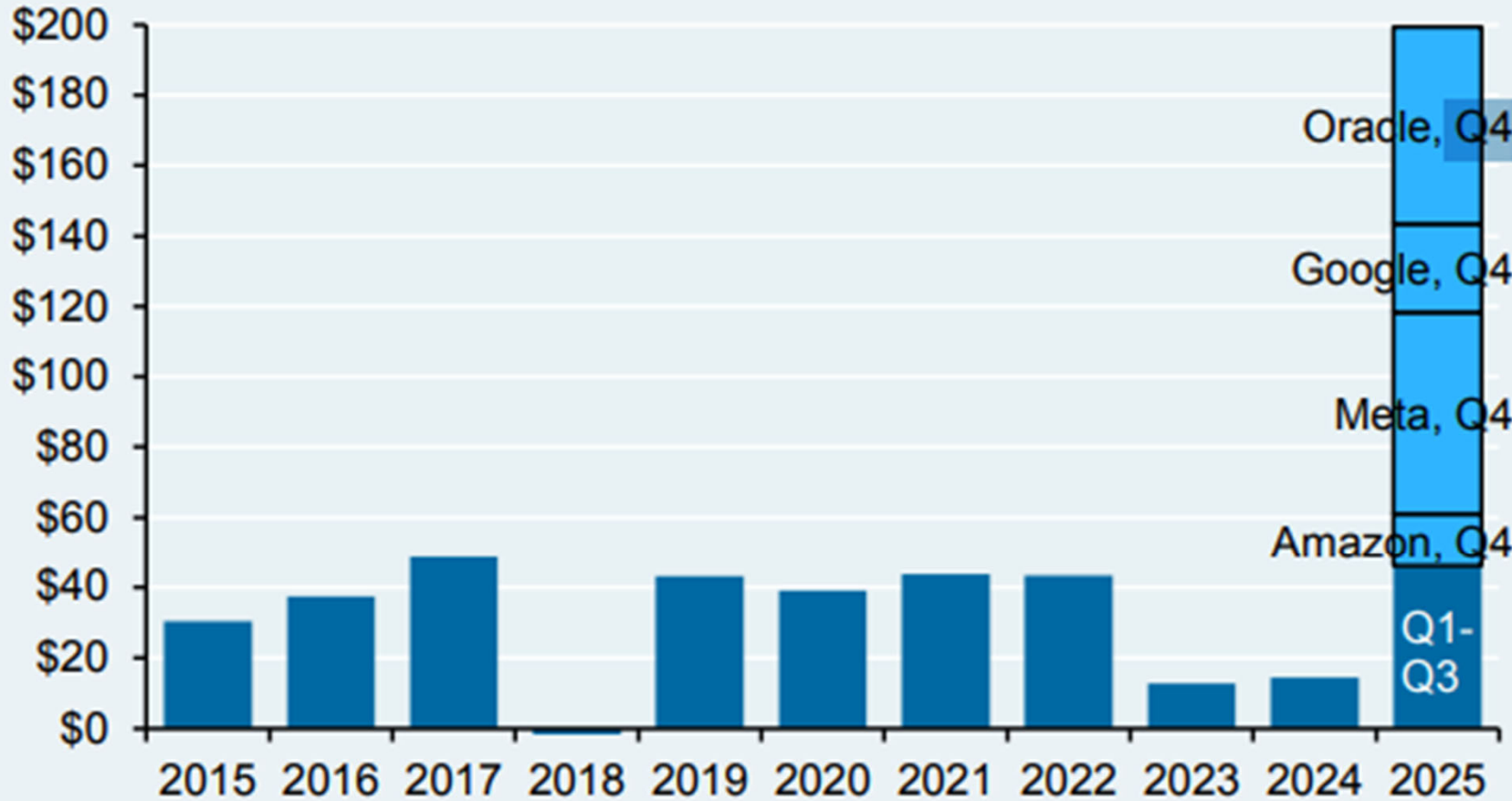


Source: Morgan Stanley Research, Aug 2025

=> DC leverage much higher than 40%, closer to **70%**

Hyperscaler Corporate Debt

Annual change in hyperscaler long term debt (bonds, loans and leases), US\$, billions

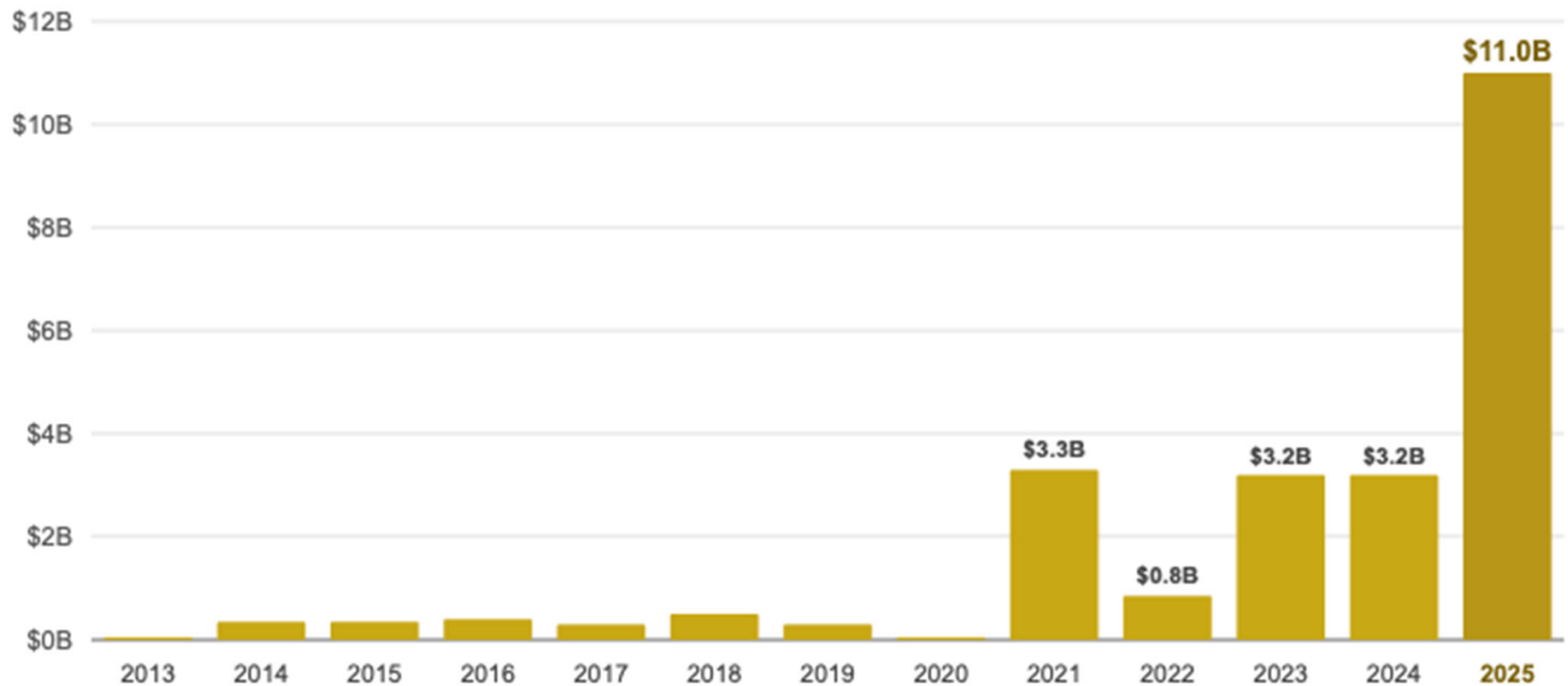


Source: Bloomberg, Company sources, JPMAM, 2025

CMBS Financing

Turnkey data centers have accounted for most SASB CMBS transaction collateral in recent years

Data center SASB CMBS annual issuance, billions

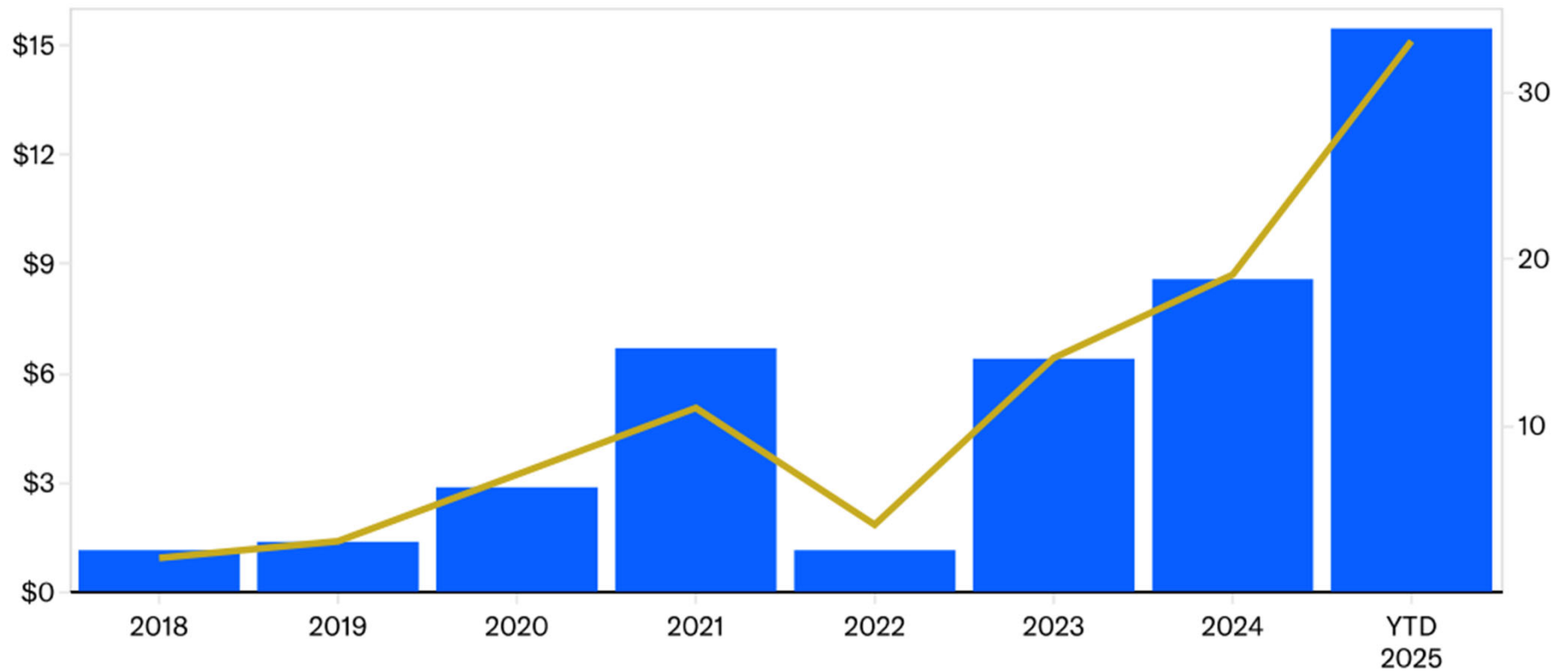


Sources: Trepp LLC and Moody's Ratings

ABS Financing

US data center ABS transaction volume has grown substantially in 2025

■ Issuance volume, billions (left axis) — Number of deals (right axis)



