Real Merge Ahead: The AI-Driven Convergence of CRE and Infrastructure

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Please note this analysis is largely based on data through year end 2024 and may not reflect recent 2025 market shifts or updates to planned projects, unless stated otherwise.

Key Takeaways

- **The rise of artificial intelligence (AI) is creating an immense demand for the physical infrastructure that supports it, particularly data centers**
- **As the demand for data centers evolves and new data centers are delivered, their appearance is driving a "real merge" across previously distinct asset classes, property types, and financing structures**
- **The current data center development pipeline is robust; initial estimates of how many more are needed suggest we are far from reaching "peak" demand, given the new, larger requirements for data center sites, power, and cooling capacity**
- **While there are many opportunities, the data center market also creates significant risks, including the potential for job displacement due to AI, growing local political opposition to new projects, and the substantial environmental impact from electricity and water consumption.**

Only the Beginning of Massive Innovation

The rise of artificial intelligence (AI) is poised to bring about lasting changes, fundamentally reshaping every facet of the economy and society. The adoption of AI across various industries, as companies seek greater efficiencies from new applications built on this technology, is creating unprecedented demand for the physical infrastructure that enables it: data centers. This dynamic is driving what can be described as a "real merge" - a convergence of physical space, labor, capital, and financial markets that were once distinct. This transformative process is not a fleeting trend but a paradigm shift that is only just beginning.

While AI is new, massive technological change is not. To understand the long-term trajectory of the full potential of AI, it can be helpful to place it in a historical context and compare to another modern profound technological change – the internet. The modern internet (i.e., World Wide Web) was invented in 1989 and proliferated through the early 1990s. The internet created a communication connection and effectively helped to catalogue known information across the globe. However, adoption and application of the new technology was not instantaneous. Mosaic, the first browser with graphical images embedded in text, which helped fuel web adoption, was not launched until 1993. And it took nearly four years from the launch of the internet before the first recorded e-commerce sale occurred in 1994 (a CD of Sting's "Ten Summoner's Tales"). It was around the same time as this first e-commerce sale, Amazon and eBay were founded.

Fast-forwarding closer to the present to draw parallels. The launch of OpenAI's ChatGPT happened in late 2022. If the AI timeline were to be compared to the internet's from the early 1990s, we are at the dawn of America Online's (AOL) mass-market expansion. It was nearly impossible to foresee the internet's full impact on our lives today, yet it has since reshaped nearly every personal and professional domain since, and the same can be expected of AI (at least in the author's opinion). Yes, there were bumps along the way for the internet, and the same companies that started the internet age are not the same which shaped it, nor those which dominate today; but the underlying technological innovation, the internet itself, stuck around, and so will AI.

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The Creative-Destructive Power

New technologies follow a clear development cycle. They are first created, then made accessible, before undergoing a period of testing and exploration, and finally reaching widespread adoption and integration (when they are "normalized", or viewed as standard or baseline). Currently, AI appears to be in the very initial testing phase (Figure 1).

Similar to the J-curve seen across commercial real estate (CRE) development or any large capital investment, it takes time before showing clear positive returns. AI is currently in this negative return portion, requiring massive capital expenditures to build out the necessary physical infrastructure and applications, which then will yield positive returns further out on the timeline. Initial estimates through mid-year 2025, suggest that the capital investment needed is in the hundreds of billions of dollars more, suggesting that the capital outflows are only starting. If the AI and data center buildout follows the J-curve, the providers or sources of funds (e.g., investors) will need to have high-conviction and ample patience, until returns become more readily apparent.

Another characteristic of profound technological innovation is that it is creative-destruction. When innovative technology removes existing inefficiencies and barriers, it can threaten the existing industries and processes, while creating opportunities for new entrants and processes. Then as barriers fall and new participants / processes enter, this can then lead to increased competition. This competition eventually results in a new period of market concentration and the establishment of new high barriers to entry.

