

PRINCIPAL REAL ESTATE

Five forces shaping the data center investment landscape

Demand is accelerating. Supply is constrained. Execution is everything. Data centers offer a compelling opportunity—but only for investors with the experience to navigate complexity and deliver. Our Global Data Center Team explains the opportunity.

KEY TAKEAWAYS

The data center investment landscape is being shaped by five structural forces that are redefining risk, returns, and execution across the sector:

- 1 Data center demand is still growing**, and it's not only AI.
- 2 Supply remains tight**, with vacancy rates at historic lows and new development constrained.
- 3 Pre-leasing is a defining feature of the hyperscale data center model due to tenant-specific design requirements.** What has changed in the current cycle is the duration and certainty of those commitments, which may result in more stable, infrastructure-like cash flows.
- 4 Capital must be committed earlier in the development cycle.** This is where return potential may be highest, but earlier-stage investing requires more disciplined risk management and selectivity.
- 5 Success in this environment increasingly depends on the ability to secure power and permits.** The more difficult that is, the more significant the benefit to those able to do it.

Successfully investing in this progressively complex environment requires a financial partner with deep data center experience and best-in-market development partners.

1 Demand: Still growing, and it's not only AI

The amount of digital data created, consumed, and stored is up 19,600% since 2010, and continues to grow.^{*1} This supports a secular growth trend of demand for more physical data center space.

Data center demand is a layered growth story. Demand has evolved over time, from traditional enterprise workloads to nearly a decade of growth driven by hyperscale cloud and the shift from self-managed infrastructure to public and private cloud, and more recently to an additional layer of demand from AI. Industry forecasts suggest the sector could grow at approximately 14% annually through 2030, with global capacity approaching 200 GW.

Cloud remains a significant and well-established growth engine. Hyperscalers continue to expand their availability zones—clusters of interconnected facilities that enable low-latency, resilient operations. These zones are typically anchored in established Tier 1 markets, with expansion radiating outward as capacity needs increase. In Europe in particular, data sovereignty is another driver of localized demand as governments and enterprises place greater emphasis on storing and processing data within local jurisdictions.

On top of cloud demand, AI is adding a new layer of demand. AI could represent a materially larger share of all workloads by the end of the decade.

But AI demand is not monolithic. The current phase of rapid growth is dominated by model training, which requires large, high-density data center campuses. This is driving investment in non-traditional markets where power and land are more readily available. Over time, as AI is integrated into enterprise and cloud-based applications, demand will shift toward inference, which has locational requirements much more similar to cloud. We're already seeing the rise of a new generation of cloud infrastructure providers built specifically for AI training and generative workloads, neoclouds, which are providing the infrastructure to support the wave of compute demand.

The transition from AI model training to AI inference has meaningful implications for deployment patterns. AI inference and cloud data centers do not require the high densities of AI model training facilities. They do require proximity to end users and are thus more likely to be located in primary and strong secondary markets. As demand for AI inference and neoclouds continues to grow, the distinction between 'AI' data centers and 'cloud' data centers will likely blur.

Bottom line: AI reinforces, rather than replaces, demand in core cloud markets. From an investment perspective, cloud provides a relatively stable demand base. AI adds a second layer of growth, which may be more volatile in the near term but offers potential upside as adoption accelerates. Assets located in primary and strong secondary markets—particularly those within or adjacent to established availability zones—will benefit from deeper demand pools over the long term.

MYTH

There's an AI bubble, and it will affect data center demand

REALITY

Nearly 75% of major technological breakthroughs since the 19th century have coincided with speculative bubbles.^{*2} Whether AI is a bubble or a sustainable breakthrough remains one of the largest debates among investors. While today's AI rally exhibits traits seen in past bubbles, fundamentals and macro backdrop appear more supportive.



Learn more: [The AI boom: Bubble risk or durable cycle?](#)

Whether or not there is an AI bubble, the data center sector has a level of insulation. Long-term leases (typically 10-20 years) with highly creditworthy hyperscale tenants may provide stable, predictable cash flows, which may help mitigate near-term shifts in AI sentiment. Residual values remain a consideration, particularly for highly specialized assets; general-purpose facilities in primary and strong secondary markets are more likely to retain long-term relevance.

