Baker McKenzie.

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Data Centers Unlocked: What's new and what matters

Legal perspectives and developing trends in today's data center landscape

Introduction

As digital transformation accelerates across industries, data centers have emerged as the foundational infrastructure powering artificial intelligence (AI), cloud computing and enterprise technology.

Their role in supporting high-density computing makes them essential to national digital strategies and private sector innovation.

The AI boom has triggered an extraordinary surge in global data center development and is driving a fundamental redesign of facility architecture, site selection and investment strategy. Market research suggests the future global data center market could reach USD 600 billion to 700 billion by 2030, with an average annual growth rate of approximately 11%[1]. Unprecedented capital expenditures in AI infrastructure are projected to keep pace with the demand for compute power.

Data centers are scale-dependent enterprises, requiring substantial resources, including financial capital, land and power, to set up and operate such facilities effectively. The business environment for their development is complex and dynamic, encompassing a range of legal considerations. For businesses operating in this sector this requires a holistic approach around strategic transactions, regulatory compliance and innovative solutions.

Aimed at helping data center developers, investors and operators achieve business success, we provide core topic overviews and key issue deep dives, covering:

- The evolving **financing and investment** landscape, as major sector players consistently seek new ways of raising capital to support development and growth plans, and unprecedented demand for data center capacity presents compelling opportunities for financing and investment.
- **Tax** considerations, including incentives, across every phase of the data center lifecycle, from finance and structuring to operations and exit planning.
- **Design and build**, as the cornerstone of data center development, including land acquisition, planning approvals/licences to operate and delivery models.
- **Power**, as a critical input and also a strategic driver in data center planning—particularly given sustainability challenges, infrastructure limitations, growing energy demands and regulatory pressures.
- Data center **operations**, managing customer contracts while addressing AI, data and cybersecurity risks, and trade and export control restrictions.

Sustainability is a key theme running through a number of the deep dives.

1. BCC Research: Global Data Center Market: Jul 25, Data Center Market Size And Share | Industry Report, 2030, and Data Center Market 2025: AI, Edge, and Hyperscale Expansion

Contents

DATA CENTERS OVERVIEW

DATA CENTERS DEEP DIVES

Click the relevant deep dive to learn more

Data Centers Overview ▶

Capital Requirements, Capital Recycling and Monetization ▶

As data centers are extremely capital intensive, the financing of their development and expansion is a key challenge for developers and operators. In a series of deep dives, we consider capitalization, capital recycling and monetization, with an in-depth focus on REITs.

Capital recycling

Data center financing and investment structures have developed over recent years to draw on key structural and financing terms from traditional corporate finance, real estate and project finance structures, with the particular blend of such terms based on a number of factors, including project status (e.g., under development or stabilized, and in the case of development, depending on other factors such as status of power, planning and pre-letting), whether they are financing a portfolio or single asset and the ultimate customer structure (e.g., single hyperscaler or multiple customer colocation structure).

View our deep dive on **financing structures for capital recycling in the data center sector** and the **key bankability issues** which sponsors and lenders to such projects should consider when structuring and financing these projects

Monetization

Over recent years, many operators were taken private with strategies to materially increase capital expenditure and operate at a significantly higher leverage than the public markets would permit. Now, private platforms have mixed portfolios of stabilized data centers as well as multiple sites at various stages of development.

Managing capital demands to enable the increased scale of development costs means developers and operators are considering strategic alternatives to enable both an exit channel for stabilized assets, as well as a means to raise additional funds for the next phase of development. Those alternatives can include, among others:

- selling a non-controlling stake to a financial sponsor;
- monetizing a set of stabilized (or development) assets by selling all, or part of, a portfolio;
- selling an entire platform (or majority stake in a platform); or
- listing an entire platform or a portfolio of assets.

View our deep dive, **The Surge: Why data centers are the new strategic asset**, for a more comprehensive overview of what we're seeing

REITs

Data Center Real Estate Investment Trusts (REITs) have become a popular financing mechanism through initial public offerings (IPOs) and follow-on equity or debt offerings. They offer institutional and retail investors a range of potential benefits, including regular dividend income streams, as well as portfolio diversification. For many developers and operators, they can provide access to deep capital funding sources, lower financing costs and support long-term growth. REITs often benefit from a lower cost of capital due to their tax-advantaged structure.

View our **deep dive** for a more in-depth discussion of REITs

Tax ▶

Data center investors, developers and operators should consider the tax implications associated with these projects. Tax treatment of course varies by jurisdiction. Further, large-scale construction projects like data centers can involve consideration of local, state, national and even cross-border tax rules.

It is important to note that tax law has been undergoing significant and fast-paced change over the past decade, especially with respect to the provision of digital services. Thus, up-to-date and jurisdiction-specific analysis of the tax implications of both investment in and operation of data centers is essential.

Availability of tax incentives can affect the projected profitability of a data center project, with jurisdictions, such as Brazil and some states in the US, offering tax incentives to encourage the development of data centers. Other jurisdictions such as the UK have enacted broader incentive regimes (such as capital allowances regimes) that would apply to the development of data centers. The availability of such incentives within a jurisdiction can also vary depending on the local municipality.

When planning the holding and financing structure for a data center investment, it is important to consider several tax concepts. It is important to understand the investor base in order to assess eligibility for various tax structures, elections or special tax regimes.

Of particular importance is whether the investment would benefit from any real estate-specific tax or investment regimes. Finally, and perhaps most important, is the tax implications of a future exit.

When operating a data center, there will be both direct and indirect tax considerations relating to the income and expenses of the project. Due to the ongoing evolution of tax regimes' treatment of digital services and related infrastructure, there can be some uncertainty about how income from the provision of data center services will be characterized—particularly with respect to VAT and VAT recovery. Sophistication with respect to these issues varies significantly from jurisdiction to jurisdiction.

Design and Build ▶

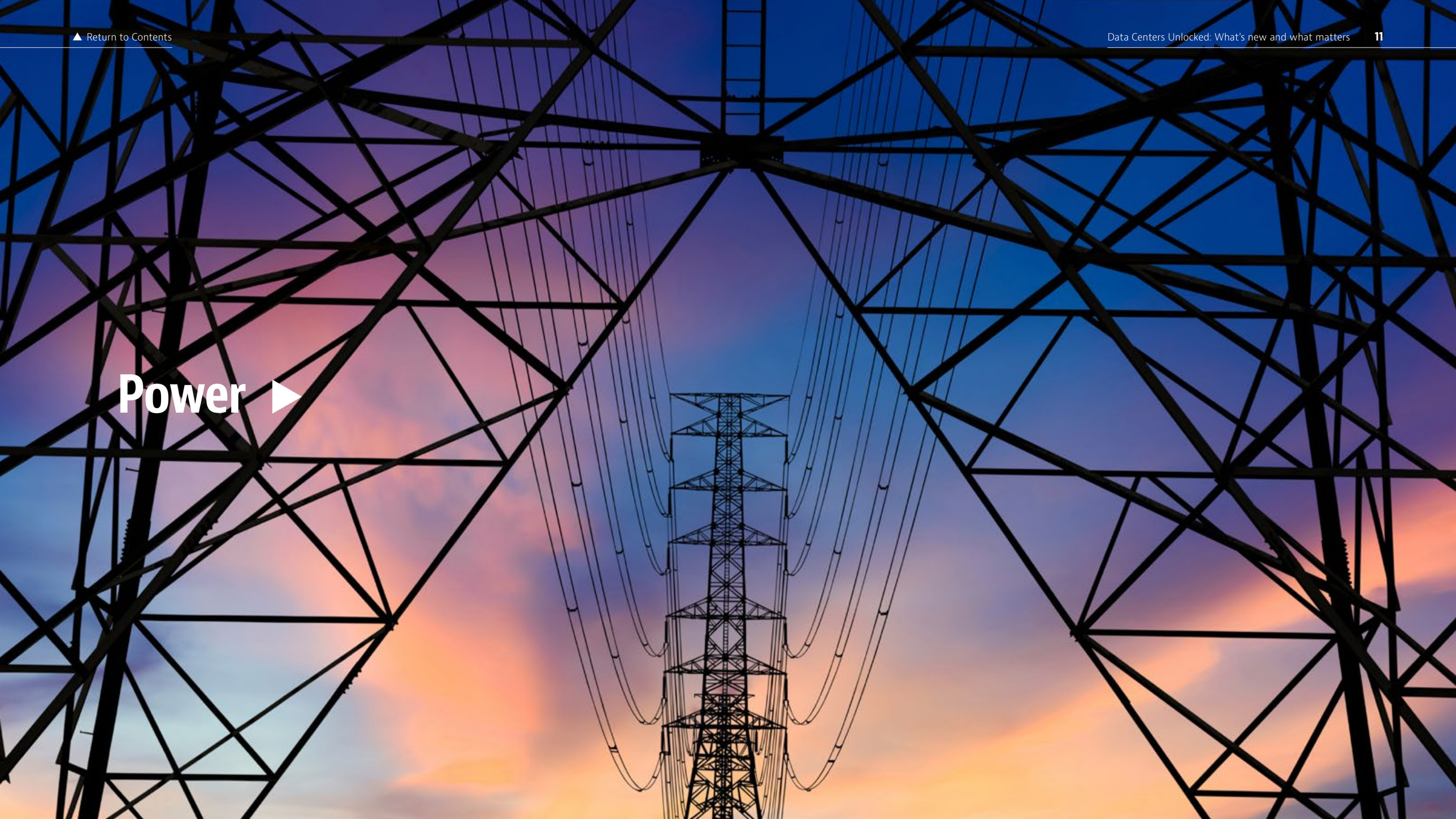
Acquiring land for data center development involves complex legal, regulatory and operational factors that vary by location.

- **Ownership vs. leasing considerations:** Data center developers must decide between owning land, leasing it or acquiring in rem rights, balancing stability, control, capital investment and risks such as insolvency. Leasing can offer faster deployment and network interconnection benefits, while ownership provides greater operational autonomy. In some jurisdictions, foreign entities cannot own land, making leases or rights in rem the only options.
- **Power infrastructure requirements:** Reliable, affordable and sufficient power supply with redundancy is critical for data centers, which require much more energy than typical businesses. Developers must coordinate with utility providers and regulators to ensure current and future power needs are met. Physical grid connections pose challenges, especially for phased developments with multiple parcels. See further on power requirements.
- **Connectivity and ecosystem integration:** Data centers depend on stable internet connections, usually via multiple fiber optic providers. Establishing physical infrastructure like cables and conduits may require rights of way and adherence to local regulations, with negotiations potentially impacting costs and timelines. Connectivity also relates to the ecosystem of a data center, which may include cloud service providers, content delivery networks, telecommunications carriers, other data centers and major population centers.
- **Critical infrastructure status and regulations:** Many jurisdictions classify data centers as critical infrastructure assets, subjecting them to stricter foreign investment rules, enhanced physical and cybersecurity requirements and stringent data localization and privacy laws. On the other hand, this status may also qualify data centers for government support and incentives.

Data center construction requires careful legal, technical and commercial planning:

- **Design and construction models:** Data centers typically use either a core and shell model, delivering the structural framework for tenants to customize, or a turnkey model, offering a fully completed facility. The core and shell model is favored by hyperscalers that demand control over their IT environments and have their own design specifications. Turnkey contracts provide single-point accountability but may limit customization. Large developments may combine both models. Owner Furnished, Contractor Installed (OFCI) procurement strategies are also common in the industry.
- **Risk allocation and contracts:** Turnkey contractors usually bear most design and construction risks, whereas multi-contractor projects face significant interface risks. Legal and technical due diligence is essential to align contracts and ensure enforceable completion obligations, especially when developments are custom-built with tenants. Risk responsibility for regulatory changes must be clearly defined.
- **Security and confidentiality:** Data center security is a key design and build consideration. Operational protocols and certifications must protect against unauthorized access, and intellectual property rights apply to bespoke design elements and proprietary systems.
- **Operational milestones and protections:** Liquidated damages clauses and completion guarantees mitigate delays and ensure timely delivery. Early access for tenants requires clear contractual terms on access scope, liability and insurance. Testing and commissioning validate system functionality before handover, triggering warranties and final payments. Additional environmental permits may be needed for backup power generation.