As another example and parallel from the internet's history, this creative destruction can be seen as the internet created the gig economy. Gig workers hired for short-term, project-based tasks instead of traditional full-time employment were connected to these paid tasks by digital, internet-based platforms. While this added flexibility for workers to pick up additional income-earning opportunities could be seen as a positive, it also introduced significant earnings and income volatility. AI may see the birth of something similar, but possibly more transformative, a "spark economy". Unlike the gig economy, where people were still needed as an input to fulfill the service or good paid for, in the spark economy, fewer people will be needed - a mere idea and sufficient computing power are all that is needed to create value. As an example, in the spark economy, if somebody has a good business idea, they may no longer need to hire legal, marketing, sales, etc. professionals to get their business idea off the ground, which might be great for the entrepreneur, but is a loss for the lawyer, marketer, sales representative that they would have paid for service. While this is fascinating to think through, and try to anticipate the impact to the economy, that will be reserved for another time.

FIGURE 1
Development Cycle For AI

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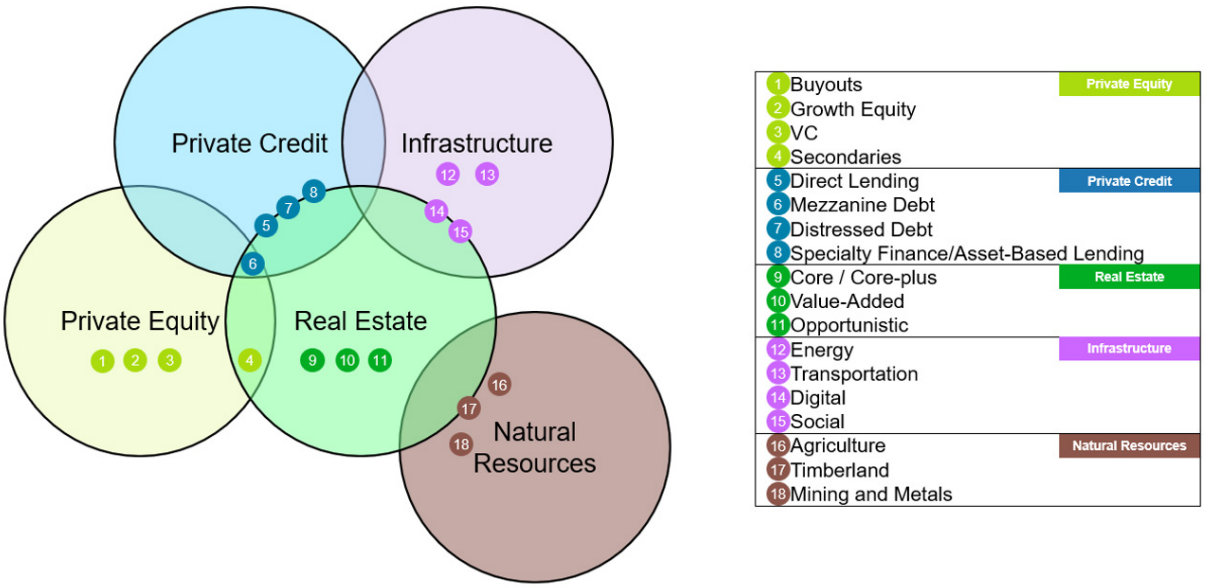
A Confluence of Market Definitions

The scope of what is considered "CRE" has expanded ever since it was considered an institutional asset class. The past two decades alone have seen many "non-traditional" sectors added to the broader CRE definition (e.g., seniors housing, student housing, single-family rentals, built-to-rent, short-term rentals, industrial outdoor storage, life sciences). Data centers look to be the latest and could be the most significant "new" sector. But data centers do more than create a new sub-category of CRE, data centers serve as a critical linchpin that connects the existing CRE universe to the infrastructure universe. This convergence is not a future possibility, it is already happening, with many investment teams and capital allocators restructuring their organizations to prepare for this asset class merge. The once clear delineation between two distinct asset classes is now getting blurred, and if data centers proliferate, the entire "traditional" view of markets (Figure 2) may be completely reenvisioned.