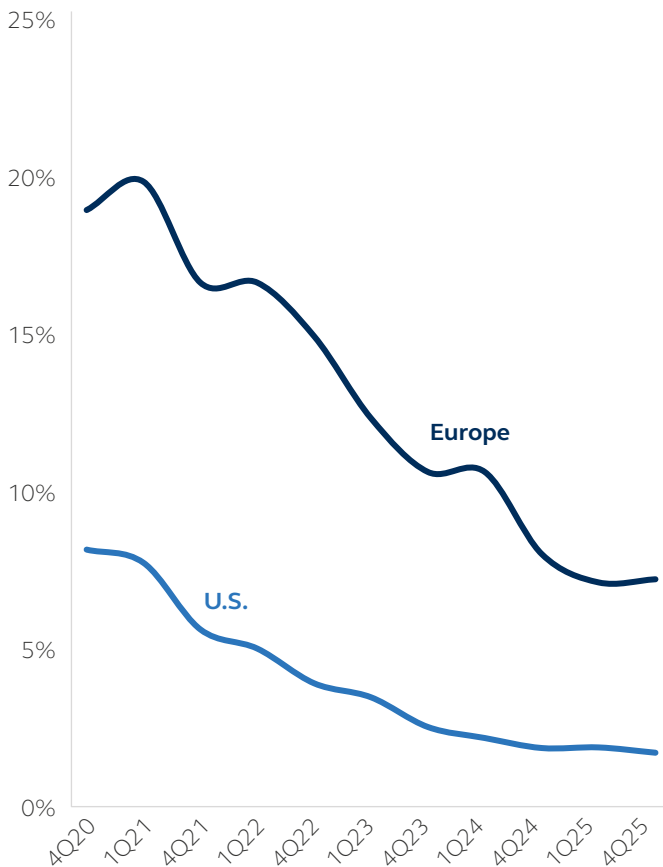
^{*1} Statista, 2025

^{*2} Sorescu, A. et al. (2018, July 12). Two centuries of innovations and stock market bubbles.

2 Supply: still constrained

The data center sector is experiencing an unprecedented “supply crunch” where explosive AI-driven demand has outpaced the physical capacity to build and power new facilities. This demand has driven vacancy rates to historic lows in the U.S. and Europe.

EXHIBIT 1: Data center vacancy rates are at historically low levels



Source: datacenterHawk, CBRE, 4Q 2025


Traditional 12-18 month data center development timelines no longer apply. Utility interconnection alone can extend timelines to 24-48+ months.^{*3}

Demand for power capacity from data centers, in addition to manufacturing and electrification, is unprecedented. Average utility load growth has been well below 1% per year for the last two decades; it could be 15.8% over the next five years. Meeting that pace would require six times the planning and construction of new generation and transmission capacity than utilities are used to.

There has been a structural shift in the development cycle; delays are now driven less by construction and more by utility interconnection. Power availability has increasingly become a license-to-operate issue—effectively determining where and when new capacity can be brought online. Gartner predicts “40% of existing AI data centers will be operationally constrained by power availability by 2027.”^{*4} In this environment, sites with secured power or clear paths to interconnection command a significant premium.

Community opposition is another material constraint on data center development. In many markets, it has led to permitting delays, zoning restrictions, and, in some cases, permit denials. According to a report from Data Center Watch, approximately \$64 billion in U.S. data center projects were blocked or delayed between May 2024 and March 2025 due to community opposition.

Opposition is often centered on concerns around grid strain, resource consumption, and perceived limited local economic benefits. In many cases, these are viewed by industry participants as misconceptions.

 Learn more: [Understanding the nuances of the data center sector in an AI era](#)

^{*3} CBRE, U.S. Real Estate Market Outlook 2026, 14 Jan. 2026.