Learn more about the key considerations in acquiring land for data centers in our **deep dive**.



Power ▶

Data centers currently consume substantial amounts of energy and are anticipated to consume significantly more in the foreseeable future, driven by the growing adoption of artificial intelligence (AI), cloud computing and related technologies.

The growth of power demand in the data center space is much faster than the growth of total electricity consumption in other sectors. While the exact statistics and projections vary depending on the source, many predict at least several multiples of the current consumption in a decade. Securing clean, steady, reliable and scalable power at the best price is critical to project feasibility, license to operate and long-term resilience of any data center.

In most data center transactions, it will be necessary to evaluate the data center's main and backup power sources, including their adequacy and reliability, the capacity to meet current and future requirements and the ability to handle peak loads.

Power supply options could include standard power from the grid, on-site power generation and micro grids (renewable or conventional), power procured via power purchase agreements (PPAs), back-up generators, battery energy storage systems (BESS), fuel cells or a combination of some of these. Moreover, nuclear power is increasingly viewed as a potential solution for rising data center energy needs: small modular reactors (SMRs) could provide reliable, low-carbon energy to data centers.

Each of the power supply options will have legal issues unique to it—arising from the technology and method of procurement, as well as issues applicable to the jurisdiction where the data center asset is proposed to be located, including specific regulatory requirements, subsidies and incentives.

Explore the options and related legal issues in our **deep dive** on **powering data centers**.

Operations ▶

Once a data center is built and powered up, a new set of legal considerations come into play. We look at these through the lens of the day-to-day operation of the data center, but many will also be fundamental issues for the initial siting, structuring, financing and design.

Prospective operators will need to assess carefully the impact of the geopolitical and trade landscape on initial feasibility and ongoing operation of a data center. Data centers that are meant to support advanced AI may be particularly affected. For example, the commercial feasibility of a data center may be heavily influenced by the involvement of investors or lenders that are sanctioned, headquartered or located in certain sensitive countries.

Moreover, export controls and other trade measures may limit the availability of key hardware (such as chips, including GPUs), software and services. Similarly, the selection of key hardware from certain sensitive countries or manufacturers, providing services to customers from certain countries or being engaged in certain activities may impact the attractiveness of a data center to developers, investors, lenders and customers. After successfully navigating investment and lending restrictions driven by geopolitical factors, operators will need to continue managing risks around export control, sanctions and other trade controls.

Operators must understand local regulatory requirements relating to cybersecurity and critical infrastructure assets (CIA). They also must assess whether the data center itself is in scope of CIA and cyber regulation, and separately, whether it is likely to be regulated by virtue of its customers and prepare to meet the compliance uplift beyond typical customer requirements.

The evolving landscape for AI regulation must also be factored in. AI used in the operation of the data centre may be subject to regulation, and customers or operators using the data center for AI will need to consider the local regulatory position when deciding where to site data centers.

While operators may not be directly responsible for compliance with legal obligations relating to the data being hosted (depending on the nature of the data center), they will need to understand the impact of those obligations.

Operators typically have no access to end user data and so data privacy compliance is not a direct issue, but data privacy rules applicable to end users will drive customer requirements for appropriate physical and technical security of their data. Similarly, cross-border restrictions on data transfers will be primarily relevant to end use but their impact across the lifecycle must be understood, from the location of investors to the nature and destination of the data being hosted.

Finally, all of the above must be factored into customer contracts, alongside key commercial terms including structure, leasehold, payment, term and termination, access controls, service levels, liability allocation, change control and audit rights. Customer contracts should be aligned with tax planning and corporate structuring guidance to optimize the value of the data center.

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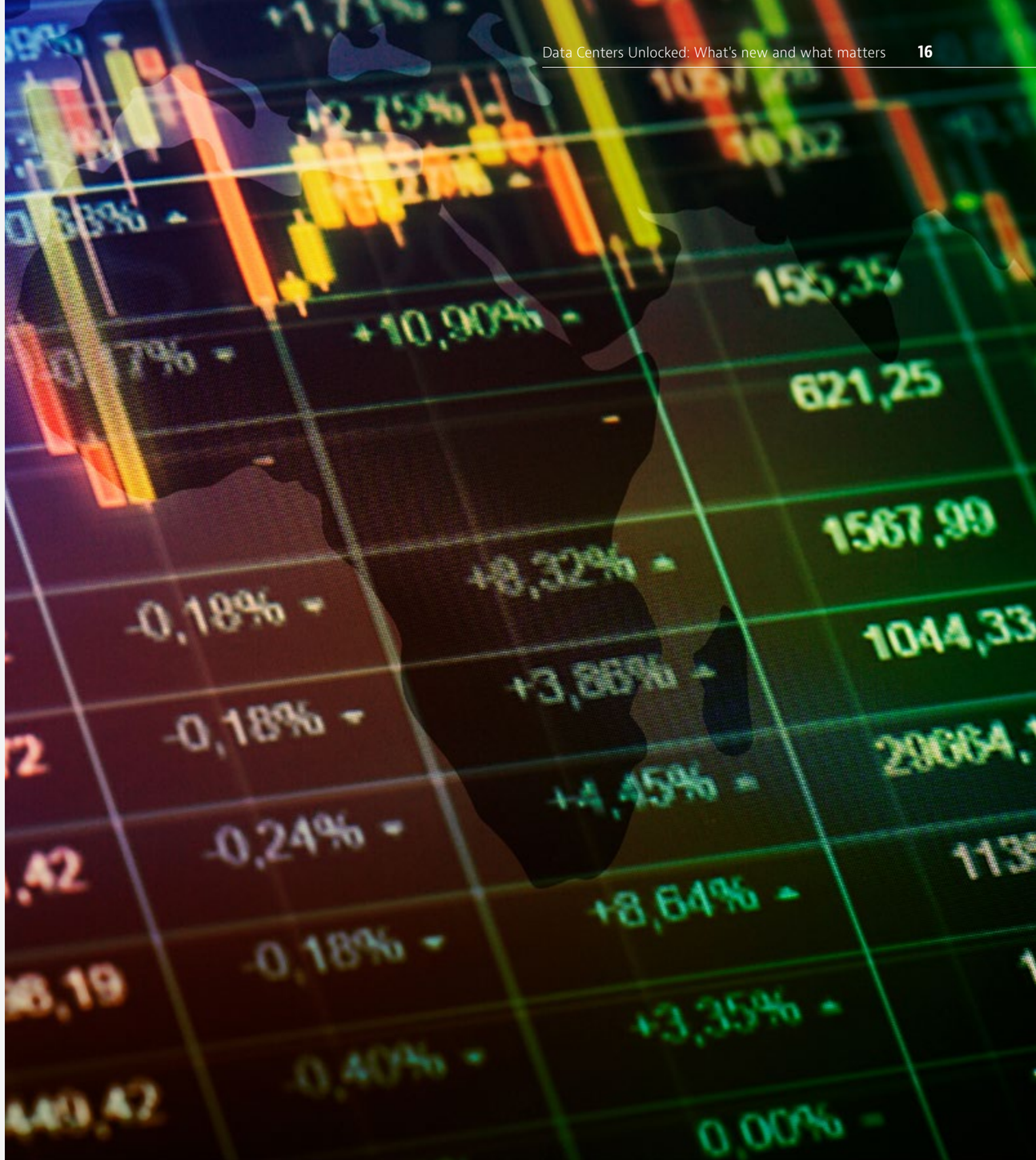
Data Centers Deep Dives ▶

Capital Requirements, Capital Recycling and Monetization

The Surge: Why data centers are the new strategic asset



The digital backbone of the next generation global economy is being built on data centers—massive, energy-hungry and capital-intensive facilities powering everything from AI to cloud computing. Demand is surging: according to McKinsey, by 2030 data centers are projected to require USD 6.7 trillion investment worldwide to keep pace with the demand for compute power.[2]

Alongside this increase in demand, the value of data center-oriented deals is growing. 2024 was a bumper year for data center M&A deals, with reports that overall deal values reached USD 73 billion[3]. And with the sale in 2025 of Aligned Data Centers to a consortium including Blackrock, Global Infrastructure Partners and MGX in a deal worth USD 40 billion[4], alone representing over half the overall value of deals in 2024, the growth trend seems set to continue.

Given the attractive economics on development, over recent years many operators went private and decided to increase capital expenditure and operate at a significantly higher leverage than the public markets would permit.

However, with many private platforms now in the market and a focus on achieving a lower cost of capital, developers and operators are considering strategic alternatives to enable an exit channel for developed assets, as well as a means to raise the additional funds they need to continue to support business growth. Those alternatives include:

1. YIELDCOS: INCOME-DRIVEN STRUCTURES FOR STABLE ASSETS

What we are seeing

Global data center capital expenditure reached USD 455 billion in 2024[5], with hyperscalers and AI-first companies pouring billions into compute-ready capacity. YieldCos (financial structures designed to own and operate stable income-generating assets) were originally popular in the renewable energy sector but look set to be increasingly relevant for data centers as developers and operators seek to lower their cost of capital and fund capital expenditure on new developments, through monetizing stabilized assets through YieldCos and recycling the capital into new projects. Across regions, YieldCos are likely to be especially attractive for assets with single, hyperscale customers.

Why it matters: Efficiency and flexibility

YieldCos offer tax efficiencies and flexibility. As a result, they appeal to income-seeking investors and operators looking to fund new developments by selling stabilized datacentres into YieldCos.

2. REITS: CAPITAL RECYCLING WITH REGIONAL FLEXIBILITY

What we are seeing

Globally, the data center Real Estate Investment Trust (REIT) is emerging as a powerful tool for raising capital for portfolios of stabilized data centers as it offers a blend of liquidity, scalability and attractiveness to investors.

Data center developers and operators are increasingly using initial public offerings (IPOs) of data center REITs and follow-on public offerings of equity or debt securities to raise capital to fund development, operations, and expansion. Multiple companies in recent years have conducted IPOs, or follow-on public offerings.

Why it matters: Structured exits

REITs offer operators a reliable exit and capital recycling mechanism, while investors gain access to a diversified, high-growth asset class.

Learn more about **REITS** in our **deep dive.**

Spotlight on Singapore

Singapore has sought to establish itself as a self-described "Smart Nation," having set out its first national AI strategy in 2019. It is a regional data center hub, with capacity exceeding 1.4 gigawatts, and has one of the highest concentrations of data centers in the region.

Given the local support for AI, unsurprisingly it is also a popular listing location for data center REITs (known as S-REITs), having created a comparatively more flexible REIT regime.

Significantly, it enables S-REITs to own global assets outside of Singapore as part of their portfolio of assets, and the regime also encourages the regular contribution of new assets by sponsors, which suits operators and developers who have a pipeline rather than just an initial set of data centers.

In July 2025, NTT DC REIT, advised by Baker McKenzie, listed a platform of six stabilized data centers (across the US, Austria and Singapore) on the Singapore Stock Exchange,[6] following Digital Core's listing in 2021, while Keppel DC REIT,[7] a pure play data center S-REIT that listed on the Singapore Stock Exchange in December 2014, continues to expand.