FIGURE 2
A "Traditional" View Of Private Markets



Sources: Altus Group's Research Team

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Data Center Development Landscape

In the spring of 2025, McKinsey projected that data centers will require $6.7 trillion in capital investment worldwide to keep pace with AI's demand growth. The consultant estimates that data centers handling AI workloads will drive 77% of that near $7 trillion figure, while those powering traditional information technology (IT) applications account for much of the remaining. While the McKinsey report and estimates do not have a regional or country breakout, the US is likely a massive market for the capital investment, given its existing share of global data centers, the number of US-domiciled AI firms, and the recent prioritization of AI by the White House. Already, in Q3 2025, the data center development pipeline is enormous (Figure 3) – totaling more than 150 projects, more than $325 billion (estimated) in planned projects, 180 million additional square feet of data center space, and nearly 25 gigawatts (GW) of additional power capacity.

FIGURE 3

Planned / Announced Data Center Projects

	Projects or Properties				Power Capacity (MW)				SF/MW			
	Count	Total SF	Average SF	Median SF	Total	Average	Median	Prop. Range	Total	Average	Median	Minimum
East North Central												
Chicago	17	6,217,240	621,724	400,000	1,872	125	72	20 - 600	3,322	8,044	8,333	3,553
Columbus	13	6,005,000	750,625	256,000	1,549	221	10	10 - 1000	3,877	6,730	6,960	5,000
Mid-Atlantic												
New York	7	335,000	111,667	85,000	103	15	15	1 - 30	3,243	5,222	5,667	3,333
Mountain												
Phoenix	18	16,937,000	940,944	624,000	1,988	153	49	14 - 768	8,520	8,763	6,667	5,000
Pacific												
Portland	12	5,453,000	681,625	627,500	790	88	48	16 - 196	6,903	9,122	9,472	5,000
CA Bay Area	20	5,661,384	297,968	257,000	712	37	32	9 - 99	7,956	11,443	7,500	3,389
South Atlantic												
Atlanta	20	20,035,000	1,054,474	660,000	2,174	121	78	4 - 700	9,218	7,944	9,429	3,472
NOVA+DC	15	102,011,136	6,800,742	2,700,000	4,305	431	224	42 - 1144	23,696	15,802	7,330	3,333
West South Central												
Dallas Fort Worth	18	6,802,675	377,926	267,000	963	60	43	9 - 220	7,064	6,466	6,188	2,907
Other	**16**	**10,679,920**	**1,334,990**	**300,000**	**10,655**	**820**	**188**	**30 - 4500**	**1,002**	**5,494**	**4,975**	**1,000**
National	**156**	**180,137,355**	**1,429,662**	**439,000**	**25,110**	**198**	**60**	**1 - 4500**	**7,174**	**8,918**	**6,980**	**1,000**

Note: The table shows an aggregation of announced / reported projects as of the end of 2024 for select markets; some of the power capacity and square footage are estimates; may not be comprehensive