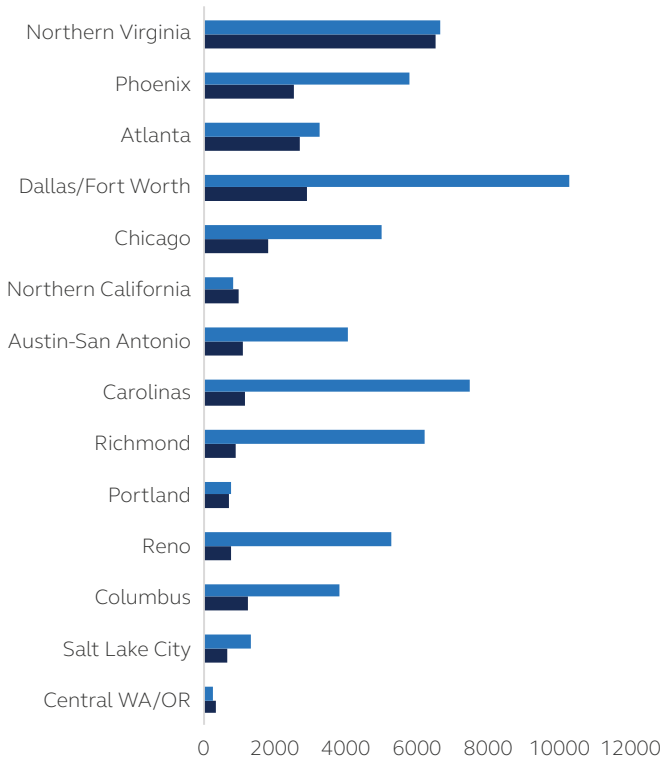
^{*4} Gartner, Rapid Growth in Energy Consumption For GenAI Will Exceed Power Utilities' Capacity, 12 Nov 2024.

Since ‘off-the-shelf’ capacity is mostly gone, new capacity has to be developed but it’s become increasingly difficult.

EXHIBIT 2: In many markets, planned capacity exceeds total current deployments

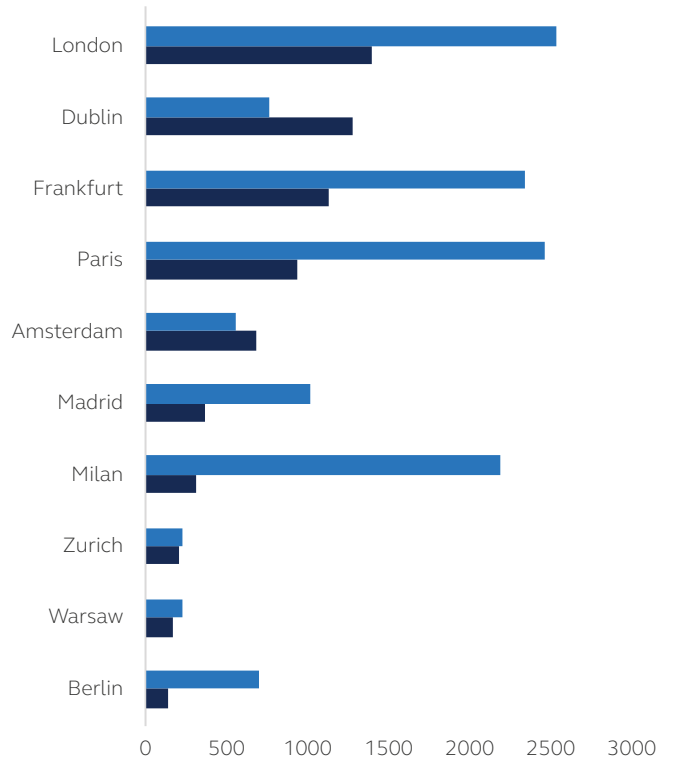
U.S. current and under-construction capacity vs planned capacity (MW)

■ Planned capacity (MW) (top bar)
 ■ Current and under-construction capacity (MW) (bottom bar)



Europe current and under-construction capacity vs planned capacity (MW)

■ Planned capacity (MW) (top bar)
 ■ Current and under-construction capacity (MW) (bottom bar)



Source: Principal Real Estate, as of December 31, 2025

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Tier 1 markets are effectively “closed” to new development

REALITY

Constraints around power and permitting are defining where development is feasible. In markets where these barriers can be successfully navigated, development opportunities may be highly attractive. As a result, supply growth is not a wholesale shift away from Tier 1 markets, but rather an expansion into adjacent and secondary markets where constraints are less acute.

3 Lower leasing risk and more 'infrastructure-like' cash flows

In the current cycle, the shift is toward longer, more certain pre-leasing commitments and potentially more stable cash flows.

Pre-leasing is a defining feature of the data center development model, driven by the need to tailor building design, power density, cooling systems, and redundancy to specific tenant use cases. Given the capital intensity and operational specificity of modern facilities, speculative development has typically been less prevalent, and developers have historically required lease commitments before advancing projects at scale.