2. The cost of compute power: A $7 trillion race | McKinsey. **3.** It's Official – Data Center M&A Deals Smashed All Records in 2024 | Synergy Research Group **4.** https://www.reuters.com/legal/transactional/aligned-data-centers-spotlight-after-40-billion-sale-blackrock-nvidia-backed-2025-10-15/
5. Data Center Capex Surged 51 Percent to $455 Billion in 2024, According to Dell'Oro Group - Dell'Oro Group **6.** Baker McKenzie Advises on the Carve-out and Listing of NTT DC REIT, a Stabilised Data Center Platform | Newsroom | Baker McKenzie; NTT REIT Prospectus **7.** https://www.keppeldcreit.com/en/about-us/about-keppel-dc-reit/

3. JOINT VENTURES (JVS): TAILORED PARTNERSHIPS FOR SCALE

What we are seeing

Another option open to data center operators is to enter a JV arrangement with a third-party investor. For new entrant investors, a JV can be attractive as it offers both the opportunity to partner with an operator that is experienced in this highly specialized market and a flexible structure, providing opportunities for tailored solutions that accommodate all kinds of investors across various risk profiles, exit strategies and market approaches. There has been a trend towards programmatic JVs as the scale of the data centers under development has increased, alongside an increase in development timeframes.

Why it matters: Broader access

JVs offer flexibility, risk-sharing, and access to specialist expertise, making them attractive for both new entrants and established players.

4. PLATFORM SALES AND IPOS

What we are seeing

The sales of Airtrunk in 2024 (see "Regional Trends" section) and Aligned Data Centers in 2025[8] show ongoing market appetite to acquire large data center platforms with both stabilized assets and ongoing development combined in a single business. The scale of capital required to execute these transactions means there is a limited pool of potential buyers consortiums who can deliver these types of deals.

Why it matters

The Airtrunk deal was thought to be a high water mark for private platform deals, but the Aligned transaction has shown that a private exit for existing platform owners, including the operating business alongside the data centers, can still be achieved. The scale of capital necessary is a challenge, and therefore the alternatives, such as monetizing stabilized assets separately from a development platform, may be easier to achieve.

Regional trends and recent data

APAC

Asia Pacific is a hotspot for innovative monetization models—the sale by Macquarie Asset Management and PSP Investments of AirTrunk, which Baker McKenzie acted for the sellers on, had previously set a new bar with the AUD 24 billion sale to a consortium of investors led and managed by Blackstone,[9] while China is reportedly piloting national cloud services to monetize excess computing power

EMEA

Europe's data center investment pipeline is massive. Whilst the traditional tier 1 "FLAP-D" markets in Frankfurt, London, Amsterdam, Paris and Dublin still generate demand, although power and land are increasingly constrained, tier 2 markets such as Madrid, Milan, Warsaw, Zurich and the Nordics have increasing levels of demand. There is also a large flow of capital into data center development in the Middle East, with the Saudi Vision 2030 initiative and other regional cloud hubs being developed in Dubai and Abu Dhabi.

Americas

The US continues to lead in terms of innovation and scale of data center investment. According to McKinsey, of the USD 6.7 trillion investment required by 2030 to keep pace with the demand for compute power, more than 40% will be invested in the US.[10] The US market is currently seeing a shift back to public exits, with REITs and IPOs regaining traction.

What investors and operators must watch

Asset ring-fencing

Ensuring portfolios offer growth (via rights of first refusal (ROFR) or upgrades) without limiting future capital-raising options.

Occupancy and counterparty risk

Managing customer concentration and renewal risk, especially as AI and energy trends shift. Transfer restrictions affecting any legacy customer contracts will need to be considered carefully.

Operational partnerships

Investors often prefer operators to retain management roles, balancing returns with long-term customer relationships.

Regulatory & market dynamics

Local rules, energy supply and technology shifts can rapidly alter the attractiveness of specific assets or regions.

The bottom line

Monetizing digital infrastructure is no longer just about selling assets it's about strategic, regionally tailored partnerships and structures that unlock long-term value. Whether through S-REITs in Singapore, mega-JVs in EMEA or YieldCos in North America, the future belongs to those who can blend financial innovation with operational excellence.

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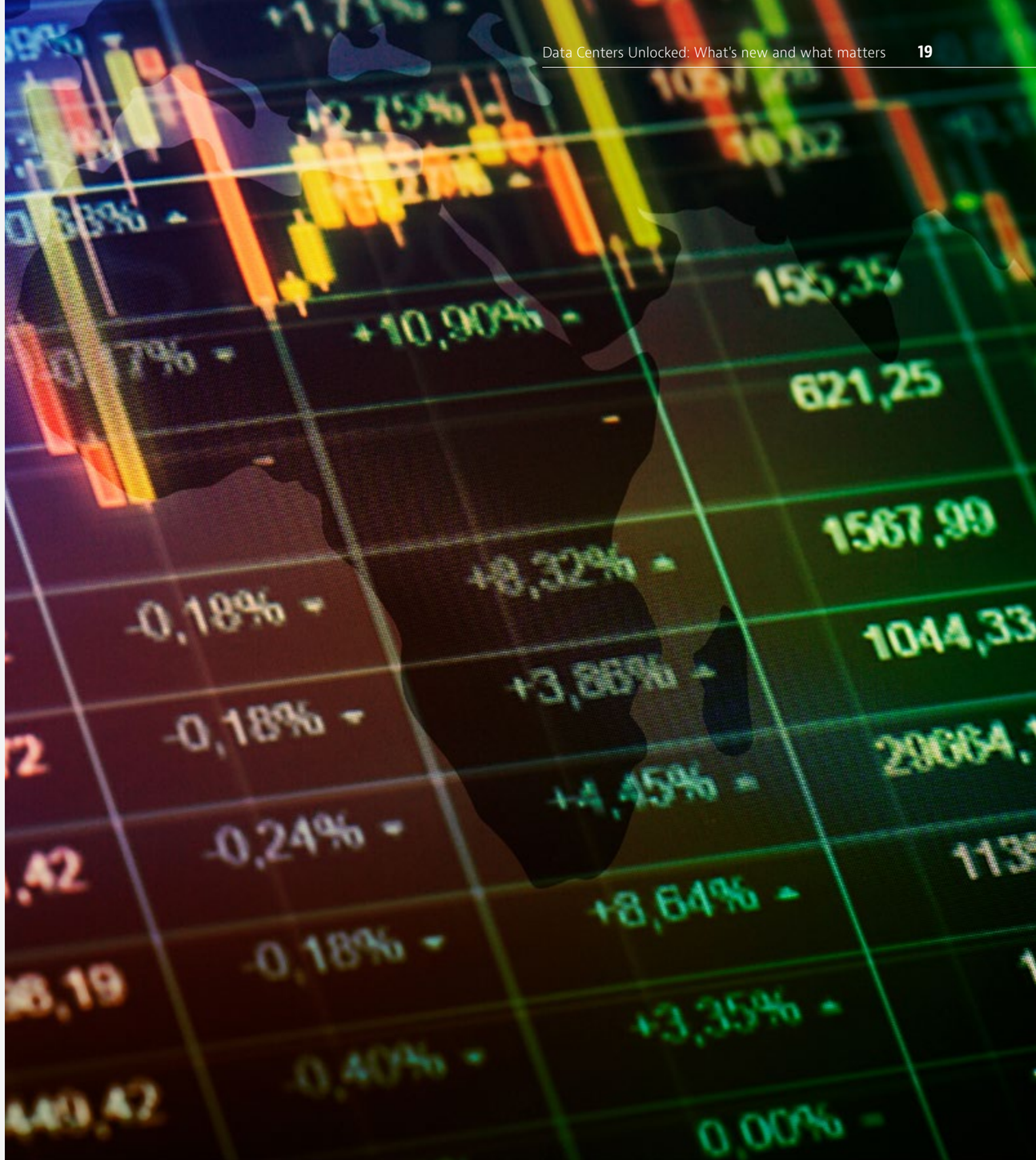
8. https://www.reuters.com/legal/transactional/aligned-data-centers-spotlight-after-40-billion-sale-blackrock-nvidia-backed-2025-10-15/ **9.** Macquarie Asset Management and PSP Investments announce sale of AirTrunk | Macquarie Group **10.** The data center balance: How US states can navigate the opportunities and challenges | McKinsey

Capital Requirements, Capital Recycling and Monetization

Financing Data Centers via REIT IPOs: A capital markets perspective



Data centers have emerged as a strategically vital and fast-growing aspect of the digital economy, fueled largely by surging data consumption, the massive computing requirements of artificial intelligence, the shift to cloud computing (including hyperscale workloads such as big data analytics) and the increase in internet traffic.

Developers and operators are facing mounting pressure to construct and scale data centers quickly and efficiently and expand into new geographic markets. As data centers are extremely capital-intensive, the financing of their development and expansion is a key challenge for developers and operators.

The data center Real Estate Investment Trust (REIT) is emerging as a powerful tool for raising capital as it offers a blend of liquidity, scalability and investor appeal. A REIT is a trust structure (typically, a public one) that owns, operates or finances income-producing real estate assets.

From a governance perspective, a REIT generally functions in the same way as a corporation. However, from a tax perspective, a REIT is generally exempt from corporate income tax if, among other requirements, it meets specific income and asset tests and distributes at least 90% of its taxable income to its shareholders.

As a result, REIT shareholders earn dividend-based income and long-term capital gains on real estate assets without having to purchase or manage the assets themselves.

Data center developers and operators are increasingly using initial public offerings (IPOs) of data center REITs and follow-on public offerings of equity or debt securities to raise capital to fund development, operations and expansion. These feature portfolios of stabilized assets that the sponsor has developed. Data center REITs offer institutional and retail investors several benefits, including the following:

- **Steady cash revenue stream:** Data center REITs provide investors with regular dividend income streams with the potential for long-term capital appreciation.
- **Portfolio diversification:** Data center REITs offer investors, in effect, a hybrid investment approach—the ability to participate in the digital technology and economy sector while benefiting from the protection of stable, income-producing real estate assets.

For operators, a data center REIT IPO may offer several benefits, including the following:

- **Access to capital:** Unlike private companies, REITs may access public markets more easily to raise the massive capital needed to build data center campuses. This provides REITs with more flexibility in financing options, reducing reliance on private equity and high-yield debt, which may impose restrictive covenants or demand aggressive returns.
- **Lower cost of capital:** REITs often benefit from a lower cost of capital due to their tax-advantaged structure.
- **Refinancing costs:** REITs may use public offerings of debt securities or preferred stock to obtain a more favorable debt structure.
- **Liquidity and transparency:** As a public company, a REIT provides liquidity for shareholders and a continuous valuation benchmark. This may support strategic initiatives such as merger and acquisition transactions or joint ventures.

For a data center operator or developer contemplating a REIT IPO, there are a number of key considerations and pre-planning activities that are important to the success of the IPO. Among these are the following:

- **Selection of trading market:** This decision involves several factors, including the REIT's jurisdiction, the jurisdiction and trading market most likely to garner and maintain significant investor interest, the company's ability to satisfy the exchange's initial and ongoing listing standards, corporate governance, disclosure requirements and investor tax implications.
- **Pre-IPO structuring of the REIT:** The pre-IPO structuring involves determining the most tax effective structure for the REIT and its subsidiaries and may involve a restructuring of the assets. The company, along with its tax advisers, will have to determine whether it meets and can continue to meet the tax requirements and conditions to qualify as a REIT.
- **Business and operational readiness review:** This involves an assessment by the company, its counsel and the proposed underwriters of the company's portfolio, business plan, development pipeline, leasing arrangements, etc., to assess the company's IPO readiness from a business standpoint.

  In addition, the company, together with its advisers, will need to consider its readiness from a management and governance standpoint, including the quality of its financial reporting, internal controls, its governance policies and its human capital resources to manage the demands of being a public company, among others. A key aspect of the pre-IPO planning process is to develop an appropriate public company infrastructure to be able to satisfy the exchange requirements and market expectations for a public company.