Sources: Census Regions / Divisions; Altus Group's Research Team

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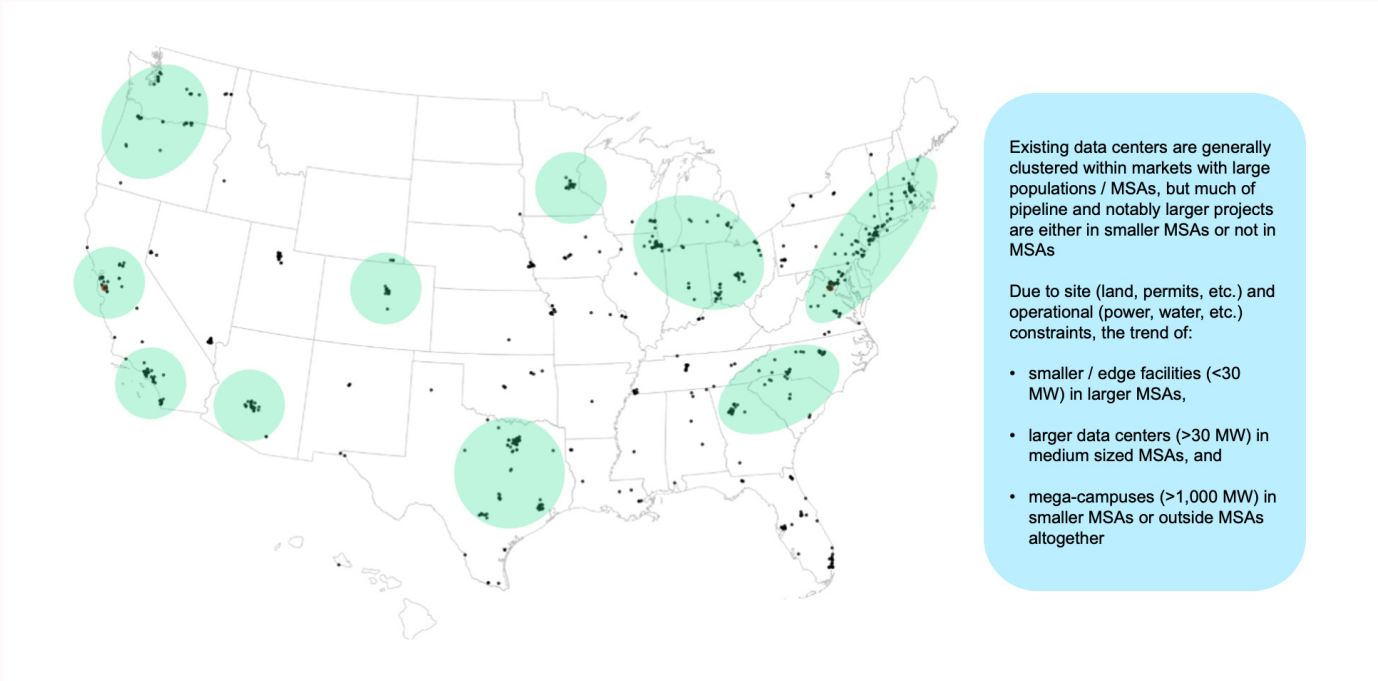
While data centers might be relatively new to the more traditional CRE crowd, they aren't new and have been around for many decades. What is new is the surging demand for more, and this demand is not for the data center of yesteryear and is driving fundamental shifts in where, and at what scale, new facilities are being built. Existing data centers are typically clustered near major metropolitan statistical areas (MSAs), but a few notable shifts are underway due to site and operational constraints (Figure 4). The emerging trend shows smaller and edge facilities (<30 megawatts (MW)) being developed in larger MSAs, while larger data centers (>30 MW) are being constructed in medium-sized MSAs, and the largest mega-campuses (>1,000 MW) are being developed or are planned in smaller MSAs or outside of MSA boundaries altogether. This change in geography is a direct result of the industry adapting to the physical demands of AI, which prioritize access to cheap, abundant power and available land over proximity to population centers. This means that a data center's value is no longer determined by traditional CRE attributes but by its connection to the energy, fiber, and cooling networks, redefining what constitutes a "prime" location.

FIGURE 4
Data Center Development From 1990-2024



Note: Each black dot is an existing data center developed between 1990-2024 identified in the Altus Group data set, the green shaded areas are key development regions for data center development
Sources: Altus Group data; Altus Group's Research Team