Pre-leasing (or pre-commitment) rates for new data center capacity are extremely high by historical standards. While pre-leasing has always been a feature of the development model, today's levels reflect longer lease terms, greater capital intensity, and a development environment that requires earlier commitment from both tenants and investors. The typical pre-leasing rate for new data center capacity today ranges from 70% to over 90% in the tightest markets. Tenants are typically hyperscalers with strong credit (AWS, Microsoft, Google, Meta, Apple, Oracle) and lease terms are long (often 10-15+ years).

For investors, this can translate into lower leasing risk and more predictable, infrastructure-like cash flows. Data centers today behave less like speculative real estate and more like contracted infrastructure. However, they require earlier and more operationally complex investing, which makes development partners ever more crucial to success.

Long-term leases with hyperscale tenants provide stable, predictable income and greater income visibility.

Data center demand is inherently long-term and operationally embedded, which drives high tenant retention.

Hyperscalers design their infrastructure around specific facilities and regions, making relocation costly, complex, and risky due to latency requirements, network dependencies, and potential downtime. In addition, tenants deploy significant capital into servers, networking equipment, and customized buildouts, which further increases switching costs. As a result, tenants are generally unlikely to vacate at lease expiry and instead tend to renew and expand within the same facility, creating highly durable occupancy and long-duration, infrastructure-like cash flows for investors.

Rather than exiting when IT equipment becomes obsolete, tenants typically perform rolling refreshes of on-site servers, replacing equipment every few years while maintaining their physical footprint. This means demand is persistent rather than transactional, with capacity continuously utilized and often increasing in value as newer, more power-dense hardware is deployed. For investors, this dynamic supports potentially stable cash flows, embedded growth potential, and strong renewal visibility, although it also places a premium on assets that can accommodate evolving power and cooling requirements to remain competitive over time.

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Data centers built today will be obsolete in five years

REALITY

Obsolescence risk can be mitigated through design, and developers have shifted the focus from predicting change to ensuring long-term adaptability. Rack densities and cooling requirements are evolving rapidly, but existing assets generally remain viable for traditional workloads and can often be retrofitted for new workloads. New developments are designed for flexibility, including support for both air cooling (for lower density racks) and liquid cooling (for higher densities).



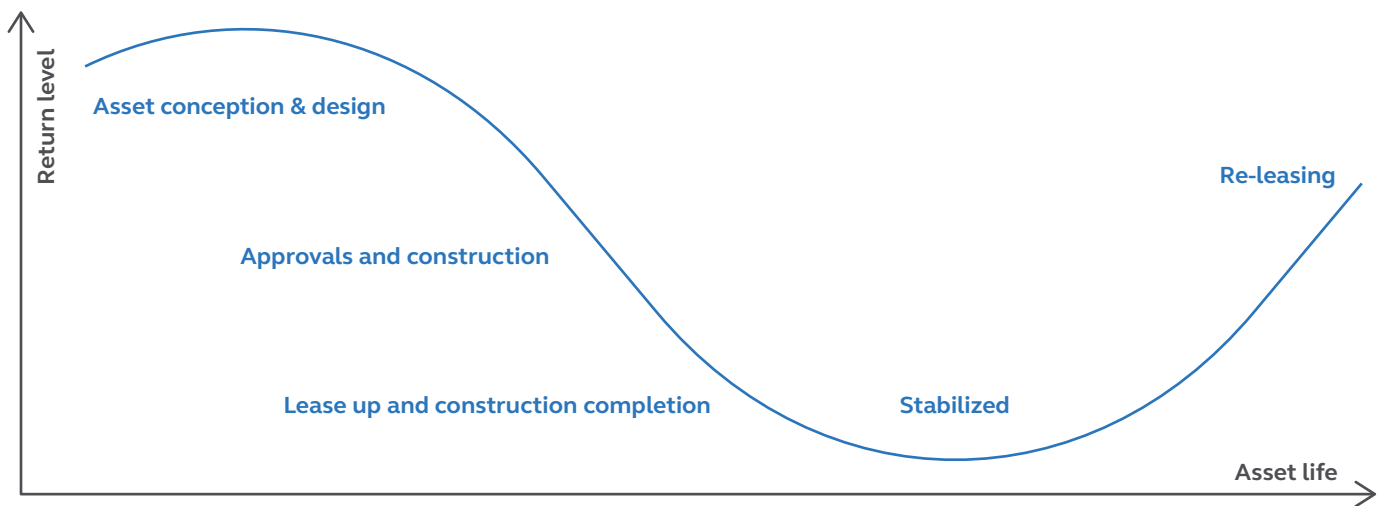
Learn more: [Data center viability requires design flexibility](#)

4 New opportunities earlier in the lifecycle

In an environment characterized by high rates of pre-leasing, capital must be committed earlier in the development cycle. This is also where return potential may be highest.