Once a company has decided to proceed with the IPO, the process itself will require close coordination and planning between the company, its counsel and auditors, the underwriters and their counsel and/or, depending on the jurisdiction, the sponsor and its counsel.

This is particularly critical in a cross-border IPO, a dual-listing IPO or even a domestic IPO if the company has material assets or subsidiaries located in multiple countries. The working group may be required to reconcile conflicting regulatory, governance or financial requirements. Early coordination with regulators is key to identifying and resolving potential issues at the outset.

As more data center REITs have material assets or subsidiaries located in multiple countries (e.g, under Singapore-REITs), one increasingly important aspect of the process is an effective and coordinated disclosure and due diligence management exercise.

As a general principle, the standard of disclosure and required disclosures in the offering or listing document are governed by the securities regulations in the country where the REIT is conducting the IPO and the exchange on which it is listing. To support the disclosures, the working group conducts an exhaustive due diligence process customary for that market.

Where material assets are located across multiple countries, each with their own practices on due diligence, legal opinions and regulatory compliance, conflicts may arise between the expectations of advisers leading the registration and listing process and those of local counsel addressing the respective matters. For example, there are significant differences in practices between the due diligence process and legal opinions in the US and in Asia Pacific jurisdictions, such as Singapore or Hong Kong.

Accordingly, it is critical in a "multijurisdictional" REIT IPO that all the advisers coordinate and agree at the outset of the process on the scope of due diligence, the required deliverables (including any reliance by a third party (i.e., someone other than the counsel's own client)), the scope of legal opinions and the timeline to avoid delays or disputes later in the process. Having counsel with both an international perspective and local market knowledge is important to working through conflicting due diligence and legal opinion practices.

As the digital economy continues to expand, the need for scalable, resilient and sustainable data center infrastructure will only intensify. For many developers and operators, a REIT IPO can provide access to deep capital funding sources, lower financing costs and support long-term growth.

A successful IPO process requires careful planning and coordination. For cross-border IPOs or IPOs involving multijurisdictional assets, having an experienced capital markets counsel with local market knowledge and an international outlook is key to efficiently accomplishing the IPO.

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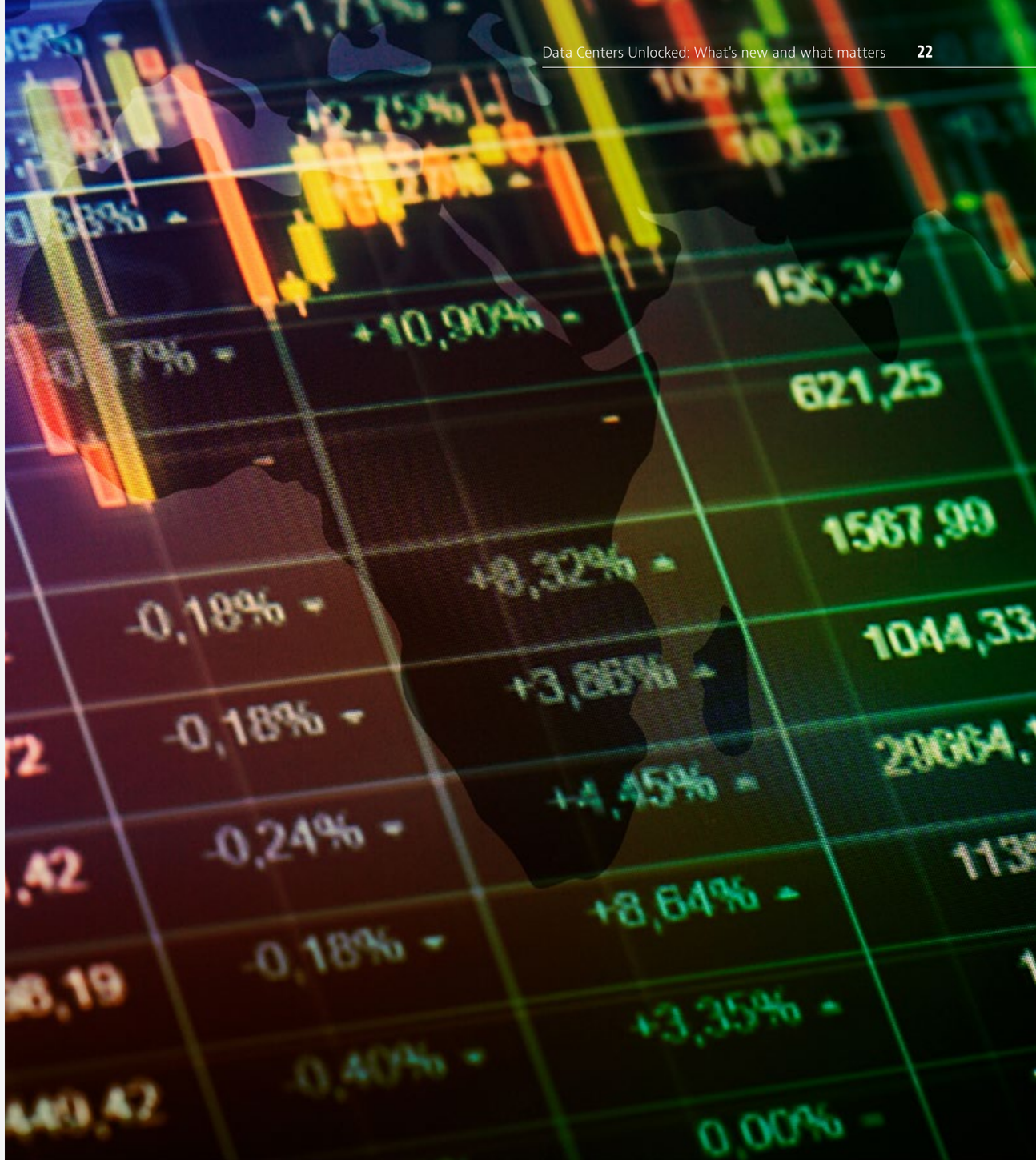
Capital Requirements, Capital Recycling and Monetization

Data Center Financing:
Capital recycling, financing structures and key bankability issues for sponsors and lenders



Introduction

Data center financing and investment structures have developed over recent years to draw on key structural and financing models from traditional corporate finance, real estate and project finance structures.

The particular blend of such models is based on a number of factors, including project status (e.g., under development or stabilized), and in the case of projects under development, depending on other factors such as the status of power, planning and pre-letting.

Other considerations include whether the financing is for a portfolio or single asset and the ultimate customer structure e.g., single hyperscaler (where one customer subscribes for all or substantially all of the capacity of the project, with the project typically built to the specifications of the customer) or multiple customer colocation structure (where the developer constructs the core and shell of the building and businesses rent space to house their own servers and IT equipment, sharing infrastructure like power, cooling and security—potentially including one or more anchor customers taking a substantial portion of the project's capacity).

We explore below the financing structures for capital recycling in the data center sector and the key structural, regulatory and due diligence issues which sponsors and lenders to such projects should consider when formulating these projects.

1. CAPITAL RECYCLING AND FINANCING STRUCTURES

Capital recycling is becoming an increasingly important financial strategy used in the data center sector, capable of being utilized both as a means of optimizing the utility of existing stabilized assets while also raising funding for new investments (often without incurring any additional debt on these new assets).

At its simplest, capital recycling involves the selling (either entirely or partially via a joint venture), leasing or otherwise leveraging existing assets and reinvesting the proceeds into the development or acquisition of new sites which offer the potential for greater returns. Employing this strategy allows sector players to avoid acquiring expensive new debt on development assets or issuing equity and allows resources to be reallocated in a way that promotes growth.

Effective corporate structuring can enable this debt to be incurred on an off-balance sheet basis, and when combined with tax structuring, can ensure operational returns as well as divestment returns are optimized.

The ever-increasing scale of capital required means that divestments, joint ventures and refinancings will be required to enable capital recycling. The financing structure along with other elements discussed in our deep dives on power, land acquisition, and construction (including land-splits and access to common parts) need to be designed at the outset to ensure they do not inhibit exits in the future and that optionality is maintained.

Sponsors and lenders should consider which financing structure best suits the type of asset being financed. Common capital recycling instruments and financing structures include portfolio financing, asset-backed securities (ABS), sustainability-linked loans and Single Asset Single Borrower (SASB) securitization structures, summarized below:

- **Portfolio financing**
  - This structure allows sponsors and lenders to group multiple data center assets into a single financing structure, including both stabilized assets and potentially also those under development. This approach aids scalable funding, permitting sponsors to expand their investment without having to enter into and negotiate separate financing for each asset, which also streamlines time and cost efficiency in the documentation process.
  - Having a unified commercial and legal framework, facilitated through documents such as common terms agreements, also simplifies negotiations with multiple lenders and supports potential future growth in the project. Sponsors and lenders can also diversify their risk across a wide portfolio, minimizing the impact of an underperforming asset.
  - Cross-collateralizing allows riskier projects which would otherwise be difficult and/or expensive to finance in a standalone arrangement to be viewed more favorably. There is also greater flexibility in the covenant and event of default regime under this structure, with testing occurring at the portfolio level as opposed to a single asset. This reduces the likelihood that an issue at a single asset level is likely to trigger a default across the entire financing.
  - The portfolio financing structure is also typically drafted to facilitate unlimited incremental debt, which permits borrowers to meet the oft-extensive capital requirements of new developments without resorting to newly negotiated financing terms for each project.
- **Asset backed security structure (ABS)**
  - An ABS allows operators to access capital tied up in stabilized and operational assets by issuing securities backed by the predictable cash flow these assets generate.
  - This model allows sponsors and lenders to take on a less large-scale financing arrangement and a shorter term commitment. Such deals can also be structured so that new data center developments, once stabilized, can be added into the broader collateral pool and support the issuance of new security without a need to renegotiate the entire financing structure.
  - As such, for sponsors and lenders, this model has the flexibility for growth and scalability, while also being efficient from a cost and documentation perspective. Given that the security is backed by a stabilized asset, sponsors, lenders and investors benefit from predictable returns and a lower risk of default.

- **Sustainability linked loans**

  A sustainability linked loan ties the borrowing cost of a project directly to the operator's environmental performance, which incentivizes energy efficiency and carbon footprint reduction.

  A formalized commitment to climate goals and energy efficiency enhances an operator's reputation in the market and can make a project more attractive to investors. Unlike a green loan, which limits proceeds to specific green-energy projects, the financial incentives and funds can be used across the broader business and allows the operator to more flexibly invest their returns.

- **SASB securitization structures**

  A SASB securitization structure involves a loan secured by a single data center asset (or group of related assets), which is owned by the same borrower, with repayment being made from cash flows generated by that asset.

  Such a structure is well suited for mature data centers with an established cash flow, allowing sponsors to optimize financing costs through scale and risk profile.

  Securitization of a SASB loan can be done through commercial mortgage-backed security structures, which enables sponsors to access institutional capital markets and recycle capital more effectively.

  This structure is less complex than portfolio financing, given it only focuses on a single asset or borrower, and in turn, can simplify the credit risk assessment process and underwriting for both sponsors and lenders. Lenders also benefit from more predictable income streams, a clearer risk assessment and a specific form of collateral the loan is backed by.

2. SCALABILITY

In order to mirror customer demand and fully utilize prime locations, many developers seek to ensure scalability for their projects and require their lenders to match these requirements with the ability to scale the financing or investments for future expansions or ancillary portfolio projects. In order to facilitate these arrangements, sponsors and lenders should consider the following key issues when negotiating the financing documentation:

- Whether lenders formalize their commitment in the form of incremental debt or committed investment, or whether this would take the form of a softer 'right to match.'