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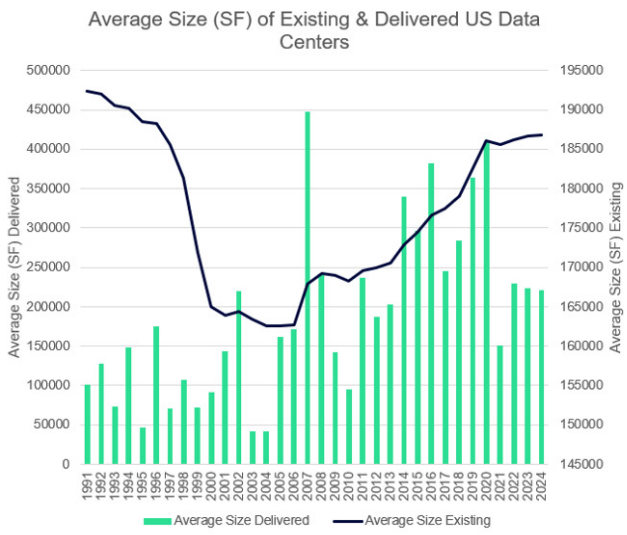
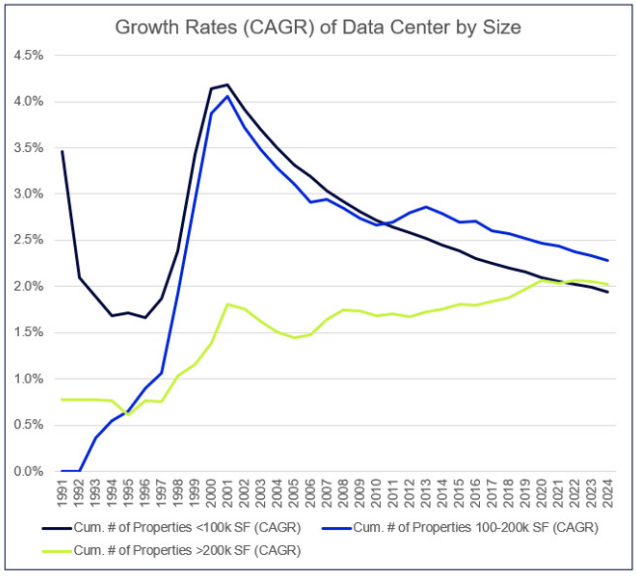
The physical scale of data centers has also evolved considerably (Figure 5). The data center of today is not the same as the one from the early 2000s. Where older facilities might have been 100-150,000 square feet (SF), today's typical data center requires more than 200,000 SF. This increase in size is a direct response to the substantial increase in power requirements from new technology. An early 2000s data center might have had a capacity of 5-20 MW, whereas a modern facility needs 4 to 5 times as much, ranging from 20-100 MW. The growth rates of larger facilities have continuously compounded over time, surpassing the growth rates of smaller formats.

While the location and size trends in data centers are emerging, and markets are shifting markets based on site specifics (e.g., land, power, cooling capacity), the forecasts and massive development pipeline appear to make one thing clear: more data centers are on the way.

FIGURE 5
Size Of Delivered US Data Centers (1991-2024)





Sources: Altus Group data; Altus Group's Research Team

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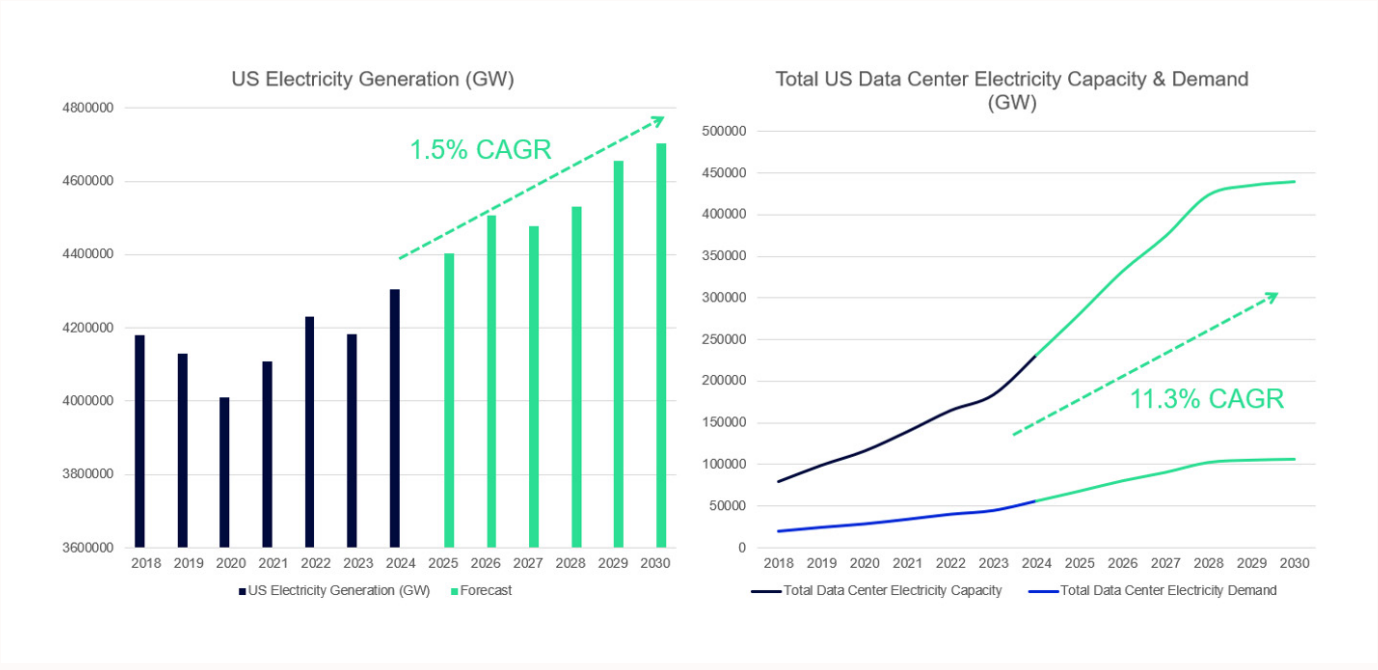
Quantifying the Demand: Are We Headed for "Peak" Data Centers?
With a massive amount of capital already allocated to building more US data centers, a critical question for the industry is whether the market is heading toward a supply glut, or asked another way: are we headed towards "peak" data centers - where there is overcapacity that creates rents that cannot support the development costs?