Institutional capital is moving earlier in the lifecycle—from stabilized assets to conception, design, and early-stage development. This trend reflects both the scale of demand and the capital intensity of modern data center projects. Power infrastructure alone can represent 40-50% of total project cost, with utility deposits of \$25-75M+ now common. This creates an opportunity for investors to capture value at the highest-return stage of the life cycle.

EXHIBIT 3: Investment opportunities differ across the data center lifecycle



For illustrative purposes only. There is no guarantee that actual investment opportunities will have characteristics like this example. Opportunities may differ materially from that depicted above based on numerous factors.

Earlier-stage investing requires more disciplined risk management and selectivity.

Early-stage investing introduces additional complexity and risk relative to stabilized assets. While a fully leased operating facility can offer attractive risk-adjusted returns, the path from land acquisition to an operational asset is not easy. The question is how much risk is taken before a lease is secured, and how effectively that risk is managed. For example: How much capital is put at risk prior to lease-up for procurement of long-lead equipment? Are those investments flexible or reusable across a broader portfolio?

The most effective asset managers are those who can navigate these complexities with discipline—making informed, measured capital commitments and demonstrating the ability to consistently execute through development challenges. Selectivity is key. In most cases today, underwriting focuses less on leasing risk and more on power access, delivery timelines, and operator capability. In our experience, investors increasingly prioritize sites with secured permits and power, or a clear de-risked path to those. We work with developers who have local experience, relationships and a demonstrated ability to deliver on time.

5 High barriers to entry

The capital requirements for data centers to support growing demand are unprecedented—\$6.7 trillion by 2030, according to analysis by McKinsey. But capital is not the most significant barrier to entry. The most significant barrier for new entrants into the data center sector is constraints on development—in particular, access to power at scale. Success in this high-demand, constrained-supply environment depends on the ability to secure power and permits. The more difficult that is, the more significant the potential benefit to those able to accomplish it.

Power and permits are becoming steadily more difficult. Securing them is a critical factor for developers today.

Constraints on power are evident across many markets (see page 5). For many investors, this begs the question: How are data center developers meeting demand?

There are a range of ways effective data center developers are getting the power they need, including:

- **Proactive collaboration with utilities**—Effective developers take a proactive, not speculative, approach. They nurture deep relationships with local utilities, communicating and collaborating about upcoming plans. They have sophisticated people, processes, and technologies for selecting the highest-quality, lowest-risk sites to pre-develop.
- **Co-development of power infrastructure with utilities**—To date, one of the chief ways data center developers and utilities have co-developed generating capacity is through power purchase agreements (PPAs). These provide the energy consumer with a guaranteed amount of power and the energy supplier with a guaranteed price per megawatt-hour.
- **Behind-the-meter power generation**—On-site generation with natural gas is a common temporary solution developers employ while waiting for interconnection to the grid. Small modular nuclear reactors, SMRs, are widely considered the ‘holy grail’ of on-site power solutions, though widespread adoption is likely a decade away and may not be possible in major markets close to metropolitan areas.



Learn more: [How data center developers are powering AI](#)

Just as securing power is increasingly challenging in many markets, so is securing permits. This difficulty arises largely from community opposition (see page 5).

Effective data center developers are overcoming these constraints to meet demand. Navigating local approval processes requires both technical expertise and stakeholder alignment. As data centers become more visible infrastructure, greater community engagement and education—alongside design improvements that make data centers more sustainable—can help address concerns and reduce opposition. Early engagement with regulators and other local stakeholders can improve certainty and reduce delays.

Bottom line: The fact that accessing power and securing permits is becoming progressively harder, creates a high barrier to entry—and a potential benefit to investors in projects that are powered and permitted.