2025 data run through November.
Sources: Finsight and Moody's Ratings

GPU-backed Securitization

- **SPV acquires GPUs and leases them to hyperscaler, neocloud, or AI cloud co.**
- Allow users to access computing power without upfront capex burden
- *This may become an important tool for moving large IT capex off-balance sheet and remain asset-lite*

Characteristic	Typical Equipment ABS	GPU ABS	Power Conversion Equipment ABS
Lessee pool diversity	Diversified	Concentrated	Concentrated
Lessee credit quality	Situational	Situational	Senior cash flow from datacenter owner
Equipment useful life	Varies	Short (4-6 years)	Long (30-35 years)
Obsolescence risk	Varies	High	Low
Residual value	Limited	Limited – rapid depreciation	Depends on asset age
Amortization	Fully amortizing	Front-loaded to zero/bullet	Back-loaded to zero/bullet
Repossession risk	Low	High	Medium

Private Credit

- Alternative lenders have raised large amounts of private credit
- In DC space, about \$200-250B of private credit currently involved
- DCs are highly capital intensive: excellent place to deploy lots of PC dry powder
- PC is not averse to structural complexity, likes lending to IG credit
- Heavy concentration in PC: top-5 60-70% market share, next-10 20-25% share

Largest private-credit lenders to AI data centers



Lender	Estimated DC exposure / pipeline	Example deals
<u>Blue Owl Capital</u>	~\$65–70B	\$27B Meta Hyperion financing
<u>Blackstone</u>	~\$30–40B+	Aligned Data Centers financing, digital infrastructure funds
<u>Apollo Global Management</u>	~\$25–35B	hyperscale infrastructure financing and digital-infra loans
<u>Brookfield Asset Management</u>	~\$20–30B	hyperscale campuses and digital-infra debt
<u>KKR</u>	~\$15–25B	data-center platforms and infrastructure lending

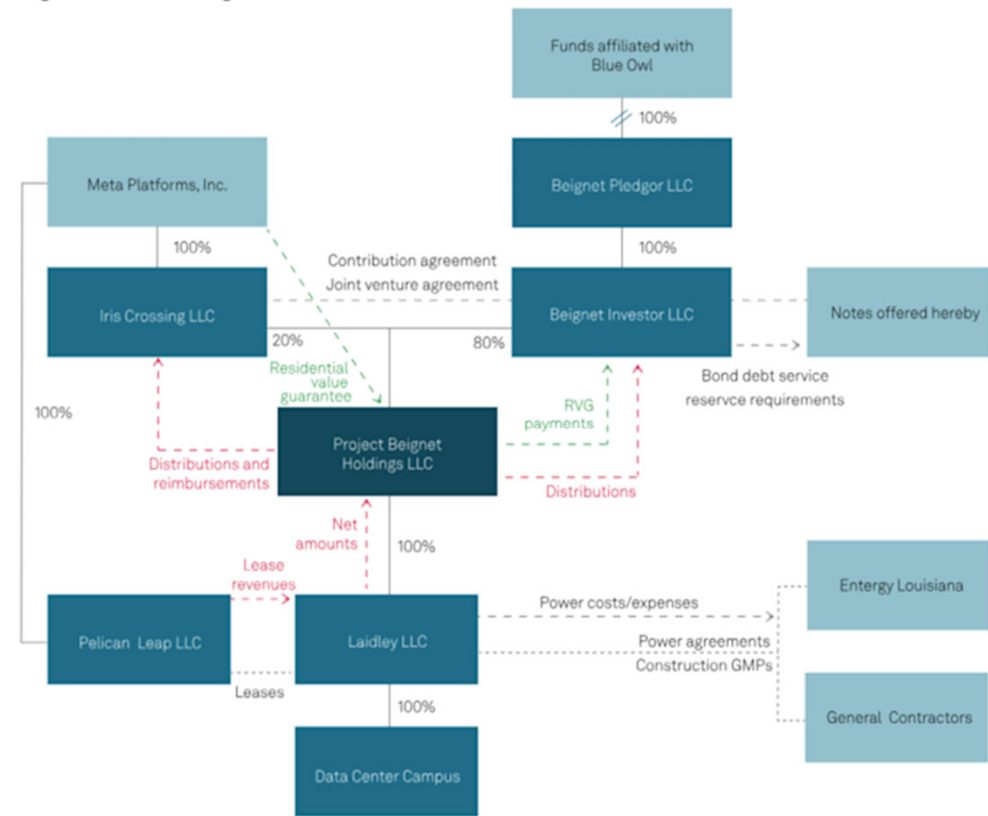
3. The New Finance Architecture of the AI Buildout Transfers Risk and Increases Opacity



Landmark Deal: Meta's Hyperion DC

- **2.06 GW** facility in Richland Parish, LA
- In construction; to come online in 2029
- Final potential scale: 5 GW
- Meta began construction in Dec 2024 as 100% owner
- Pivoted and sold 80% equity stake to Blue Owl in October 2025 for \$2.5 B, formed JV “Beignet”
- Beignet issued **\$27.3 B in debt** on October 16, 2025
 - **Largest single IG bond ever issued in the U.S.**
 - Rated A+ by S&P (only credit rating)
 - One notch below Meta’s corporate credit rating
 - Maturity: 2049, co-terminus with lease, amortizing
 - Coupon: 6.58%
 - 120 bps higher YTM than Meta unsecured corporate debt; amounts to **\$5.7 B in extra interest payments**
- **Beignet leverage ratio: \$27.3 B/\$30.425 B = 90%**
- Structural complexity!
- SPV bankruptcy remote -> no recourse to Meta’s bs

Beignet Investor LLC organization structure

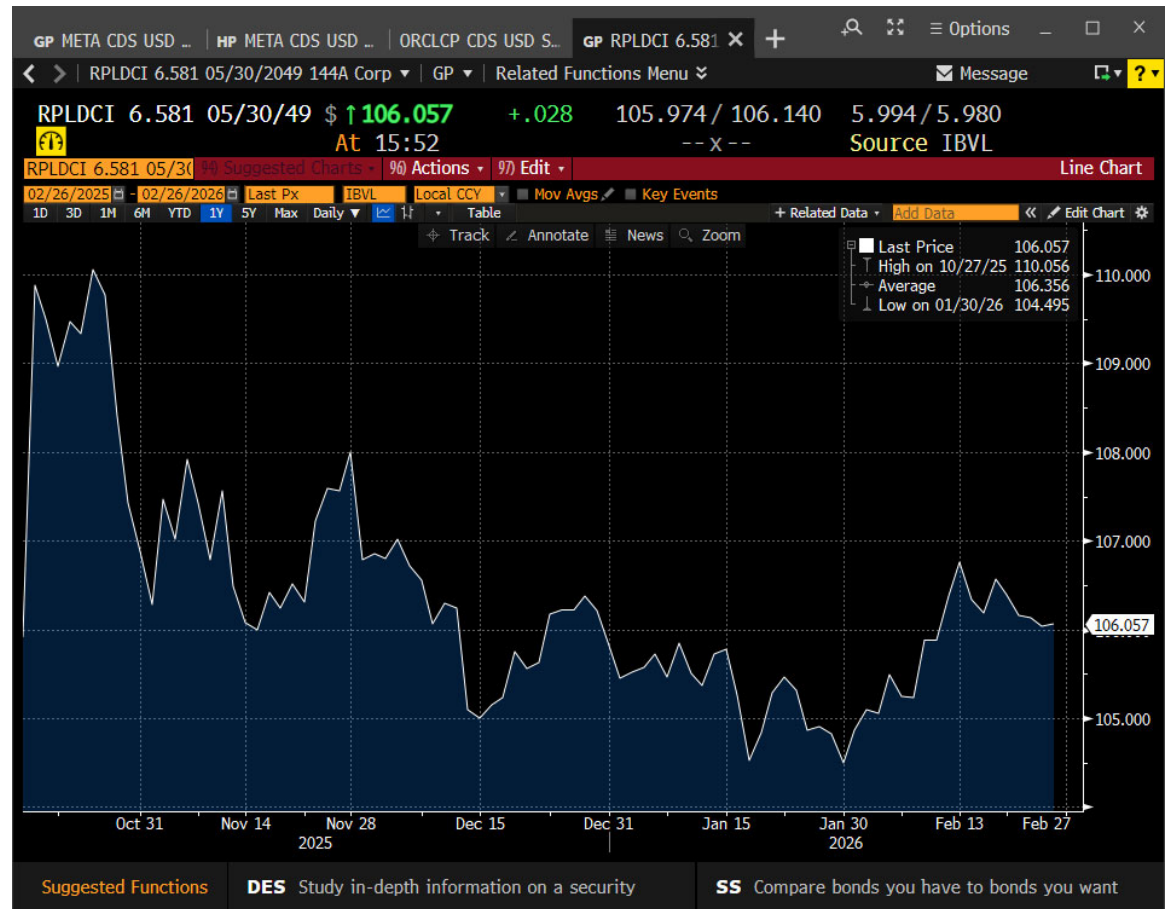


Source: S&P Global Ratings. Copyright © 2025 by Standard & Poor's Financial Services LLC. All rights reserved.