While a seemingly simple question to ask, it is not one which is easily answered, given the myriad of variables, factors, and scenarios on both supply and demand side of the equation.

However, to explore potential answers to the question, we built off of an existing study by a Lawrence Berkeley National Laboratory (LBNL) 2024 report which looks at the power consumption of data centers. The report, which uses a bottom-up modeling approach based on detailed equipment data, analyzes historical energy consumption at US data centers and projects future use through 2028.

The LBNL report found that data center electricity use, which was 1.9% of total US electricity consumption in 2018, rose to 4.4% by 2023. The report forecasted that this share could reach between 6.7% and 12% by 2028. Building on these projections and using US Energy Information Administration data, forecasts for overall US electricity generation, data center power capacity and demand were created (Figure 6). While total US electricity generation is projected to grow at a modest 1.5% compound annual growth rate (CAGR), data center capacity and demand are expected to grow at an explosive 11.3% CAGR through 2030.

FIGURE 6
US Electricity Generation, Data Center Capacity And Demand



Sources: Altus Group data; Altus Group's Research Team estimations

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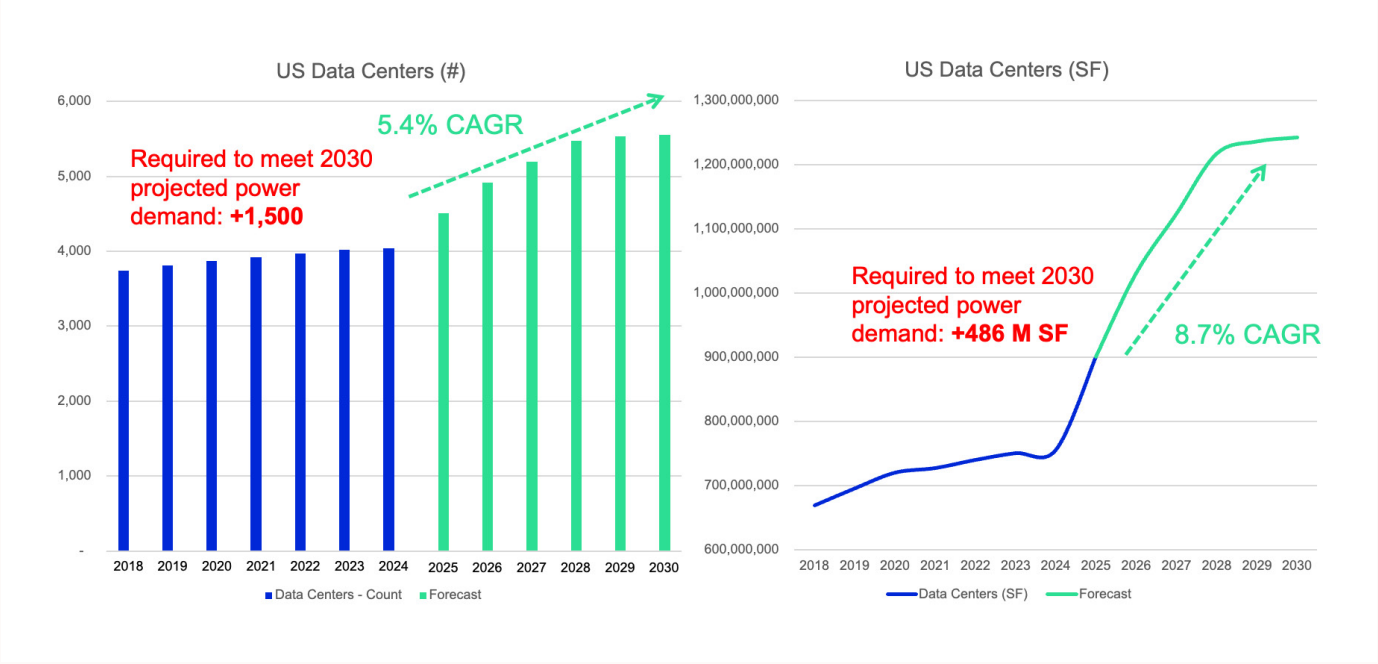