Fundamentals still matter

In today's environment of growing demand, limited supply, and constraints on new development, high pre-leasing rates have reduced traditional leasing risk. But risk isn't eliminated; it's shifted. When capital must be committed earlier in the development cycle, the ability to effectively manage execution risk—power access, delivery timelines, and operator capability—is a key factor influencing performance.

Successful investment often requires an experienced data center partner.

Successfully investing in data centers today requires experience, access, and execution capability in a complex and constrained environment. This is where fundamentals still matter—and where experienced investors can differentiate.

Principal Asset Management has been investing in the data center sector since 2007 and manages approximately **\$11 billion in data center assets**.^{*5} With 156 global real estate professionals actively engaged in the sector and coverage across 19 markets in six countries, our platform provides both local insight and a global perspective. Teams embedded in local markets understand the day-to-day realities of permitting, power procurement, and development, as well as evolving demand and supply dynamics—helping to proactively identify and manage and mitigate investment risks.

Best-in-market development partners

In a dynamic market where development is more challenging and the ability to deliver capacity at speed and scale is critical, partnering with top-tier data center providers is central to managing and mitigating key investment risks.

A multi-operator approach further enhances this capability. Having worked with a range of developers across markets and cycles, Principal has observed different approaches to navigating development challenges—allowing for more flexible, informed decision-making in a rapidly evolving environment.

Principal has spent almost two decades building relationships with developers that have:

- Demonstrated experience delivering for hyperscale tenants—helping to minimize execution risk
- Established relationships with utilities—enabling more dependable and faster access to power
- Institutionalized knowledge of strategic markets—can help manage risks related to site selection, permitting, and development

 Learn more: [Unlocking data center opportunities through partnership](#)

These capabilities are reflected in a track record of 36 data center transactions.

^{*5} As of December 31, 2025. Includes current assets under management, realized assets, capital for funds in their commitment stage, and investment pipeline with committed capital.

MYTH

Data center development is bad for communities

REALITY

Data centers can materially affect host communities. But while community opposition to data center development makes headlines, many studies have shown potential positive benefits.

For example, a 2024 study by the Joint Legislative Audit and Review Commission in Virginia found most data center buildings in the state used about the same water as an average large office building or less. (Where data centers rely on open-loop evaporative cooling, it is very water intensive. But most data center designs now rely on closed-loop systems that do not consume water.)

The Virginia study also found that data centers are currently paying their full cost of electric utility service—though “growing energy demand is likely to increase other customers’ costs.” Other jurisdictions, like Oregon, are implementing large-load specific tariffs or rate classes explicitly to prevent cost shifts.

And while data centers are not massive employers after construction is complete, a study by professors at Brown University and the University of California found that counties gaining data centers see a 4-5% increase in total private employment over 5-6 years, including a 22% increase in IT sector employment and 11% in construction. These gains have been observed to persist over time.

The opportunities will evolve. Continuing to capture value will depend on disciplined underwriting, strategic partnerships, and local expertise.

The data center sector will remain very dynamic. Over the next 2-3 years we anticipate additional evolution—in the requirements developers have to build for, and the challenges they have to navigate—especially as AI adoption increases, neoclouds grow, and model training evolves to inference.

In a market defined by constraint and complexity, Principal’s integrated approach helps mitigate development and operational risk. Combining disciplined underwriting, strategic partnerships, and local expertise, the platform helps position investors to access opportunities earlier in the lifecycle while managing risk and seeking to deliver long-term performance.

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Investing involves risk, including possible loss of principal. Past Performance does not guarantee future return. All financial investments involve an element of risk. Therefore, the value of the investment and the income from it will vary and the initial investment amount cannot be guaranteed. Potential investors should be aware of the risks inherent to owning and investing in real estate, including value fluctuations, capital market pricing volatility, liquidity risks, leverage, credit risk, occupancy risk and legal risk. All these risks can lead to a decline in the value of the real estate, a decline in the income produced by the real estate and declines in the value or total loss in value of securities derived from investments in real estate.

Data center properties will only be attractive to a unique type of tenant. A limited tenant base increases the risk of vacancy. Additionally, a property designed to be a data center property, may be difficult to relet to another type of tenant or convert to another use and will be more likely to become functionally obsolete when compared to other properties. For example, if converted to industrial use, the expected rents would be lower than that projected for data centers. Thus, if operating a data center were to become unprofitable, the liquidation value of properties may be substantially less than would be the case if the properties were readily adaptable to other uses.

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