Source: S&P Beignet offering memorandum

Hyperion Bond Price

- Price jumped from \$100 to \$110 after issuance
- Yield: 6.58% -> 5.68%
- PIMCO bought nearly \$18B of the bond; realized ~\$2B in profit
- Bond currently trades at \$106
- Because bond is 144A-for-life issuance with limited distribution, not part of Bloomberg's Corp or Agg bond indices, and no requirement of annual financial reporting to SEC



Source: Bloomberg

Hyperion's Innovative Lease Structure

- Meta is developer; **bears all construction risk**: cost overruns and time delays
- Meta is **sole tenant**: signed **five consecutive 4-year leases, 2029-49**
 - 4-year lease term coincides with IT cycle
 - Gives Meta flexibility to scale down at various points
 - Building large-scale DCs requires long-term tenant commitment
 - Meta signed **residual value guarantee (RVG)**
 - If Meta terminates lease, owes a minimum guaranteed value
 - Lease termination triggers sale
 - Meta owes $\max\{0, \text{MGV} - \text{sale value}\}$
 - Amounts are such that bond can be paid off



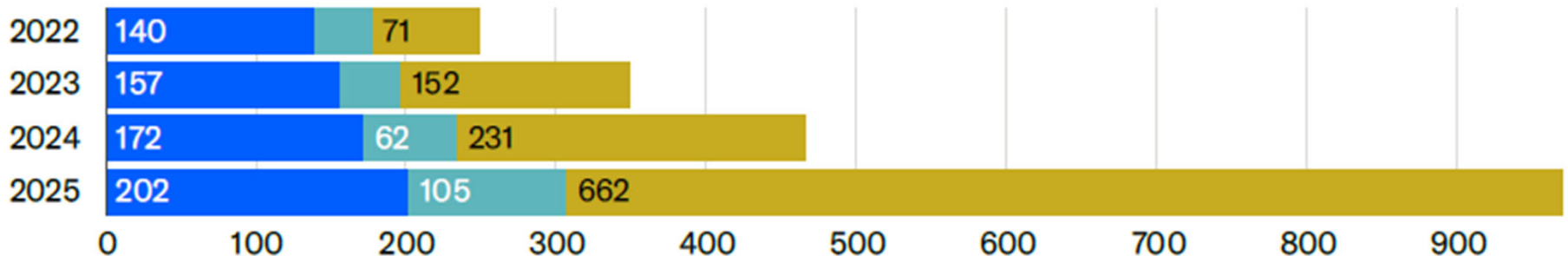
Regulatory Arbitrage: A Probability Vacuum

- Because lease renewals are not at least 70% likely, Meta need not account for future lease obligations beyond the first 4-year lease under GAAP
- But because RVG is also not probable, Meta need not account for RVG either
- Has led credit ratings agency (S&P) to not include *either* obligation in adjusted debt
- While one of these two obligations will happen with prob 1, neither scenario is reflected on Meta's balance sheet
- Future lease obligations or realizations of RVG will be reflected on bs, but only when they occur

Exhibit 1

Hyperscalers' data center commitments soar, with most for leases that have yet to start
Undiscounted future lease payments

■ Operating ■ Finance ■ Yet to be commenced



Amounts in billions USD as of 12/31/25 SEC filings for each company

Source: Moody's Ratings

The New Financial Architecture of AI Buildout

- DCs have been around for 25 years, but this ain't your daddy's DC
 - DCs and the IT that goes in them have become much more expensive (P), and tech companies need a lot more compute (Q)
- To **preserve their high-growth valuation multiples and strong credit rating**, hyperscalers must keep on-bs leverage low, cash high, and ROIC high
 - Software firms trade at higher valuation multiples than infrastructure firms
 - Moving invested capital on-bs lowers ROIC and leads to **multiple compression**
 - Much larger \$ impact on equity valuation than extra cost of off-bs financing
- Leads AI companies to shift DC debt off-BS, taking on lease obligations instead of debt
 - **Enables higher LTV** (e.g., 90% LTV for Hyperion)
 - No accounting recognition of future leases or RVGs, a form of **regulatory arbitrage**
 - No impact on credit rating (yet)
 - Keep optionality of non-renewal of future leases; RVG as bundle of put options
 - Complex structured finance solutions **add opacity**

A bear's face is formed by dark, stormy clouds. The bear's eyes are glowing with a bright red light, set against a dark, ominous sky with swirling clouds.

AI RISKS

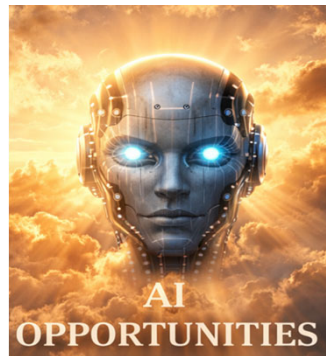
A futuristic robot head is shown from the chest up, set against a bright, golden sky filled with clouds. The robot's eyes are glowing with a bright blue light, and the overall scene is illuminated by a warm, golden glow.

**AI
OPPORTUNITIES**

What Could Go Wrong?

The bullish case

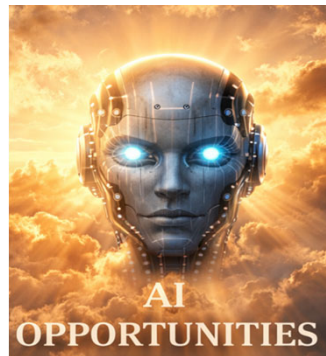
the practitioner perspective



- The modern economy is data-centric, DCs are critical infrastructure
- AI will be a productivity miracle, with ample revenue for AI companies
- Use cases for AI are 12 miles long and growing
- Years of growth in compute and new DC development lie ahead, esp. given how slow it is to build new DCs, chips, server racks, and power
- DC vacancy is at an all-time low and rent growth at an all-time high. This protects margins for current DC operators.
- There is no speculative DC development, and hence no risk of overbuilding. Credit tenants sign long-term leases, creating predictable cash flow.
- Even if one of these tenants were to disappear, **compute is compute**. There are many potential users of the DCs and GPUs clamoring for capacity.

The bullish case

the academic perspective



- Equity and debt investments in AI and DC companies are a hedge against the displacement risk of AI
 - Labor market disruptions
 - Other affected business sector disruptions (e.g., SaaS selloff in stock market in Feb 2026)
- New finance architecture: Risk born by entities who can best withstand it
 - Unlevered pension funds, bond mutual funds, private credit funds
 - Many of these invested on behalf of wealthy individuals

Risk 1: Hyperscalers face rising cost of capital



- Capex keeps growing relative to operating cash flows from AI if Hyperscalers decide to fund IT capex on-bs + when future lease obligations come on-bs
 - > Higher Leverage
 - > Higher cost of debt; maybe credit ratings downgrade
 - > Higher cost of equity: Multiples compression as hyperscalers slowly become infrastructure rather than software firms
 - > Higher DC leasing costs
- Ultimately depends on **ROIC**: how fast can revenue from AI grow?
 - AI use currently heavily subsidized with mostly free accounts what is demand at $P > \text{marginal cost of compute}$?
 - Given ~5-year economic lifespan of IT equipment, revenue growth needs to occur in the near term

Risk 2: Tenant Credit Risk



- Many DCs have single tenant – concentration risk
- Could one of the hyperscalers implode in the next 5 years?
- One of the large AI model companies implodes (e.g., OpenAI, Anthropic, xAI)
 - Largest users of AI model training compute
 - the vagaries of markets and policy (e.g., Anthropic being banned as contractor non grata by U.S. government)

5Y CDS Spreads - Oracle (Since 2023-01-01)



5Y CDS Spreads - Meta, Microsoft, Amazon, Alphabet (Since 2023-01-01)



Risk 3: Development & Operational Risks



• Development

- Long delays for power infrastructure
- DCs build their own behind-the-meter power generation
- **Bottlenecks in IT infrastructure supply chain** (logic, memory, lithography EUV, rare earths)
- Cost overruns (monopoly pricing)
- Delays due to community resistance to DCs

• Operations

- Cost of electricity could go up
- GHG emission & water use standards could tighten

Data centers are skipping the grid

Data center developers announced 48 GW of behind-the-meter projects in 2025, according to Cleanview's project tracker. Now 33% of all planned capacity is expected to come from BTM data centers.

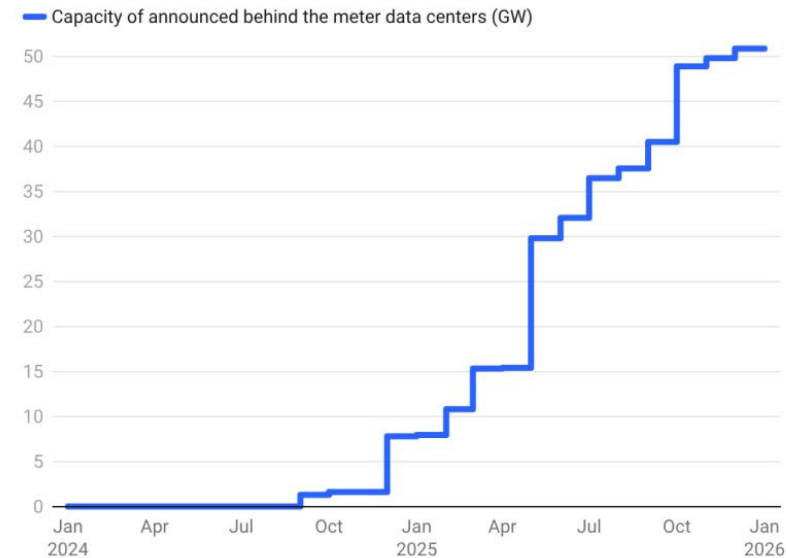
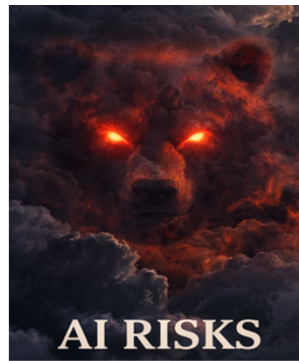


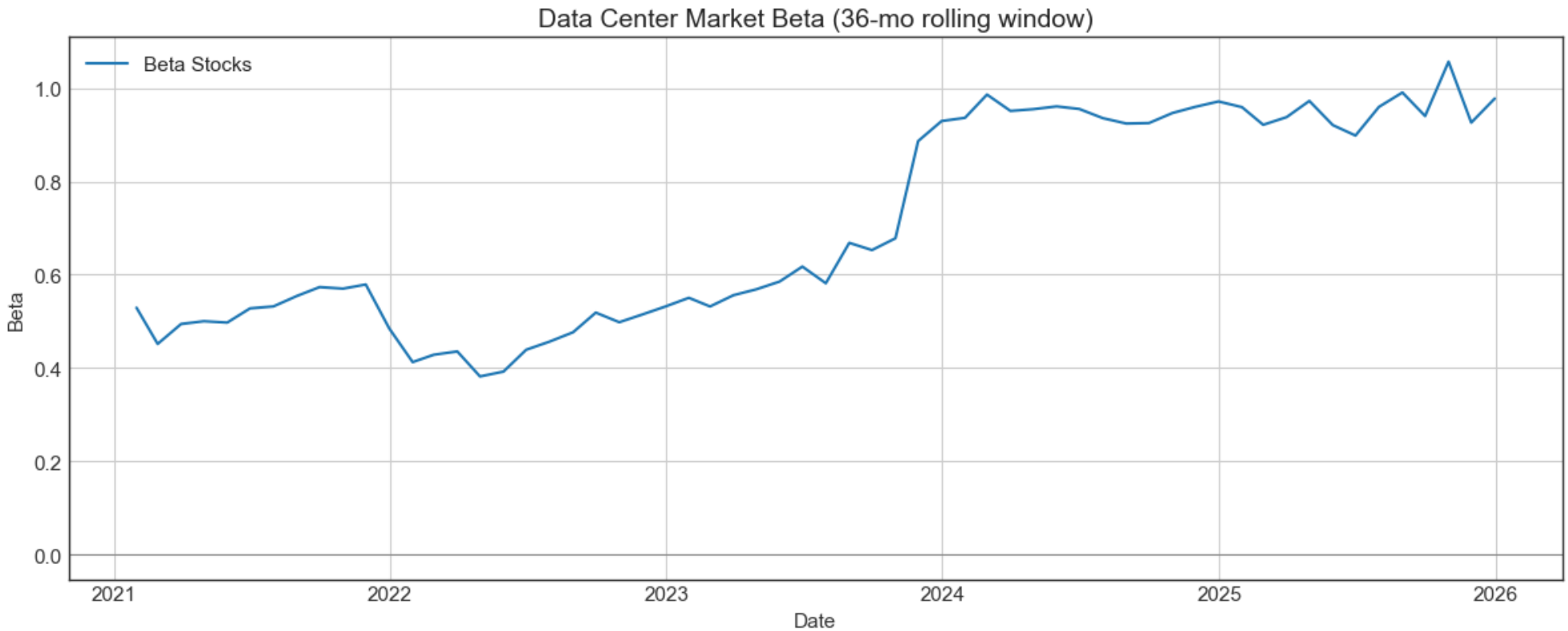
Chart: Michael Thomas • Source: Cleanview project tracker • Created with Datawrapper