Next, by translating these data center power needs into physical space requirements (and incorporating the recent trends seen in data center development discussed previously), a clearer picture of future data center demand emerges (Figure 7). Based on current trends in data center size and power density, the US will need approximately 1,500 new data centers - a 30% increase over today's existing stock - or an additional 486 million square feet of space - a 50% increase - to meet projected demand by 2030. These figures provide a definitive answer to the question of whether the market is reaching a "peak." Assuming current trends hold, a significant and sustained build-out is required, and there is no "peak" in sight.

This suggests that even with all announced projects delivered, the market will still have a substantial supply gap to close in just a few years. The primary risks for data center investment are therefore not on the demand side but on the supply side, centered on whether the industry can overcome the inherent challenges of site acquisition, permitting, and construction to meet this demand before it outstrips available capacity.

FIGURE 7
Implied New Data Centers To Meet Demand



Sources: Altus Group data; Altus Group's Research Team estimations

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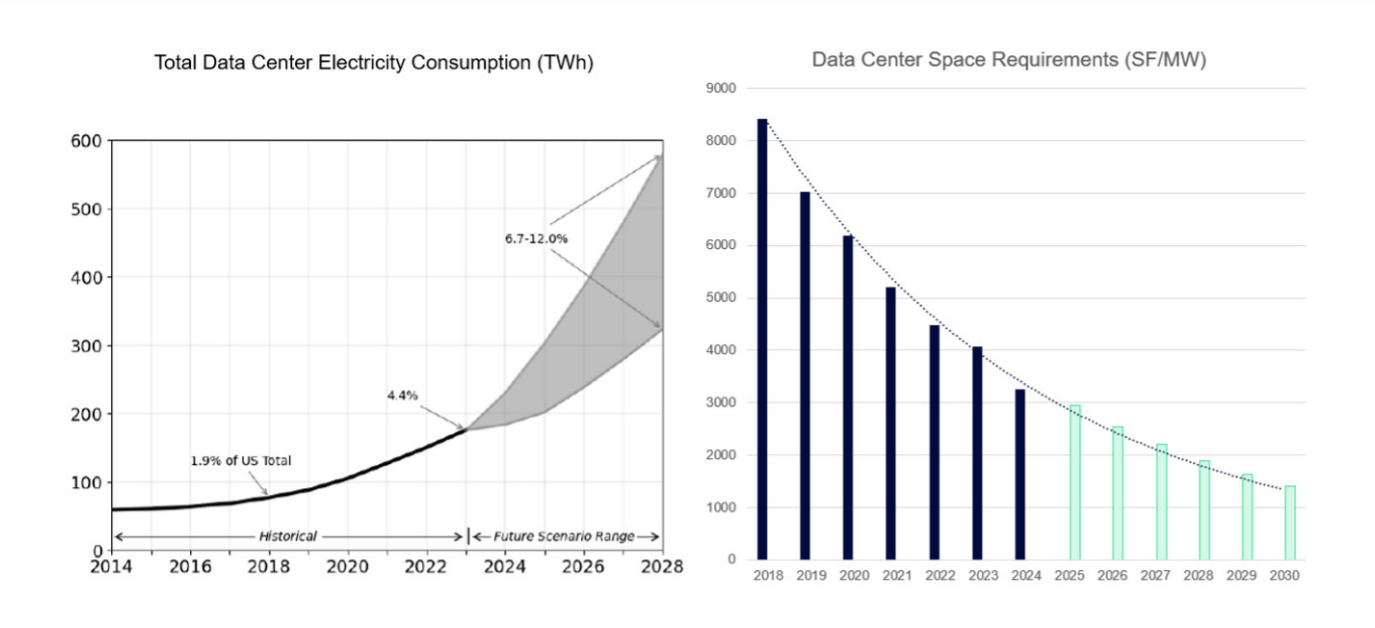
The Nuanced Reality: Caveats, Risks, and Societal Impacts