  In our experience, the willingness of lenders to provide more commitment to expansions will largely depend upon the degree of information and structure which has been prepared in advance—for example if land and power rights have been secured and multi-phase construction contracts are in place.

- On more complex financings involving multiple projects, both currently in development and planned, whether the financing documentation should cater for different terms applying to different portfolios of projects—for example undertakings, financial covenants and pricing.

- If expansions are to be undertaken by a separate entity to the original developer (e.g., to allow easier future divestments), sponsors and lenders will need to consider the inter-project issues which arise.

  These can include the following issues:

  - Documenting the use of shared facilities and infrastructure (e.g., sub-stations) so that the quiet enjoyment of the primary developer (and other future owners) over such assets is preserved;

  - If lenders are willing to allow (and in some structures it will be essential that they do) such shared facilities and infrastructure to be unsecured, so to ensure a lender cannot enforce and deprive other users of their shared access and use, as a compromise, lenders would usually insist on a negative pledge that such assets will not be secured in favor of any other third parties;

  - Due to the increasing size and costs of data centers, more advanced structures will include a separate SPV owning the shared facilities and infrastructure which is co-owned by the sponsors of each developer SPV and with first ranking security shared among the lenders to both projects. However, this can cause permitting and regulatory issues in certain jurisdictions which careful structure is needed to overcome.

3. MULTIPLE CONTRACTOR VS. SINGLE CONTRACTOR STRUCTURE

One key bankability concern for sponsors and lenders is the data center construction delivery model.

Explore the typical delivery models in our **data center construction deep dive.**

Traditional project finance structures require a single turnkey contracting structure. However, that model may not be possible or favored in data center construction projects and more flexibility to adopt a split contracting structure may be required. Key issues which sponsors and lenders should consider are the following:

- **Interface and completion risk:** if there is no turnkey contract in place with a single contractor or consortium, a number of completion and interface issues may prevent the project from being completed on time and within budget to the required specification, which is a key concern for both sponsors and lenders;

- **Contractor-procured insurance:** in traditional project finance structures, lenders often insist on a comprehensive borrower-procured insurance program to be in place, with all insurance terms controlled and direct confirmations and undertakings provided by insurance brokers to the lenders.

  However, we have seen borrowers moving towards a contractor-procured insurance program for projects adopting a multiple contractor approach, due to the lack of a single point of responsibility for the overall project. Certain jurisdictions have different mandatory approaches to insurance requirements in relation to construction.

- Sponsors and lenders may wish to consider appointing a contractor to coordinate, manage and take responsibility for the interface risk between the various contractors pursuant to a project management or interface agreement, although this increased role and liability will result in increased cost for the project.

- **Potential sponsor support:** to the extent that the lenders do not get sufficient comfort that the interface and completion risk issues are covered, or cost overruns occur, this may be an area where lenders ask for sponsor support to cover such risks, although this is likely to be heavily negotiated and tightly defined by experienced sponsors.

  Recourse to the sponsor group can inhibit future divestments and capital recycling, and can also impact the desire of some sponsors for the borrower to be off-balance sheet so the debt is not consolidated from an accounting perspective.

4. LAND, POWER SUPPLY AND WATER

Lenders to data center projects usually expect security over land title or right to use land, or at the minimum that there are no existing encumbrances over such land or right. The position will depend on the make-up of the lender group and some lenders with a real estate finance history will have different views to traditional infrastructure or corporate lenders.

View our **deep dive** on **data center land acquisition considerations.**

Lenders and sponsors should also undertake thorough due diligence to ensure that the borrower has robust non-intermittent power supply arrangements and that customer contracts include appropriate liability caps covering any breaches of commitments around performance and downtime.

View our **powering data centers deep dive.**

5. ENVIRONMENTAL AND SUSTAINABILITY ISSUES

Given the extensive land, power and water requirements of data centers, they naturally raise a number of environmental and sustainability concerns, which are key issues for all stakeholders, including lenders and sponsors/borrowers.

Borrowers and their financial sponsors will wish to ensure that they get access to sites, power and permitting from governments and regulators and so need to ensure they meet the necessary requirements.

This is also increasingly a focus for the customer who will pay a premium for data centers which have the highest environmental standards.

This in turn is also of interest to lenders, and they will want to ensure that the data center they finance has the customer demand and cashflows that will enable the repayment of their loans and also to avoid the worst case scenario of penalties imposed by customers or regulators which might restrict cashflows.

Lenders will sometimes be prepared to lend at a lower interest rate if certain sustainability criteria are met. Consequently, lenders and sponsors may wish to consider including provisions relating to the following requirements:

- Mitigating financial consequences through undertaking due diligence to ensure that key performance indicators (KPIs) under construction and operational contracts mirror the corresponding KPIs under any customer contracts.
- Incorporating compliance with market-standard formal green or sustainability principles, such as the Equator Principles, the Green Loan Principles (GLP) or the Sustainability-Linked Loan Principles (SLLP), where the GLP and SLLP have been issued jointly by the Loan Market Association, the Asia Pacific Loan Market Association and the Loan Syndications and Trading Association.
- Reviewing (together with the technical adviser for the project) the power and water usage and re-usage systems in place.
- Depending on the importance of the requirements and taking into account the requirements in any customer contract, determining whether a breach of the relevant requirements results in a 'hard' margin ratchet or event of default, or a 'soft' declassification event preventing all parties from disclosing the green or sustainable nature of the loan.

6. COLOCATION CUSTOMER / HYPERSCALERS DUE DILIGENCE

As noted above, data center projects requiring financing tend to fall under either a hyperscaler structure or a colocation structure. There are other types including enterprise, edge, container and 'GPU as a service' data centers, which all have their own nuances and impact on financing structures.

In any case, customer contracts will be a developer's sole revenue source, and it is crucial that lenders and sponsors undertake thorough legal and technical due diligence to assess the contractual framework in place. Relevant factors will include:

- Fee structure and performance security, which will link into debt sizing, tenor and repayment terms.
- Term of the customer contracts, including (if required) a weighted average expiry of the relevant service agreements to ensure that there are adequate revenues available for debt service or expected returns.
- Early termination provisions—for example, upon a change of control, change of operator or enforcement of security—and permitted security rights for the lenders over the developer's rights under the customer contract. See below in relation to subordination, non-disturbance and attornment issues.
- The extent to which lenders are willing to take on market risk in relation to potential customers for the project, particularly in light of the rise of pre-let customer contracts over the past few years which enable significant de-risking.

Where lenders are willing to take on this risk, potential mitigants include:

- Strict analysis of the developer's business plan, including conservative projections agreed by the lenders (together with input from the technical adviser as to the feasibility of such projections).
- Including a 'whitelist' of pre-approved customers, or by including clearly defined criteria for potential customers covering financial creditworthiness, operational track record, weighted average tenor and maximum exposure for certain customers to ensure diversity.

7. SUBORDINATION, NON-DISTURBANCE AND ATTORNMENT ISSUES

For projects which follow the hyperscaler structure (or where a particularly strong material customer is involved), sponsors and lenders are often required to deal with stringent demands, since such customers have a strong negotiating position as a key part of the feasibility of the project.

This is a dynamic area of the sector, and market positions are constantly evolving, but sponsors and lenders to such projects should consider the following issues:

- Customers are likely to insist that the lenders do not disturb the customer's quiet enjoyment and use of its designated areas, provided that the customer is not in default (including following enforcement of the lenders' security interests).
- In exchange, lenders will likely push for customers to recognize and agree to the rights and interests of the lenders' security interests in the project, including the rights of the lenders' successors in title, subject to the successor agreeing to comply with the same terms as the original lenders.

  As part of this requirement, customers are likely to insist on certain criteria of incoming operators (e.g., relating to creditworthiness and operational experience) and will push for the right to exercise its remedies under the customer contract if the default is not cured within a specified period.
- Lenders will want to push for limitation of liability for incoming operators for those liabilities arising prior to their date of appointment, which may be strongly negotiated by experienced customers.
- To allow the lenders to assess the performance of the borrower under the customer contracts, information covenants relating to defaults and payment status under the lease or customer contracts.
- Dealing with concerns around creditworthiness through keep-well letters where parent companies of the customer will provide undertakings (often subject to extensive negotiation) to maintain the financial good standing of the customer.

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Tax

Key Tax Considerations

We provide a practical overview of the key tax considerations relevant to investment, development and operation of data centers, highlighting key issues in various jurisdictions. In particular, we cover the evolving landscape of tax incentives and key issues to consider in relation to tax structuring, VAT treatment, real estate-specific taxation and potential exits, highlighting the importance of careful planning and up-to-date advice to navigate complex and frequently changing tax environments.

Tax incentives

Many jurisdictions, such as Brazil and some states in the US, offer tax incentives to encourage investment in data centers. These incentives may, depending on the jurisdiction, be available at federal, state or municipal levels. These can include benefits such as a reduction in sales and use taxes (such as on purchases of equipment, software and construction materials), property tax reductions and energy tax incentives (e.g., where using renewable energy or investing in energy efficient technology). A detailed analysis of any available tax incentives is therefore required prior to investing.

Some jurisdictions provide targeted incentives specifically designed to attract data center investment. For example, in Texas, United States, the owner, operators or occupant of a data center may qualify for a 10 to 15 year exemption from state sales and use tax on qualifying purchases (including electricity, electrical systems, cooling systems, hardware, network connectivity equipment and software), subject to meeting certain conditions, such as creating a minimum number of qualifying jobs and making a capital investment of at least USD 200 million in the data center over a five year period.

Other jurisdictions offer broader tax incentives that, while not data center-specific, are nonetheless advantageous for the sector. For example, the United Kingdom's capital allowances regime allows for 100% first-year allowances on the cost of qualifying plant and machinery and 50% first-year allowances on 'integral' plant and machinery, such as air conditioning and air cooling systems, hot and cold water systems and electrical systems, including lighting systems.

This landscape is continually evolving, with jurisdictions regularly introducing new incentives. For example, in Brazil, a new provisional measure, published September 2025, establishes a Special Tax Regime for data center services in Brazil.

The Special Tax Regime would suspend certain federal turnover taxes, as well as taxes on imports of certain data center equipment. If enacted, these incentives could take effect in 2026.

Conversely, some jurisdictions are scaling back incentives, particularly electricity-related tax benefits to encourage improvements in energy efficiency.

Tax structuring

When planning the holding and financing structure for a data center investment from a tax perspective, a clear understanding of the potential investor base is crucial to understand where the tax impact is in the structure and whether any steps can be taken to use specific real estate holding structures to exempt income and/or gains, so that only the ultimate investor is subject to tax. This could be done by:

- Using certain holding vehicles, such as Real Estate Investment Trusts (REITs), which can eliminate taxation at the entity level provided relevant conditions are met.

Exlpore our **deep dive** on **REITS.**

- Making use of any available tax elections. For example, a collective investment vehicle can make a transparency election for UK tax purposes so that investors are treated as directly holding the underlying real estate and taxed accordingly.
- Making use of reliefs available to certain categories of investors, such as sovereign wealth funds. For example, in the US, sovereign wealth investors (non-US investors) are generally subject to 0% withholding tax on US dividends, interest and gains. Such investors will generally wish to invest in US-based data centers through a US REIT holding structure so that: (i) they will not have any US tax leakage at the level of the US REIT; (ii) they will not have any US income tax payment exposure and US income tax return filing exposure; and (iii) they will also eliminate tax on distributions of earnings from that US REIT to them (i.e., dividends) by taking advantage of the 0% withholding tax rate on such distributions.

In addition, it is essential to take into account any future exit strategies. This is especially relevant for real estate holdings, where the structure and timing of its set up—whether pre- or post-development— can have significant tax implications and should be considered at an early stage.

In the case of a multi-data center campus, it is also important to consider early on whether to split the site into multiple investment units (and thus separate holding structures)—again, for purposes of a future transfer.