Risk 4: Collateral Values: Technological Obsolescence Risk



- GPUs continue to improve at rapid pace, reducing value of IT on-b-s
 - Yet hyperscalers have lengthened depreciation schedules, increasing earnings
- DCs cooling and power infrastructure could become obsolete if technology changes rapidly (further increases in power density)
- or a different compute technology emerges
 - Quantum computing
 - Edge computing (small language models)
 - Large increases in chip efficiency (AI inference chips)
- DCs often custom built – limited/costly re-deployability
- Misallocation: may have too many AI training vs. AI inference DCs
 - Decreasing gains to model efficiency
 - LLM arms race -> Duplication of effort? (ChatGPT, Gemini, Claude, Groq, Lama, etc.)
 - Different locations -> limiting conversion options

Risk 5: Systematic Risk of DCs is Increasing



Market beta of DC REITs is rising – **hedge** against stock market risk?

Risk Shifting

- Financial risks of AI/DC are increasingly shifted from hyperscalers to private capital pools
 - Pension funds, insurers, credit funds, BDCs, ABS and CMBS buyers, and bank counterparties
 - Households are the beneficiaries, investors, depositors in these institutions
- Originate-to-distribute model did not work out so well in GFC (Gete and Mercader, 2026 for early evidence on DCs)
- Distributional consequences
 - Technological innovations result in rising wealth inequality, AI stocks imperfect hedge (Kogan, Papanikolaou, and Stoffman, 2020)

Conclusion: What To Look Out For?

- **Revenue growth from AI**
- **Growing leverage and financial opacity**
 - Growing leverage off-balance sheet
 - Unaccounted lease commitments,
 - Weaker loan underwriting
 - Risk circularity – aggregate, systemic risk of AI buildout
 - Neoclouds and AI cloud companies are the weakest link in the credit chain
- **Technological disruption**
 - Better chips, alternative computational methods, abundant power



Conclusion: What To Work On?

- **Better measurement of risk**, capturing the full credit stack
- **Better accounting frameworks**, increasing transparency of future obligations
- **Better risk models**, accounting for interdependencies and contractional optionality
- **Better models of collateral valuation and depreciation for DC and IT**
- **Corporate finance**: valuation consequences for hyperscalers when becoming more physical capital intensive, but economically dependent on these assets
- **Financial intermediation and stability**: parallels and differences with prior infrastructure booms and busts
- **Local public finance implications of AI buildout**, local externalities, infrastructure siting, subsidies (Gargano and Giacoletti 2026)



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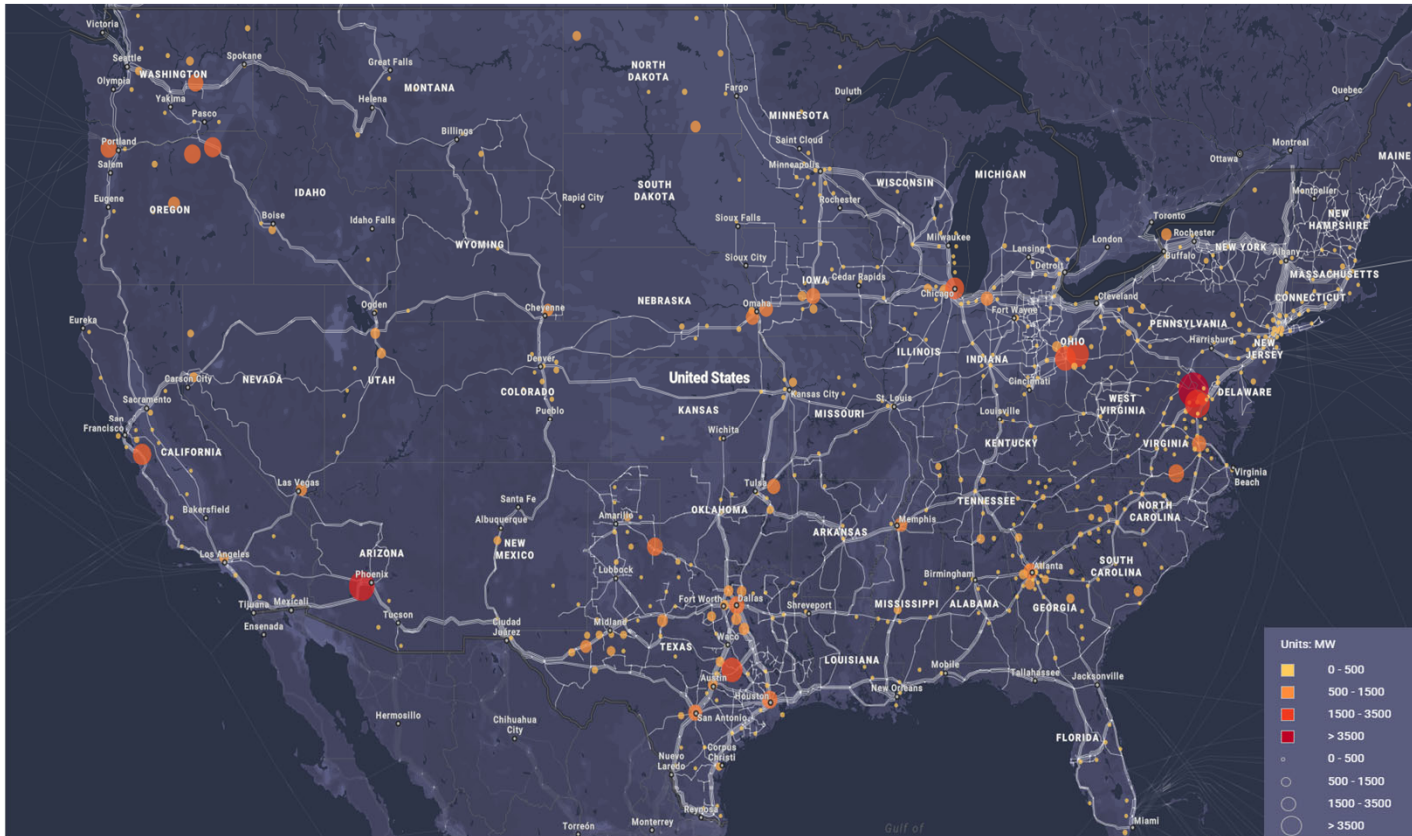


Thank you!