A proper analysis of the data center market must move beyond a simple narrative of growth and acknowledge the inherent risks and opposing forces. One significant risk lies in the non-linear dynamics of demand and supply. While demand for data center capacity is growing exponentially, the physical space required per unit of power is collapsing exponentially due to technological innovation (Figure 8). This introduces a fundamental uncertainty, as future innovations (everything from chips, models, power, cooling, space configurations, etc.) could render current facilities less efficient or even obsolete, a critical consideration for investors with long-term horizons. This non-linearity introduces greater volatility and makes long-term modeling a complex challenge with many potential scenarios and outcomes.

FIGURE 8

Projected Power And Space Requirements For Data Centers (2025-2030)



Sources: Lawrence Berkeley National Laboratory, "2024 United States Data Center Energy Usage Report" (2024); US Energy Information Administration; Altus Group data; Altus Group's Research Team estimations

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Additionally, while the growth of AI brings many promises of efficiencies across the economy and our collective personal lives, it also introduces many potential headwinds that are difficult to factor into a simplified forecast analysis. To name a few:

- Labor market impact: A 2017 US Chamber of Commerce report estimated that the average data center employs 1,688 local workers during construction, only about 10% of these jobs - 157 total - become permanent post-delivery. This temporary job creation from the physical build-out contrasts sharply with the broader, permanent job displacement driven by the technology itself and could potentially drive great inequality within the US population.
- Political (local, national) support and resistance: As the societal impacts of AI, such as job displacement and increased energy demand, become more apparent, there is a possibility that the current tech-enabling policy agenda at the federal level could shift to be less supportive of further development. There is already a growing list of projects delayed or canceled due to local opposition groups. If this trend were to continue, it could lead to political and regulatory changes that would directly challenge the data center build-out.
- Environmental impact: The environmental impact of large-scale data centers, particularly their substantial electricity and water consumption, is a growing concern that cannot be ignored. While AI's growth is renewing the effort to explore and discuss nuclear energy, it remains a sensitive topic which if adopted would likely have many ramifications for surrounding markets.

Conclusion: A New Frontier for Commercial Real Estate

The demand for data centers, driven by the adoption of AI, is just getting started. The rise of AI has shone a spotlight on this once-niche sector, positioning data centers as a critical linchpin between the broader real asset ecosystem and the real economy. The evidence overwhelmingly suggests that the market is not headed for a "peak," and a massive build-out of new facilities is required to meet projected demand.

For experienced CRE professionals, this is not merely an opportunity to participate in a new sector; it is a call to enable a new era of technology. The "real merge" means that success in the data center market requires a new, hybrid approach that blends traditional real estate expertise with an understanding of infrastructure, technology, and capital markets. It necessitates a long-term, patient commitment to the J-Curve investment cycle and a willingness to navigate the risks inherent in non-linear market dynamics. By providing the physical space and power required for the AI revolution, CRE professionals are in a unique position to shape the future of both the built environment and the global economy.