Careful structuring at the outset can help ensure compliance and optimize tax efficiency throughout the investment lifecycle.

EU and UK VAT considerations

Data centers present a range of complex VAT issues globally that must be carefully assessed throughout their development and operation. We focus on EU and UK VAT considerations specifically, however, similar issues will also arise in other jurisdictions that operate VAT or GST regimes, and care should be taken to ensure that proper planning is done to identify and mitigate potential VAT / GST risks.

Input VAT recovery

The VAT treatment on the acquisition of land, construction services and ongoing costs can be complex and the methods of recovering any input VAT will need to be considered carefully given the nature of the business in question. This can vary between jurisdictions which often have differing rules on the VAT treatment of property.

Tax advice is essential, particularly where the site is mixed-use, shares infrastructure (e.g., colocation with energy generation) or involves capital investments subject to regimes which require input VAT adjustments over time (such as the Capital Goods Scheme in the United Kingdom).

There is often a lengthy period of time during the development of a data center where costs are being incurred but the data center cannot yet be used to generate revenue. During this period in particular, input tax recovery may come under scrutiny from local tax authorities, who may require varying levels of evidence to demonstrate a future intention to make taxable supplies.

These factors mean that the broader activities and location of the entities incurring development (and ongoing) costs should be assessed, and careful planning around how such projects are structured should be undertaken to avoid unnecessary VAT costs or VAT registrations, particularly in the context of multi-jurisdictional projects.

VAT classification of colocation services

The VAT treatment of colocation services depends on whether the services are classified as relating to immovable property or as a broader bundle of services (e.g., hosting, maintenance, and security). This classification impacts the place of supply of the services (and therefore whether the supplier is required to charge local VAT and the means by which a customer can recover input VAT), as well as the VAT liability of the supply itself.

For example, many EU Member States would treat a supply of immovable property as exempt from VAT, which would lead to no VAT being charged to the customer and a restriction to the amount of input VAT the supplier could recover on its costs.

In many EU member states, it may be possible for the supplier to opt to tax the property, such that relevant supplies of the property become subject to VAT. The utilization of any such option can protect against the risk that data center services could be regarded as exempt supplies of land and will generally allow the supplier to recover VAT incurred on their costs.

In this respect, the European Court of Justice addressed this issue in **A Oy** (Case C-215/19), concluding that colocation services—including provision of IT cabinets, electricity and environmental controls—constituted a bundled service taxable under the general rule, rather than a mere supply of land or property.

The judgment in A Oy is based on the specific facts, but sets out a number of general principles. While an analysis should be undertaken on a case-by-case basis in the jurisdiction concerned to confirm if the judgment is applicable to other supplies of colocation services, to date the treatment outlined by A Oy is being applied by operators across the EU and United Kingdom not only with respect to colocation data centers but also the lease of entire operational data centers to multinational customers.

Fixed establishment considerations

For entities that operate using third-party or group data center services in the location of their customers, there is a question whether the presence of the data center (and any hardware and software located therein) gives rise to a fixed establishment—this is relevant both to the question whether the supplied data center services are subject to local VAT, and whether the entity receiving the data center services is required to charge VAT on its supplies to its business customers.

Under EU and United Kingdom law, a fixed establishment is created for VAT purposes by the permanent presence of human and technical resources in a jurisdiction other than where that person's business is established, where those resources are sufficient to receive and use supplies for the recipient's own needs, or to make the supplies to the customer. The CJEU has recently held in **Adient** (Case C-533/22) that a company cannot be deemed to have a fixed establishment solely due to a group relationship or exclusive service contract with another company, or where it otherwise has no local human presence.

As it stands at the moment, therefore, a data center may only be likely to create a fixed establishment of the supplier of data center services if employees of that supplier are present in the jurisdiction. However, case law may develop with technology, particularly given the increase in the use of AI in this space. Indeed, the Advocate-General in Adient raised the possibility that technical resources requiring no permanent presence might be regarded as sufficient to constitute a fixed establishment (albeit the Court itself did not adopt this approach).

Real estate specific taxation

Jurisdictions may have real estate-specific tax regimes or rules. Many jurisdictions (including Singapore, the United Kingdom and the United States) have special regimes for REITs that encourage investment in real estate through tax efficient entities.

For example, in Singapore, tax transparency treatment may be accorded to the Singapore REIT (S-REIT) on a share of the statutory income of the trustee, subject to conditions being met, including the trustee distributing at least 90% of its taxable income to the unitholders in the same year in which the income is derived. Where the conditions are met, the specified income distributed to unitholders is not taxed at the S-REIT level but is instead taxed in the hands of the unitholders.

In addition, jurisdictions often impose more complex tax rules relating to the ownership and development of real estate. For example, the United Kingdom operates the Construction Industry Scheme—a tax deduction mechanism under which 'contractors' must deduct tax from payments made to 'subcontractors' and remit those amounts to HMRC.

The definition of 'contractor' under this scheme is broad, and real estate owners may be required to register as contractors, verify subcontractors' tax status, deduct the appropriate amounts, and apply the domestic VAT reverse charge. This creates an additional compliance burden, as contractors must file returns and make payments to the UK tax authority (and may face penalties for non-compliance).

Furthermore, on divestment, many jurisdictions impose real estate-specific taxes on the transfer of property. Typically, the transfer of real estate will trigger a liability for real estate transfer tax, which may fall on the seller, the buyer, or both, depending on the jurisdiction. Even where the transaction involves an indirect disposal—such as the sale of shares in a property-rich company—real estate transfer tax may still apply.

In addition to transfer taxes, some jurisdictions levy non-resident capital gains tax on the sale of real estate, which can also extend to property-rich entities. Accordingly, where a future divestment is contemplated at the time of acquisition, careful consideration should be given to the choice of holding vehicle and the potential structure of the sale.

Exit tax implications

If a future divestment is contemplated (whether by way of IPO, bilateral sale or a majority/minority investment by a joint venture partner), a variety of taxes could apply, including corporate income tax / capital gains tax, real estate transfer taxes, VAT and stamp duties.

In relation to corporate income taxes, many jurisdictions have participation exemptions that can apply to exempt a sale of shares from corporate income tax. However, it is important to seek tax advice to determine whether the conditions are met to benefit from such an exemption and whether there are minimum holding thresholds and/or holding periods that need to be taken into account.

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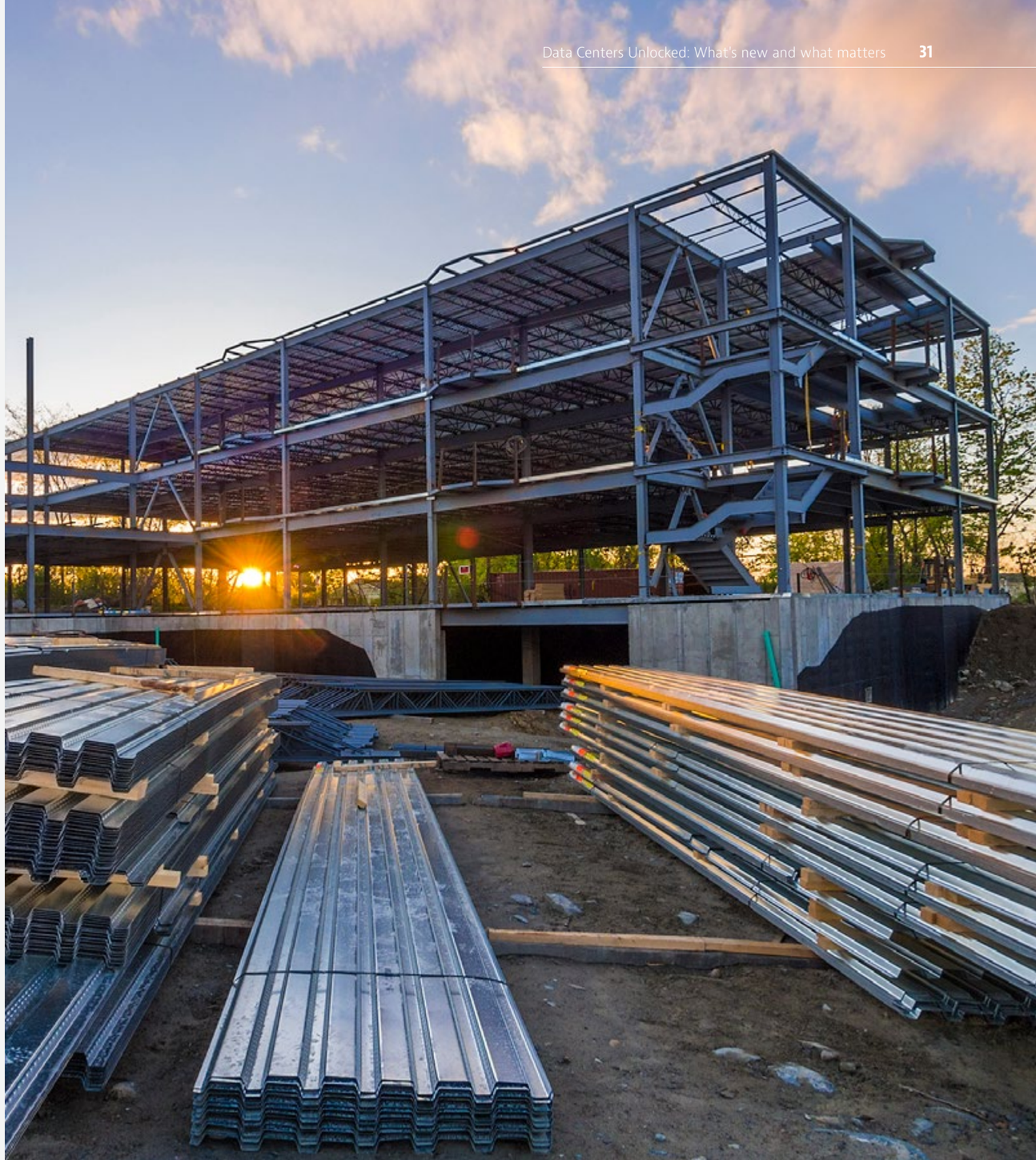
Design and Build

Breaking New Ground: Considerations for data center land acquisitions



One of the most critical aspects of developing data centers is suitable land acquisition, which intersects with legal, regulatory and operational considerations that vary significantly across jurisdictions. We explore the key considerations in acquiring land for data centers.

Existing owners and developers of land also have strategic options to maximise their returns by converting sites to the data center asset class, although there are pitfalls.

Ownership vs. leasing or acquiring in rem rights

The decision to own or lease land for a data center is shaped by legal constraints, investment strategy and operational needs. Larger data center operators may have a mix of owned and leased data center sites.

Acquiring full ownership of the land provides stability: the developer/operator has control over the site, allowing for tailored infrastructure, expansion and operational autonomy. A data center developer or operator that owns the site will generally have uninterrupted possession over the land. Lessees may have to contemplate the impact of a lessor becoming insolvent or a lease being terminated early. A landowner will also be able to freely negotiate with utilities and service providers.

Conversely, in shared, campus type data center sites, the lessee is likely to be subject to a cap on the amount of utilities it consumes, in order to avoid any inadvertent breach of another customer's requirements. Campus data center sites generally require large, flat and well-developed land, which may be originally government-owned.

In Japan, we have seen agreements that include milestone-based development conditions for data center developers, permitting the government to repurchase the land if these milestones are not met.

On the other hand, there are also advantages to leasing. Acquiring real estate requires significant capital investment on top of the cost of construction of the data center. Lessees will only have to cover the cost of construction, the rent and the required advances or deposits. In most cases, leasing land may also allow for shorter deployment timelines, especially in jurisdictions with complex land acquisition processes.