The Geography of the AI Buildout



Where DCs are operating today



Top Counties

No Va (Loudoun): 5.4 GW

No Va (Prince William): 1.8 GW

Columbus (Licking): 1.3 GW

Columbus (Franklin): 1.3 GW

Phoenix (Maricopa): 2.2 GW

Austin (Milam): 1.2 GW

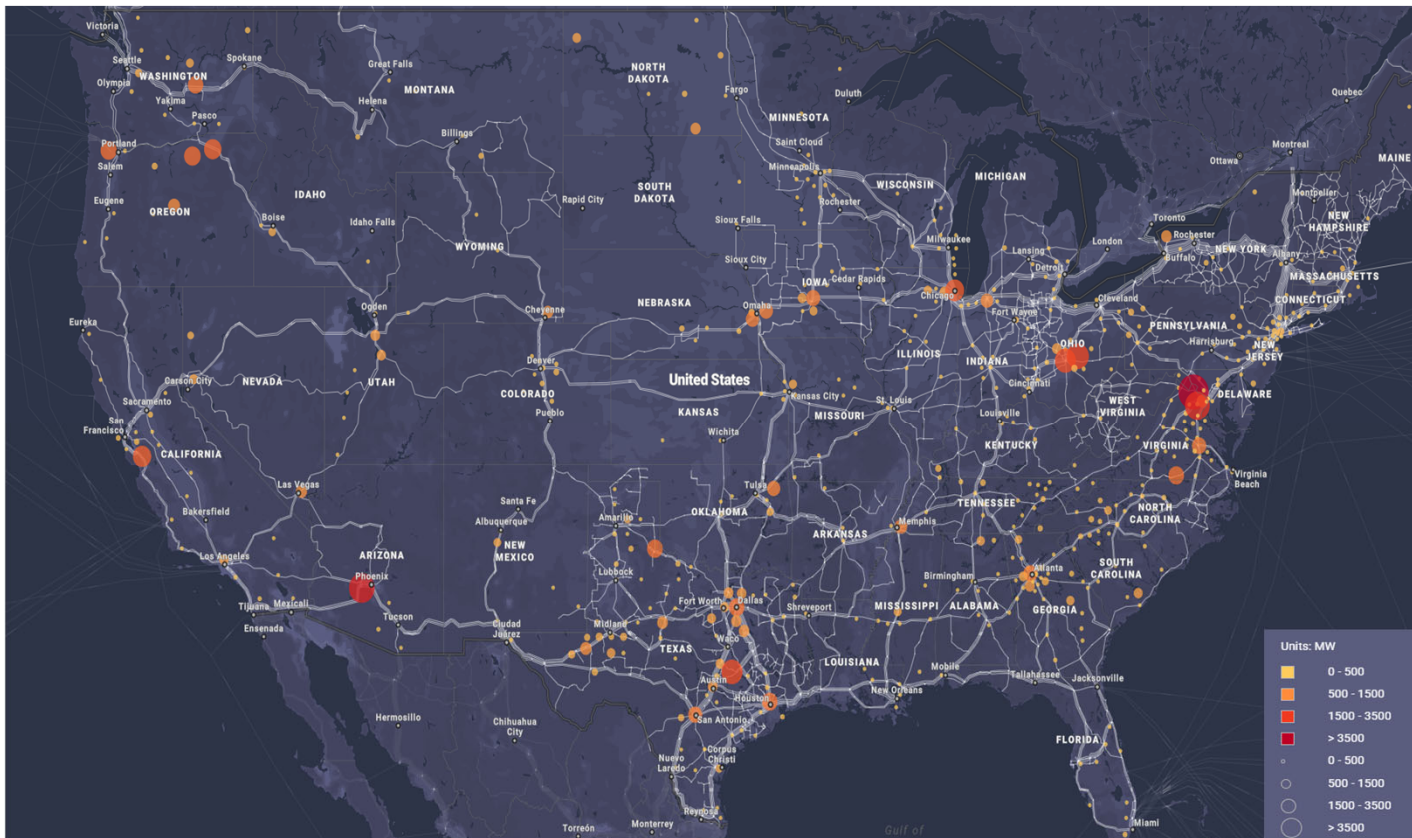
Chicago (Cook): 1.07 GW

San Jose (Santa Clara): 1.02 GW

Total U.S.: 51 GW

Source: National Laboratory of the Rockies

Where DCs are operating + in construction



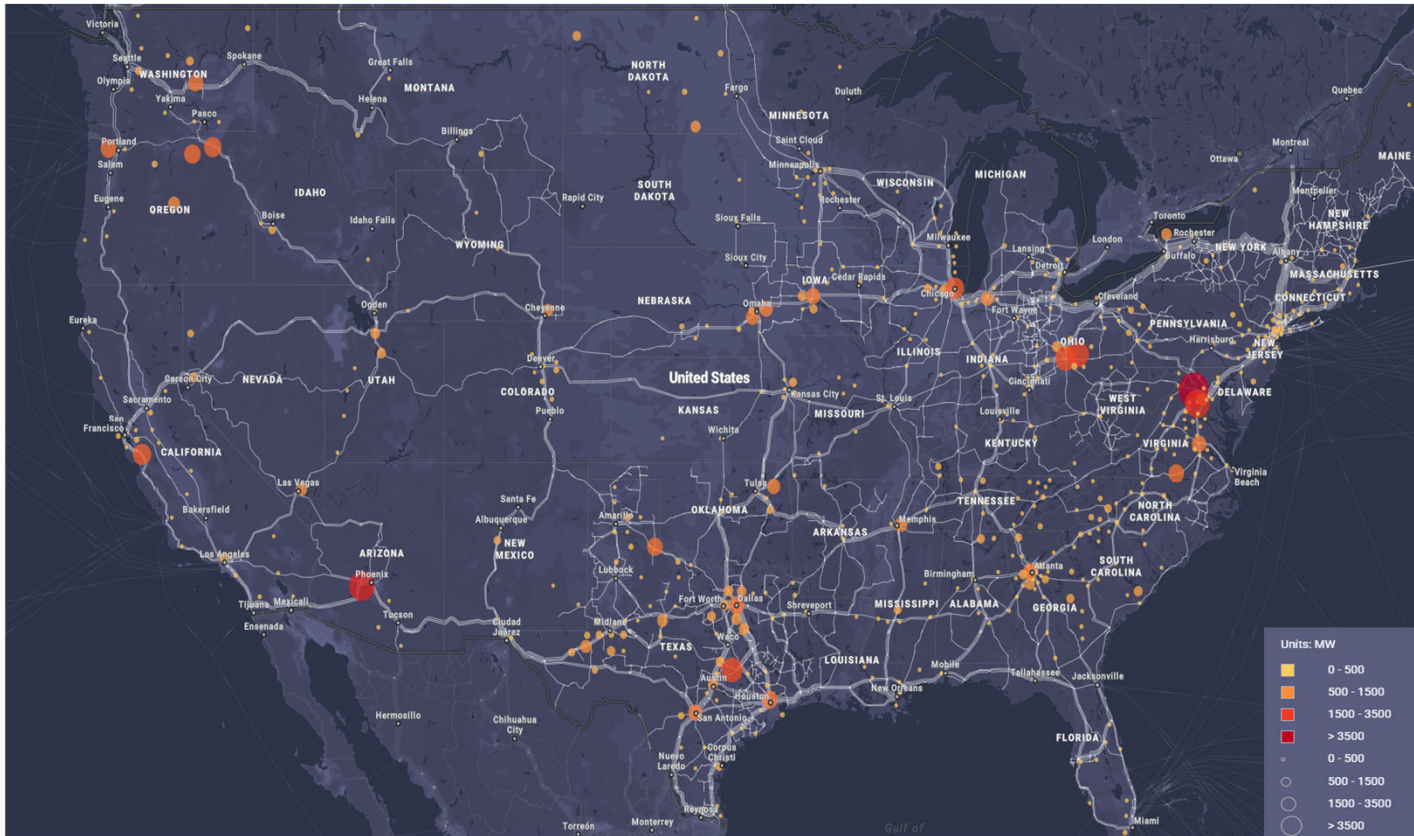
Operating: 51 GW
In construction: 36 GW

2/3 of new construction is outside traditional DC markets

Texas positioned to overtake No Va as the largest market by 2030 (6.5 GW in construction)

Source: National Laboratory of the Rockies

Where DCs are planned

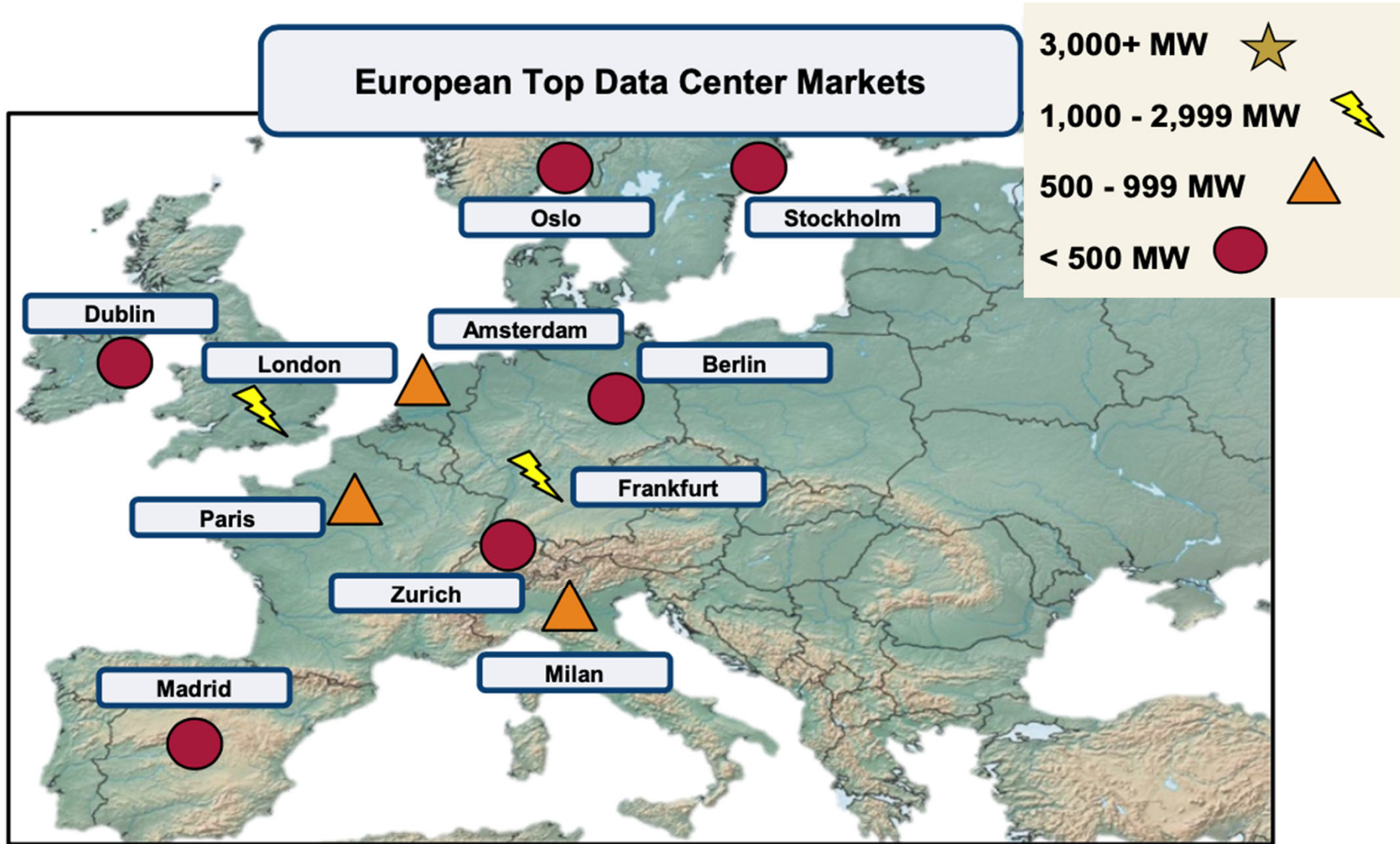


Operating: 51 GW
In construction: 36 GW
Additional planned: 200 GW

See Brandsaas et al.
(2025) for nowcast of
planned DC investment

Source: National Laboratory of the Rockies

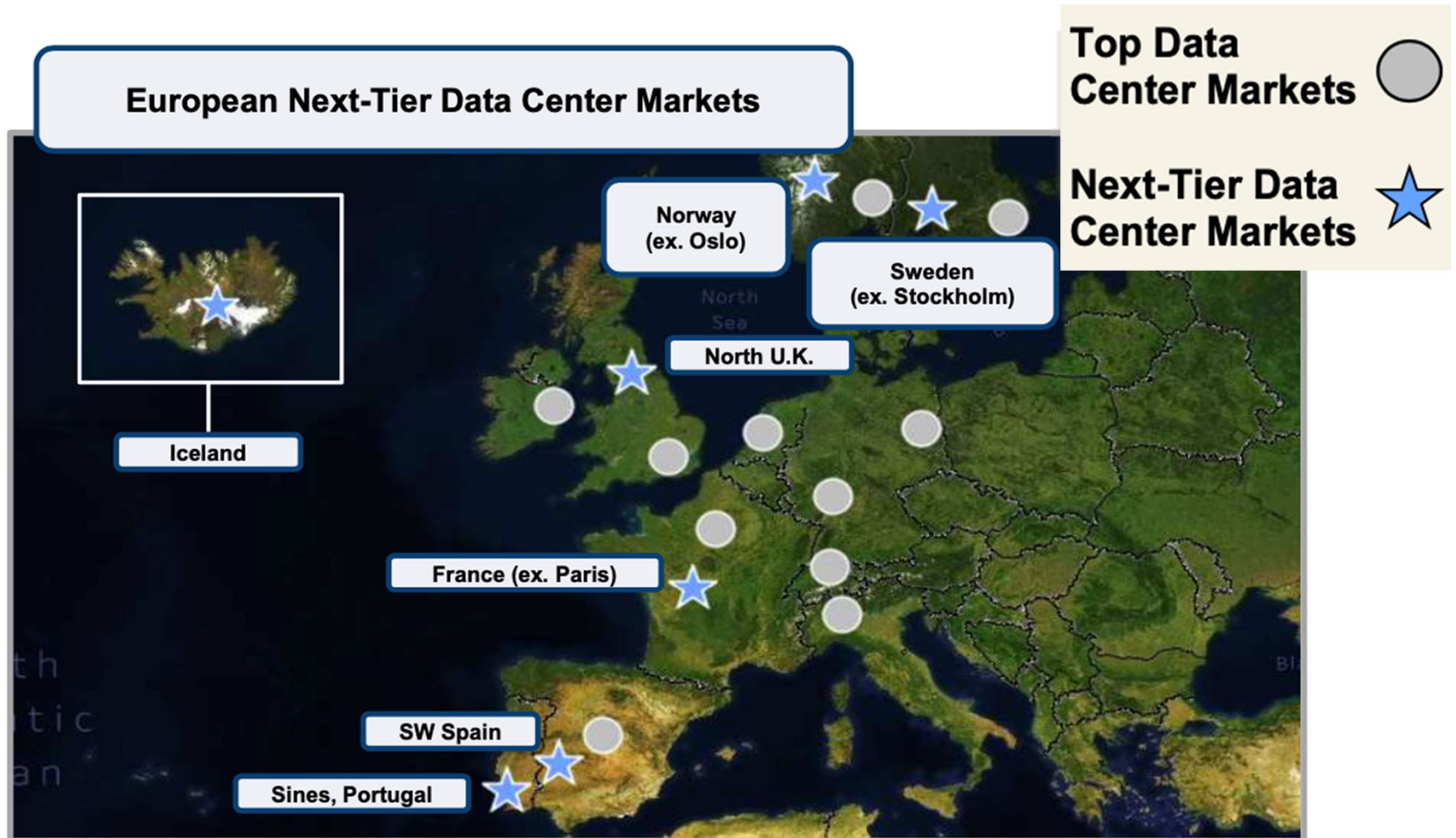
Major Markets in Europe (FLAPM)



Source: Green Street.

Size in MW based on end of year '25 estimates

Europe's Next-Tier Markets



Source: Green Street.

New DCs needs approvals, but NIMBYism growing

Concern	Issue	Example
Power Consumption	Enormous electricity draw strains local grids, may pushes up electricity rates for residents	Northern Virginia proposed rate increases partly attributable to data center load
Noise & Pollution	Diesel generators and industrial cooling run 24/7	Frequent source of community complaints in residential-adjacent sites (inferencing)
Water Usage	Evaporative cooling uses millions of gallons daily	Mesa, Arizona approved a facility using 1 million+ gallons/day despite severe drought conditions
Land Use	Large facilities occupy lots of land, competing with housing for scarce urban land	Hyperion data center in LA nearly the size of Manhattan
Fiscal trade-off	Tax incentives to attract DCs offsets economic benefits to the community	Undermines the jobs & tax base arguments governments use to justify approvals

- But...** it is also true that DCs
- Provide **critical infrastructure** for our often-essential (and growing) digital needs
 - Pay a disproportionate share of property taxes
 - Could provide backup power to increase the resilience of the power grid
 - Could save on water use with new cooling technologies

Location, location, location? Power, power, power!

DC location choice trades off **key considerations**:

- Need to be close to population centers (AI inference vs. AI training)
- Availability and cost of power; ability to quickly/cheaply add power
- Approval process (zoning, permitting, NIMBYism)
- Financial incentives from local governments (Gargano & Giacoletti, 2026)
- Local property taxes
- Residual value of structure and land in alternative-use scenario

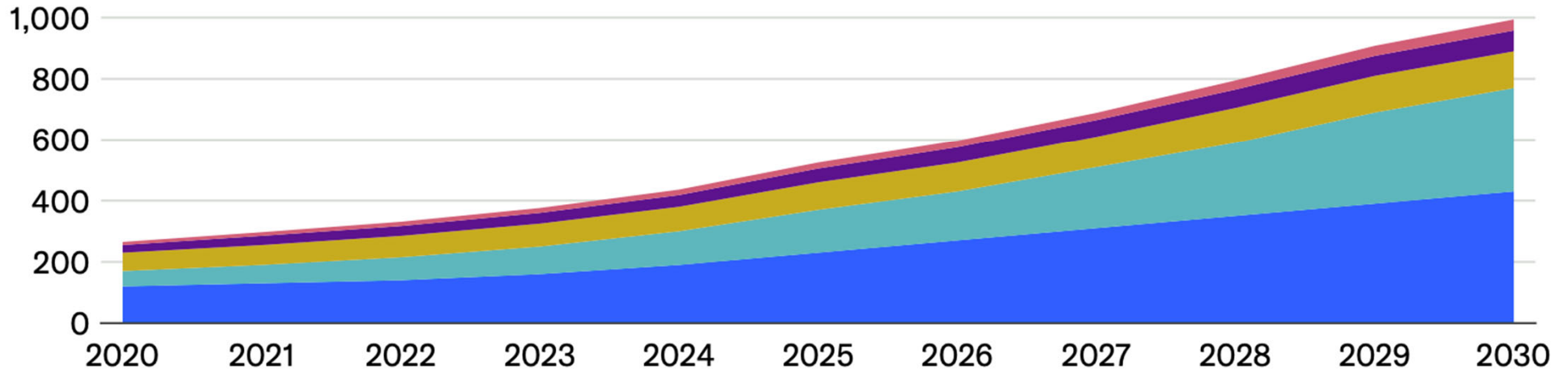
Unlike in traditional real estate, overwhelming concern is **power availability**

- Grid connection timelines average 4 years
- Requires securing capacity years in advance
- Drives expansion into frontier markets

Data Center Electricity Consumption

US will lead global data center capacity growth in 2026 and through 2030
Data center electricity consumption by region in terawatt-hours, base case, 2020-2030

■ US ■ China ■ Europe ■ Asia excluding China ■ Rest of world



Source: International Energy Agency

DC electricity CAGR 2025-2030: 13.5% (global) and **15%** (US),
after having been flat from 2007-2024



Appendix Slides

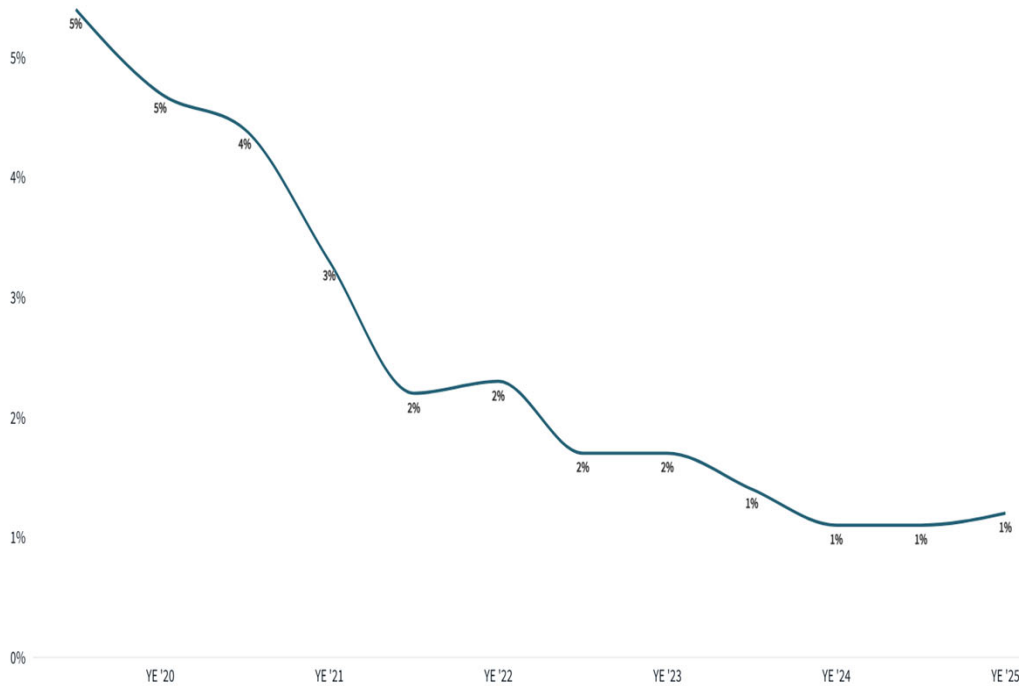
Third-Party Data Center Ownership

Company	Capacity	Public?	Notes / Owners
AirTrunk	2.6 GW	N	Acquired by Blackstone and CPPIB in 2024/2025.
Aligned Data Centers	5.0 GW	N	Owned by BlackRock (GIP) & Microsoft/NVIDIA consortium.
Compass Data Centers	1.2 GW	N	Owned by Brookfield and Ontario Teachers' Pension Plan.
CoreSite	0.6 GW	Y	Publicly traded as part of American Tower (NYSE: AMT).
CyrusOne	2.1 GW	N	Privatized by KKR and Global Infrastructure Partners (GIP).
Data4	0.5 GW	N	Owned by Brookfield Asset Management.
DataBank	0.8 GW	N	Majority-owned by DigitalBridge.
Digital Realty	4.2 GW	Y	Traded as NYSE: DLR (The largest Data Center REIT).
EdgeConneX	1.1 GW	N	Owned by EQT Infrastructure.
Equinix	3.9 GW	Y	Traded as NASDAQ: EQIX.
Global Switch	0.4 GW	N	Majority-owned by Shandong Inspur (Acquisition interest by NextDC).
Iron Mountain	0.7 GW	Y	Traded as NYSE: IRM.
NextDC	0.3 GW	Y	Traded on the Australian Securities Exchange (ASX: NXT).
NTT Data (GDC)	2.8 GW	N	Parent NTT delisted shares in late 2025 (now fully private subsidiary).
QTS Data Centers	2.4 GW	N	Privatized by Blackstone (part of the BREIT portfolio).
STACK Infrastructure	2.5 GW	N	Owned by IPI Partners.
STTelemedia GDC	1.6 GW	N	Acquired by KKR and Singtel in early 2026.
Switch	1.1 GW	N	Privatized by DigitalBridge and IFM Investors.
Telehouse	0.5 GW	N	Owned by KDDI Corporation (though KDDI is public).
Vantage Data Centers	2.6 GW	N	Owned by DigitalBridge and Silver Lake.