However, lessees will still have to consider that even without acquiring land, the permitting processes may be lengthy. In certain jurisdictions we have also seen issues where planning laws and regulations have not caught up with data centers as a relatively new asset class, which can impact on the development timetable or, in extreme cases, the viability of the project.

Operators may also choose to lease existing data centers where they can interconnect with network carriers, cloud service providers, content delivery networks and other enterprises. A data center operator may sometimes lease a powered shell (which includes the basic structure and power) from a competitor. However, such operators will have to consider that if issues may arise between the parties, the data center owner/lessor will have more leverage over a lessee.

There is also ever increasing availability of powered shells from real estate investors or developers, particularly industrial and logistics groups, who have land acquisition, permitting and construction expertise, but not the operational know-how or ability to do customer specific fit-out work. For some operators, this offers de-risking and greater speed to market, and for existing landowners, the potential to materially increase value of an existing asset with a different current use.

In several jurisdictions, in rem rights (such as long leaseholds and surface rights) are a good alternative to short-term occupational leases, as they provide additional security, especially against insolvency and early termination risks. For example, where administrative concessions are granted by the government for the use of public land, the developer or operator will not have to worry about the insolvency of the landowner. Administrative concessions also carry fewer early termination risks as they are usually governed by law, which imposes stricter procedural and substantive requirements for termination.

In rem rights also give developers and operators a certain amount of land control as they tend to have a longer term than a standard occupational lease. In many countries the term of a long leasehold is often 99 years or more.

In some countries, such as China, Philippines and Thailand, foreign entities cannot own land. In such cases, developers and operators may enter into long leaseholds or rights in rem structures. Data center developers and operators may also enter into a joint venture with a local entity that owns the land.

When full ownership of the land has not been acquired, and instead a lease or other right has been granted, parties should also negotiate the consequences of expiry of the right at the end of the term (reinstatement, acquisition of assets by landowner, indemnity to be paid, etc.).

Whether the site will be owned or leased, developers and operators must ensure compliance with applicable land-use and zoning regulations. Industrial land is usually the appropriate zoning for data centers, but there are instances when commercial zoning may be acceptable, especially for smaller data centers.

Power and connectivity

Infrastructure readiness is a key determinant of site viability. A data center requires reliable and affordable power and water, and robust network connectivity. It is also best for data centers to be situated in low disaster risk locations to avoid or minimize damage from flooding, earthquakes, typhoons, volcanic eruptions and other natural disasters. The suitability of the site will also depend on the type of customer and service level agreements (and penalties for downtime) required by them.

- **Power**
  - The most important aspect of running a data center is power.

Explore the **power options and layering strategies** in our **powering data centers deep dive**.

  - In some locations, utility providers will only allow for one main connection to the public electricity grid for each address or parcel of land. In large data center campuses, development is usually undertaken in phases, and the land may be divided based on the areas corresponding to these phases.
  - These different areas may be leased or sold to different operators or investors when completed. Developers must ensure that each parcel will continue to have access to the grid and to the infrastructure connecting them to the grid. These may have to be covered by covenants or easements that are tied to the title over the parcels of land.
  - Subdividing land can also have tax and regulatory implications, and careful structuring at the outset is required. For example, in some jurisdictions, site-splitting can involve the on-selling of power to multiple entities, which can cause regulatory problems.
- **Connectivity**
  - Data centers also sell connectivity—they will need stable internet connection, so they usually have multiple providers. Currently, most operators prefer fiber optic connectivity, which requires physical cables, conduits, ducts, access points and terminals. In some areas, cables will need to be installed, and this may require securing rights of way and ensuring compliance with local regulations. Any negotiation with third-party landowners can have the potential to add cost and delay, unless carefully managed.
  - The ecosystem of a data center will also include cloud service providers, content delivery networks, telecommunications carriers, other data centers and major population centers.

Data centers as critical infrastructure

Data centers are increasingly classified as critical infrastructure assets in many jurisdictions, due to the essential services that are vital to the functioning of a country or the information stored on them.

As critical infrastructure, data centers may be entitled to additional government support and incentives but may also be subject to stricter foreign investment rules, enhanced security requirements, which include both physical security and cybersecurity, and strict data localization and privacy laws.

In some jurisdictions, such as Australia, foreign investment in data centers requires government approval. On the other hand, to attract data center investment, some jurisdictions have relaxed their rules and have allowed foreign companies to own data centers. In China, foreign-owned enterprises may now operate data centers in designated free port zones. This is the same for Vietnam, which has removed restrictions in foreign investor participations in data centers since July 2024.

In the UK, data center transactions may be subject to mandatory or voluntary notification under the National Security and Investment Act 2021. In contrast to many jurisdictions, the nationality of the acquirer of the data center entity or asset is not relevant to the UK regime, and therefore the potential need for national security clearance should be considered as a factor that may impact the acquisition of any existing data center, or land on which a data center will be constructed, in the UK.

For members of the European Union, data center service providers fall under digital infrastructure that are covered by the NIS2 Directive (Network and Information Systems 2 Directive). The NIS2 Directive requires Member States to ensure covered entities take cybersecurity risk management measures.

Sustainable data center assets

Data centers use large amounts of land, energy and water.

In many jurisdictions, conservation matters will have to be considered in relation to any site on which a data center is to be constructed. In the UK, for example, planning considerations for a new data center development will be likely to include biodiversity gain and a mandatory environmental impact assessment. Developers should also consider potential physical climate change risks, such as extreme weather events that may cause power outages or flooding or ground shrinkage that may disrupt operations.

Increasingly, sustainable and diversified sources of energy will be an important determinative factor in investment and development decisions for data centers.

Learn more about **power options and layering strategies** in our **deep dive**.

Some jurisdictions are specifically legislating to ensure that data centers are more energy efficient: for example the German Energy Efficiency Act, passed in 2023, requires data centers to have an energy and environmental management system, reduce and reuse waste heat, have specific power usage effectiveness targets, obtain 100% energy from renewable energy sources from 2027, and publish specific information and submit it to the government every year. In Japan, beginning in 2022, large-size data centers are subject to reporting Power Use Effectiveness (PUE) to the government.

The environmental impact of any data center is influenced by its water consumption, primarily used for cooling. Some operators are developing alternative cooling methods and water conservation measures to mitigate this concern, but at present site selection is often influenced by access to water.

Data center developers may seek a green certification such as Leadership in Energy and Environmental Design (LEED) or Building Research Establishment Environmental Assessment Method (BREEAM) demonstrating the green credentials of the data center asset. Depending on the level of certification achieved, this may reflect the embodied carbon of the asset rather than its sustainability credentials in terms of operational emissions.

If a data center is leased, the lessor and lessee may consider entering into a "green lease" which, as well as containing the usual lease provisions, also requires the parties to manage the property sustainably.

For example, the parties may be required to share data in relation to energy and water consumption, and to collaborate on ways to reduce the property's emissions. Additionally, the lessee may be prevented from altering the property in a way that would impact its green certification. For the data center lessor, this can bolster the property's green credentials, ensure that the asset continues to meet regulatory requirements, as well as remaining attractive to investors.

Conclusion: A global strategy with local execution

Successfully planning and building a data center requires a nuanced approach that blends global strategy with local execution. Navigating the complexities of land acquisition, infrastructure readiness and regulatory compliance is crucial for long-term operational resilience and growth.

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Design and Build

Building the Backbone: Legal considerations in data center construction

The global surge in digitalization, cloud computing and artificial intelligence has made data centers a critical asset class and a focal point for investment, innovation and regulatory attention. Data center construction involves navigating a complex landscape of legal, technical, and commercial issues.

We explore the key considerations that key stakeholders must address during data center construction, in addition to the usual construction issues which arise in the development of complex infrastructure.

Delivery models: Core and shell vs. turnkey

Data center construction typically follows one of two models: core and shell or turnkey. The core and shell approach involves delivering the structural framework and essential systems (power, cooling, connectivity), leaving flexibility for the tenant to customize and be responsible for fit-out and IT infrastructure.

This model is often favored by hyperscalers that demand control over their IT environments and often bring their own design specifications. However, this approach carries a risk of misalignment at the interface between the shell and core fit-out teams unless carefully managed.

In contrast, the turnkey model offers a fully completed facility, ready for immediate use. From a legal standpoint, turnkey contracts are often preferred in traditional project finance due to their single-point accountability.

However, while the turnkey model simplifies delivery and reduces interface risks, it limits the opportunity for tenant customization. The model also has its risks as it will require the provision of equipment and technology that are often even more expensive than the building and the land on which it stands. Developers will have to choose their vendors well, making sure that they have technical knowledge and a stable supply chain.

In the current construction market in many jurisdictions, there can be challenges in finding contractors who are willing to bid on a turnkey approach, unless at a high-cost premium. Some developers are seeking greater cost control by engaging multiple separate contractors rather than one main contractor to do the design and build.

In such circumstances, clear definition of scope, performance standards, and interface management between multiple contractors or vendors is critical to avoid disputes and delays.

Risk allocation in design and construction

Risk allocation is a central concern in data center projects for both developers and lenders.

In turnkey arrangements, the contractor bears most of the design and construction risk. However, in multi-contractor setups, interface risk—the risk that different contractors' scopes do not align—can be significant. Lenders and developers must conduct thorough legal and technical due diligence to ensure that all contracts are harmonized and that completion obligations are enforceable.

Where data center developments are custom-built for customers, the developers will have to ensure that their development agreements with their customers are mirrored with their contracts with their builders. The development agreements will also have to be clear on who bears the risks for variations required by authorities or arising from changes in law or regulations.

Design error risks are increased due to the very specialized nature of data center design, design development and the complex interfaces and operational requirements needed to accommodate the requirements of evolving technology. As a consequence, it is not uncommon for rework, redesign or further approvals to be required during the construction phase. This means that contractual variation provisions require careful consideration, particularly in circumstances where the initial design is constantly evolving and variable due to inputs by end users.

Some developers may prefer traditional procurement methods that allow them to appoint specialist mechanical, electrical, plumbing (MEP) consultants to lead the design phase of the project. In this way, they retain a greater degree of control than might typically be the case with design and build procurement approaches.

This allows the developers to remain more closely engaged in the design phase, not just on a review and approval basis. Often, the contractor's design responsibility will then be limited to defined portions of the overall project, and this requires a high degree of interface between the lead MEP consultant and the contractor.

Owner Furnished, Contractor Installed (OFCI)

OFCI procurement strategies are common in the industry. These strategies allow data center developers to standardize equipment across sites, ensure the quality of the equipment, and achieve better pricing by negotiating directly with vendors and using bulk purchasing. They afford having a greater control over long lead items and therefore avoiding project delays.

However, these procurement strategies also introduce additional legal, logistical and technical complexities. These include the need to coordinate equipment delivery schedules with the overall construction timeline, clearly allocate risk of loss or damage to the equipment at various stages, and define responsibility for pre-installation storage, assembly, and final connections, among other considerations.

Strong coordination and clear communication between the data center developer, the contractor and the equipment vendor, and clearly drafted contractual documentation that defines roles, responsibilities, and timelines in contracts, are key for the success of the OFCI approach in the data center context.

Security, IP and confidentiality

Data center security and confidentiality is a key design and construction consideration. Data centers are increasingly classified as critical infrastructure in many jurisdictions, triggering heightened regulatory scrutiny and compliance obligations.

While developers and operators may not be directly responsible for compliance with legal obligations relating to data hosted in the data center (depending on the nature of the data center), regulations applicable to end users will drive customer requirements around security.

Certifications and operational protocols must demonstrate that data is protected from unauthorized access or misuse. IP rights also come into play, particularly in bespoke design elements or proprietary cooling and connectivity systems. Inclusion of strong data handling and security provisions along with cooperation clauses for investigations are increasingly common, particularly noting that audits are on the rise.