DC: Low vacancy, high rent growth

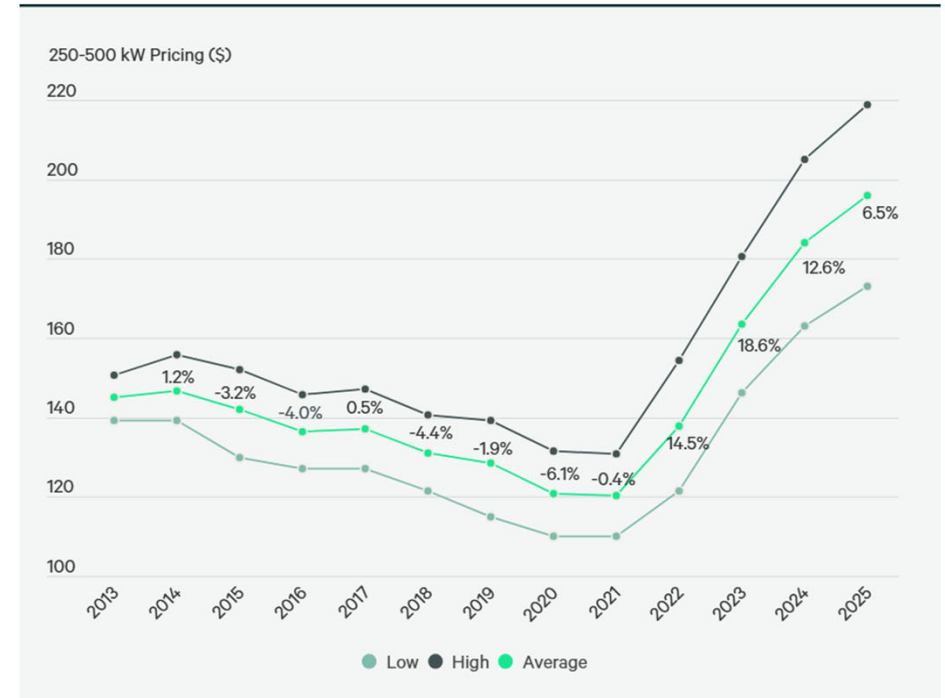
Balance of power has shifted from tenants to landlords

North America data center vacancy (%)



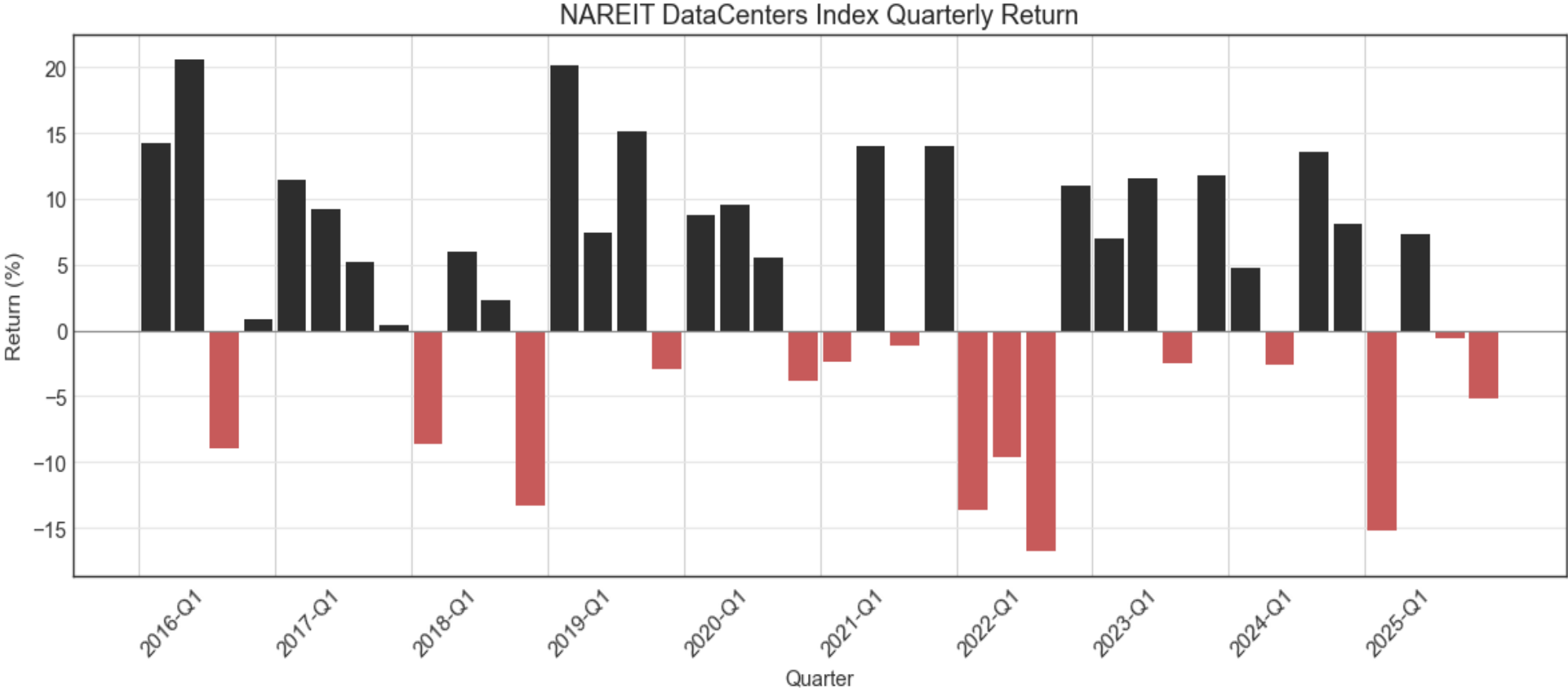
Source: JLL Research. Note: vacancy reflects leased and hyper-owned inventory.

Figure 3: Average Asking Rental Rate with Y-o-Y % Change for Primary Markets

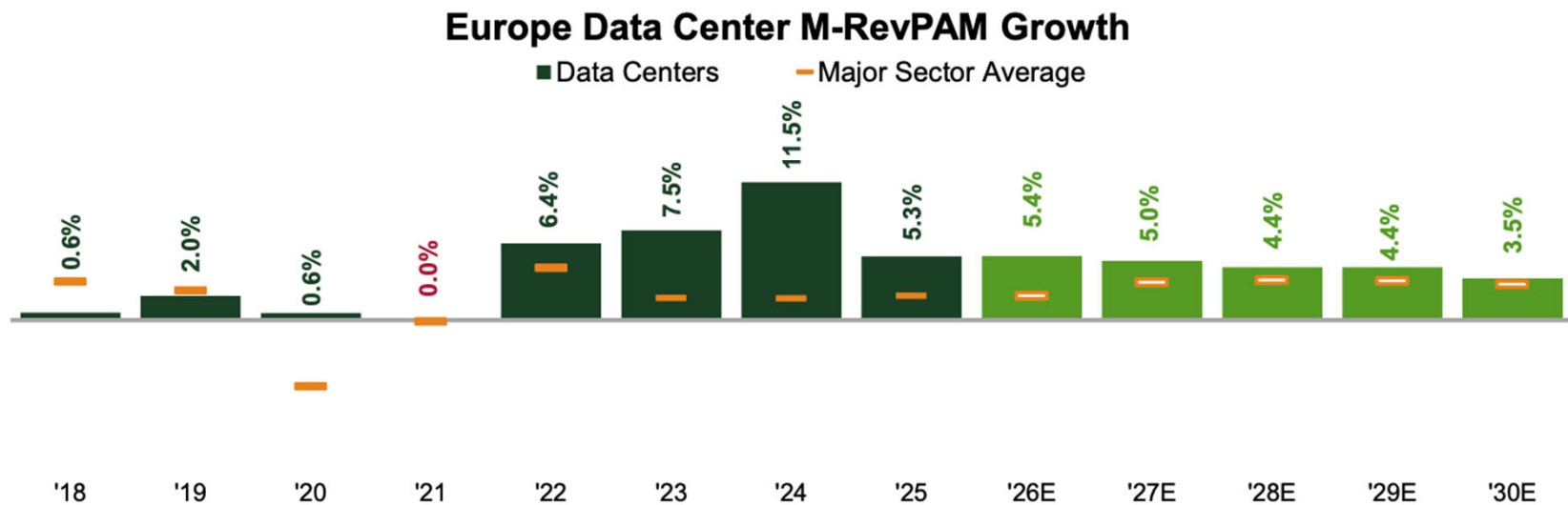
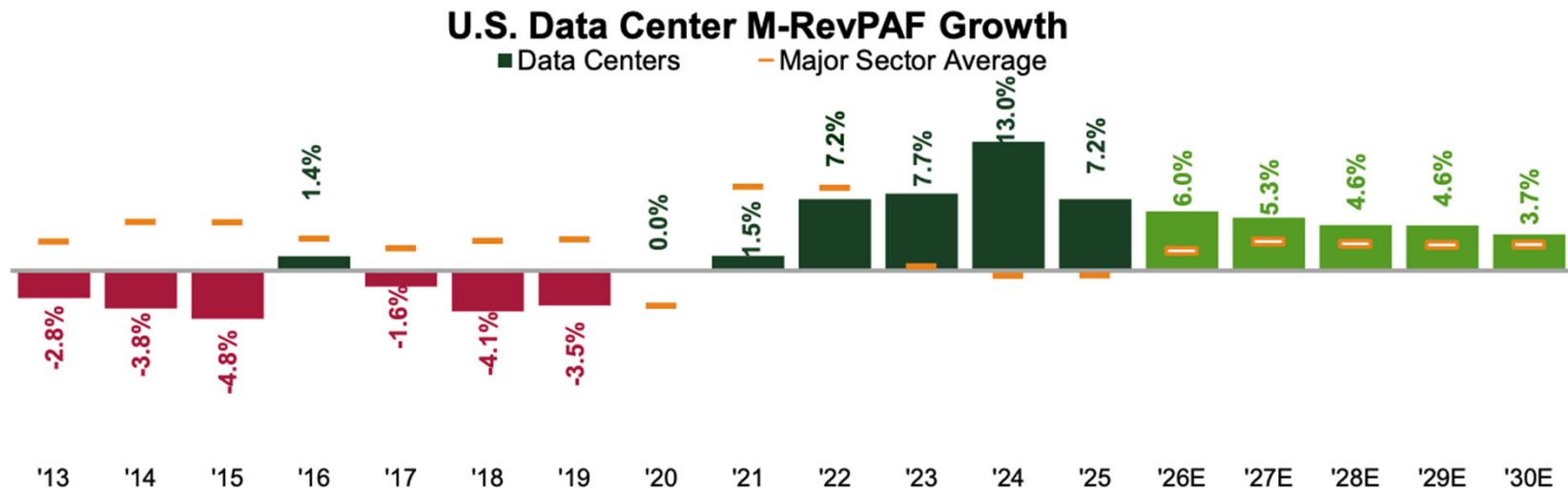


Source: CBRE Research, CBRE Data Center Solutions, H2 2025.

Equity Returns on REIT Data Center Sector



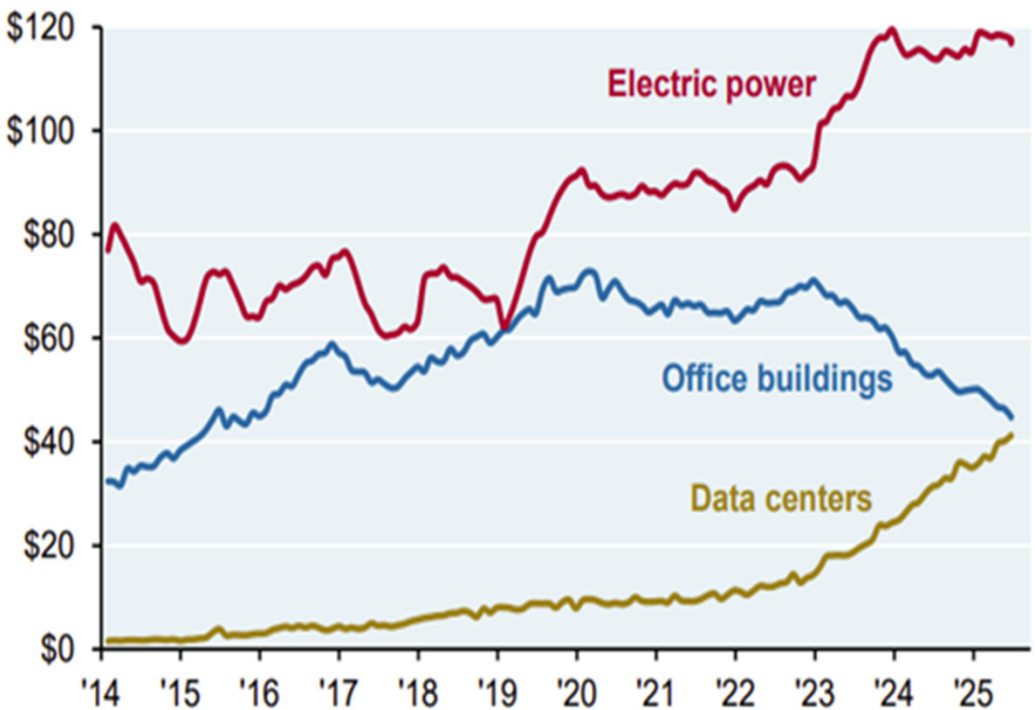
REIT DC Revenue Growth



Data Centers Outpace Office Construction

US construction spending

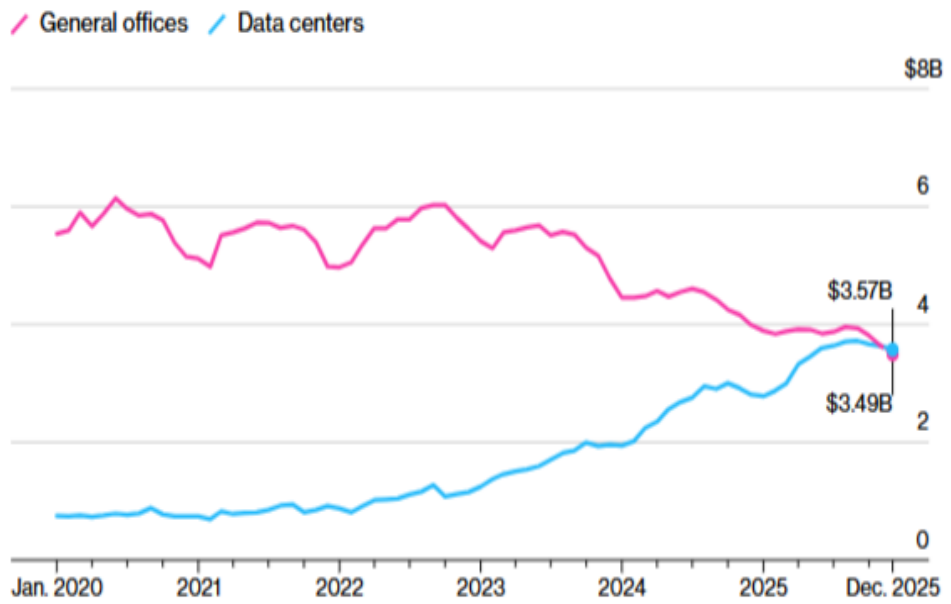
US\$, billions, seasonally adjusted annual rate



Source: Census Bureau, JPMAM, July 2025

Data Center Construction Spending Climbs to Record

Outlays for data center projects overtook offices in December 2025



Note: Data for November and December are preliminary. Spending on racks or servers within data centers is not included.
Source: US Census Bureau

Leasing Standards in Data Centers

The Uptime Institute Tier System

- Tier I & II: Basic infrastructure with minimal redundancy — largely obsolete for institutional capital due to single points of failure
- Tier III (*Gold Standard*): Concurrently maintainable — any component can be serviced without taking the facility offline; no single point of failure during maintenance
- Tier IV: Fully fault-tolerant — facility sustains operations even through major equipment failure or grid outages; commands a scarcity premium from mission-critical tenants such as banks and government entities
- **Tier III is the minimum baseline for institutional-quality assets** — below this, facilities struggle to attract creditworthy tenants or command market rents

What This Means for Leasing Economics

- Tier III+ certification requires highly standardized design across power, cooling, and connectivity — tenants plug into a ready-made environment rather than a customized one
- Standardization eliminates the need for significant tenant improvements (TIs), unlike office or retail real estate where landlord-funded fit-outs are the norm
- Most leasing costs are immediately expensed rather than capitalized, making NOI a cleaner and more reliable measure of true cash flow
- This tightens the gap between reported NOI and actual free cash flow — a key consideration for CMBS and ABS debt sizing and coverage analysis
- **The one caveat:** technology-driven capex (cooling upgrades, power density increases) remains the landlord's responsibility in turnkey structures, partially offsetting the otherwise favorable leasing cost profile

Data Center Accounting: Paradigm Shifts

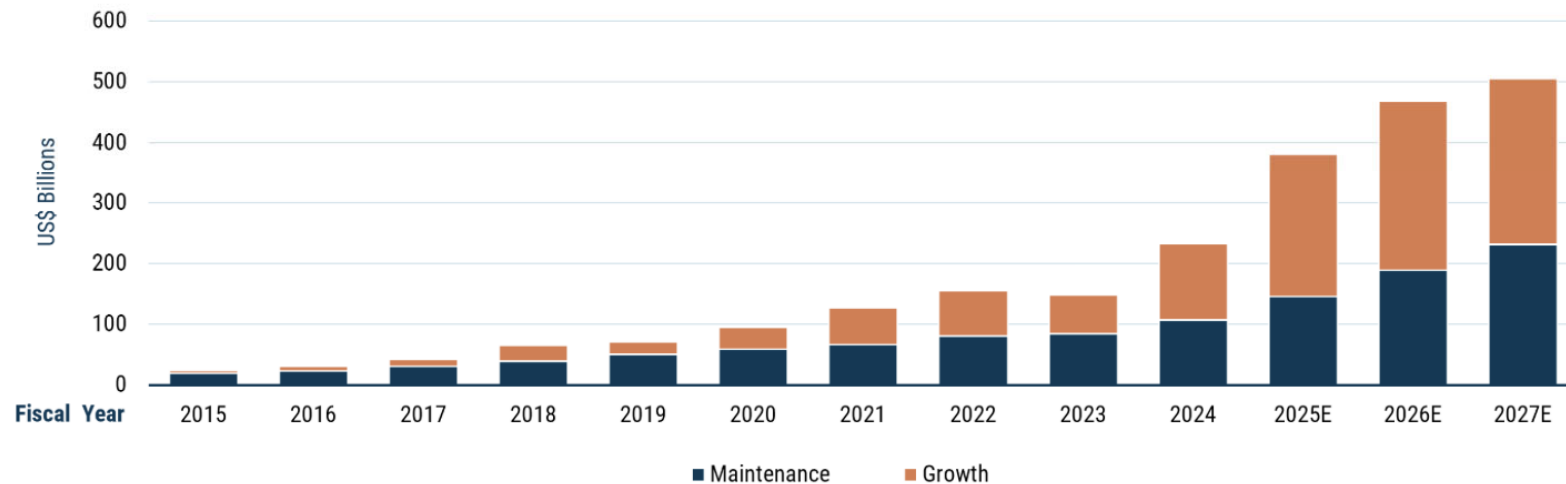
Dimension	Traditional Paradigm	AI Data Center Paradigm
Lease Term	10-15 years	4-6 years (hardware-aligned)
Renewal certainty	High – strong economic lock-in	Low – tied to future capex and AI strategy
Renewal periods on balance sheet	Generally included	Generally excluded
Landlord protection	Standard commercial terms	Large RVGs with multi-billion dollar thresholds
RVG accounting	Fair value if standalone guarantee	Contingent – only recorded if 'probable'
Balance sheet outcome	Broadly reflects economic reality	May significantly understate true cash exposure

Hyperscaler Maintenance vs. Growth Capex

HYPERSCALER CAPEX: GROWTH VS. MAINTENANCE

When the buildout stops, the companies revert to maintenance CapEx

HYPERSCALER CAPEX



Source: Visible Alpha

The "Hyperscalers" include Microsoft, Alphabet, Amazon, Meta, Oracle, and CoreWeave. Maintenance CapEx is estimated based on depreciation schedules.

Decreasing Returns on AI Model Training

Collapsing Model Gains on Composite Benchmarks

Half-year rate of material progress, frontier AI models



Sources: Epoch; paulkedrosky.com

Half-year compound rate of improvement on aggregate capability benchmarks, frontier models only.

Stargate Plans on Ice?



- Under Stargate, Oracle agreed to develop 4.5 GW of DC capacity for OpenAI in July 25
- Oracle and OpenAI now scaling back leasing plans at DC campus in Abilene, TX being built by Crusoe: 1.2 vs 2 GW
- Nvidia is helping to bring in Meta to take up slack and make sure its GPUs are used