Limitations of liability

As is usually the case with major infrastructure projects, contractors routinely seek to limit their liability to an aggregate cap and minimize their exposure to consequential loss. Along with the usual carve-outs, data center projects often involve the negotiation of additional carve-outs relating to data loss, cyber breaches and data security.

Liquidated damages and completion guarantees

Robust liquidated damages clauses are critical to mitigating delays and achieving certain performance levels. For data center turnkey construction, key performance metrics include data processing and storage capacity, internet connection speed, energy, carbon, water usage and cooling efficiency as well as ambient temperature and humidity.

Liquidated damages clauses must be carefully calibrated to reflect actual losses and avoid being deemed penalties. In projects involving multiple separate contractors, enforcing liquidated damages can be complex due to fragmented scopes of work and overlapping responsibilities.

The cost to developers of delay in getting data centers to operation is substantial, and pre-let customer contracts with hyperscalers will often contain extremely high penalties for a delay to ready for service (RFS) date. A number of other tools more typically found in engineering, procurement and construction (EPC) contracts to drive contractor performance and delay mitigation may be deployed in design and construction contracts to motivate or achieve timely completion.

Completion guarantees—whether contractual or backed by performance bonds—offer additional protection to developers and lenders and are designed to incentivize delivery of the facility on time and to the agreed specification.

Early access

For design-and-build arrangements, tenants often seek early access to install IT equipment before completion is achieved. This must be managed through clear contractual provisions that define the scope and timing of access, liability, and insurance coverage.

It should be clear when tenants may access the site, the work that may be done by tenants, the utility charges to be borne by tenants, as well as the amount of the damages to be paid by tenants for damage caused by their representatives and contractors.

Typically, intermediate entry surveys of condition or pre-acceptance visits are organized before any such early access. Developers may also add a self-help right so that they can timely rectify any issues arising from tenant early access and demand reimbursement from the tenant.

Data centers may also be constructed in phases with staggered completion dates which allow customers to enter and start installation of servers in completed parts of the facility while other phases remain to be completed

Testing and commissioning at handover

The testing and commissioning phase is the final checkpoint before handover. It validates that essential systems including power, cooling, security, and connectivity function as intended. It is essential that commissioning protocols are embedded in the contract and that handover is contingent on successful completion.

These protocols should cover (among other things) the required tests, acceptance criteria, and documentation standards. This phase also triggers the commencement of warranty periods and final payments, making it a critical milestone in the project lifecycle.

Additional permits and assessments

Data centers require copious amounts of energy. For this reason, most data center operators make provisions for back-up generation (e.g., solar PV, batteries, fuel cells, gas turbines). This may necessitate obtaining further permits or conducting additional assessments—such as planning, environmental, and energy regulatory reviews, especially in light of the rapidly changing regulatory environment.

Read our **deep dive** on **powering data centers**.

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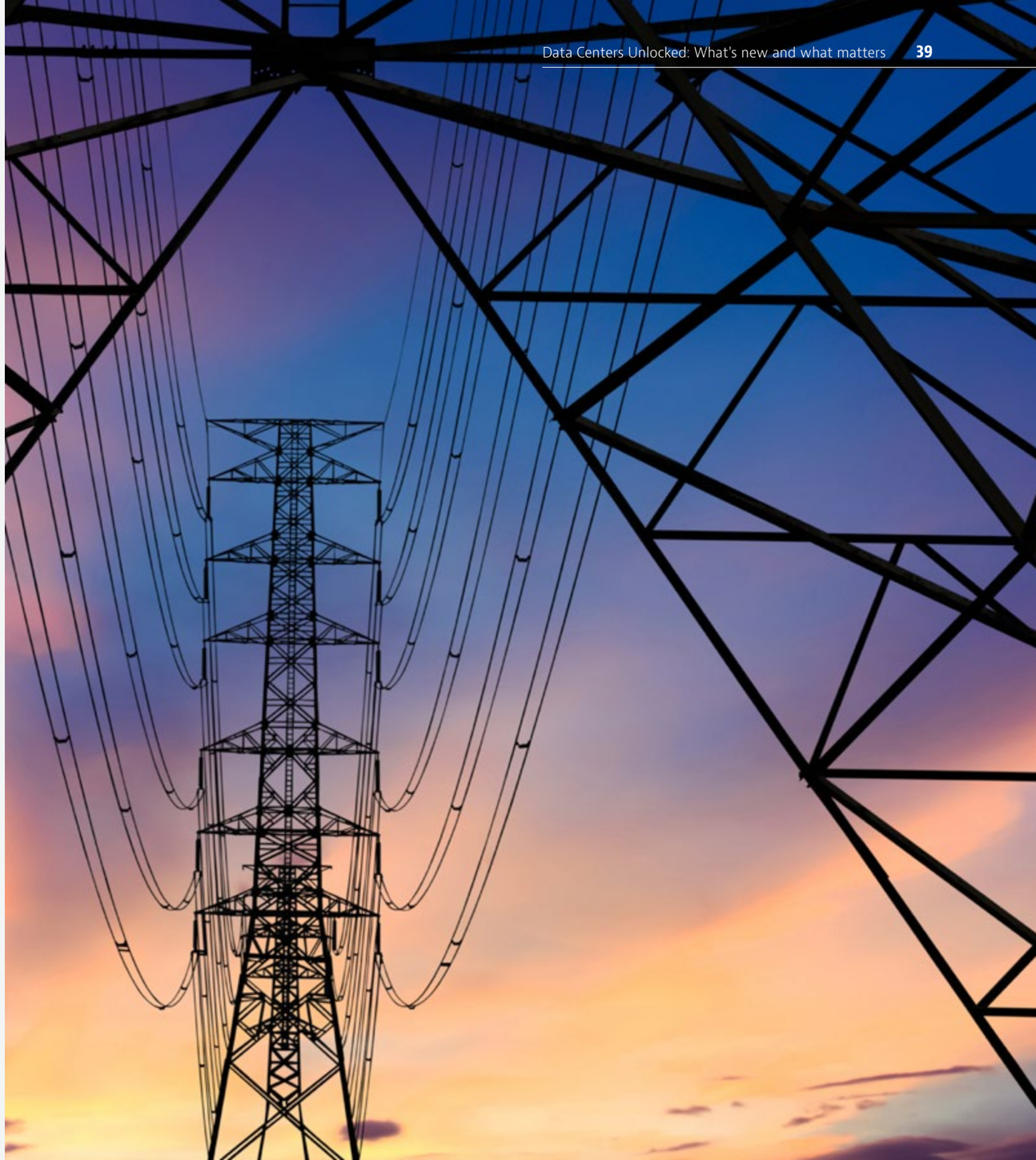
Power

Powering Data Centers: Supply options and layered strategies



It is widely acknowledged that data centers currently consume substantial amounts of energy and are anticipated to consume significantly more in the foreseeable future, driven by the growing adoption of artificial intelligence (AI), cloud computing and related technologies.

The growth of power demand in the data center space is much faster than the growth of total electricity consumption in other sectors. While the exact statistics and projections vary depending on the source, many predict at least several multiples of the current consumption in a decade. Securing clean, steady, reliable and scalable power at the best price is critical to project feasibility, license to operate and long-term resilience of any data center.

Below we outline the key power supply options for data centers and highlight some of the common power supply issues encountered on data center projects worldwide.

Power supply options

In most data center transactions, it will be necessary to evaluate the data center's main and backup power sources, including their adequacy and reliability, the capacity to meet current and future requirements and the ability to handle peak loads.

The power supply options could include standard power from the grid, on-site generation (renewable or conventional), power procured via power purchase agreements (PPAs), back-up generators, battery energy storage systems (BESS), fuel cells or a combination of some of these. Moreover, nuclear power is increasingly viewed as a potential solution for rising data center energy needs: small modular reactors (SMRs) could provide reliable, low-carbon energy to data centers.

Each of the power supply options will have legal issues unique to it—arising from the technology and method of procurement, as well as issues applicable to the jurisdiction where the data center asset is proposed to be located, including specific regulatory requirements, subsidies and incentives.

Grid connection

Data centers are typically connected to the public electricity grid. In most jurisdictions, the existing grid infrastructure was not designed to handle the large volumes of electricity required for the operation of data centers. Grid reinforcement, upgrades and expansion measures are therefore necessary to enable adequate power supply.

These measures are generally both time-consuming and costly. In some cases, grid upgrades and expansion may require multiple interconnection studies and may take several years, during which a (full-capacity) load connection to the grid may not be possible.

Furthermore, in a number of jurisdictions, the grid users are required to bear the costs of grid upgrades, expansion and/or improving the distribution infrastructure in and around their facilities, either in full or in part. If the data center is later expanded, further grid upgrades may again be necessary, potentially involving additional time and expense.

Historically, signal latency was the main driver when selecting data center location. However, with the rapid growth of AI, signal latency is becoming less important than availability of the power supply to support the scale of computing capacity required for training AI models. Greater grid congestion at a site leads to longer interconnection times, increased costs, and more frequent curtailments from bottlenecks.

Where a country's electricity infrastructure includes both national and local grids, the identity of the local grid operator can be another important factor. Smooth communication with the grid operator is crucial and there is a risk of project delays if the grid operator's initial timelines prove inaccurate or if the grid operator is unwilling to commit to binding schedules.

Flexible grid connection agreements or implementing a phased connection are emerging as some of the solutions to grid capacity challenges faced by many countries. Under flexible grid connection arrangements, the data center operator may agree to reduce or temporarily shut down certain services (e.g., AI applications) in the event of grid congestion or get time—or capacity-limited access to the grid (e.g., only during off-peak hours or capped usage levels).

As a result, the data center can connect to the grid faster and at lower cost because full capacity is not needed at all times, reducing the need for extensive grid expansion.

Even after selecting a location with these factors in mind, grid connection is not automatically secured. Data center projects require long development times, during which third parties may also identify the site as attractive and seek to connect their own, faster-to-complete projects to the grid.

To avoid this issue, reserving grid connection capacity is required. However, such reservations—where permitted by law—are often subject to specific conditions (e.g., demonstrating a certain level of project progress). This requires careful planning and a thorough understanding of legal requirements. Otherwise, there is a risk that the reservation will lapse and the planned grid capacity will not be available when the data center is completed.

When utilizing the public grid, data center operators would typically need to enter into both a grid connection agreement and a separate supply agreement with an energy provider. Due to the substantial energy volumes required, these supply agreements are usually negotiated individually, balancing the interests of cost-efficiency, flexibility and security of supply.

The long-term nature of such agreements often necessitates the inclusion of price adjustment mechanisms. If the data center is to be powered by green energy, the conclusion of a (physical or virtual) PPA may be required (see the clean energy solutions section below).

On-site power generation and micro grids

Under certain circumstances, a (partial) solution to the challenges associated with using the public grid could lie in establishing an independent, self-sufficient energy supply through on-site generation and microgrids.

This could involve constructing solar and wind power plants, BESS, gas-fired power stations, combined heat and power (CHP) units adjacent to the data center and supplying electricity directly via (private) lines without relying on the public grid. Furthermore, fuel cell and linear generator systems as well as SMRs are emerging as low-carbon, scalable power solutions for data centers. Fuel cell and linear generator systems can generate electricity on-site either as a back-up power source or as a flexible load-following power source to supplement grid power.

These systems have the benefit of modular deployment and can often use different fuel sources, including natural gas and, in the future, hydrogen. SMRs are covered in more detail below.

Building such a dedicated energy infrastructure typically entails significantly higher upfront costs compared to connecting to the public grid, while the ongoing costs for self-generated energy are generally much lower. Instead of construction and operation of these power generation units, a collaboration with a third party constructing and operating the power generation units could be considered. In such a case, the energy supply could take place under an on-site PPA.

It must be noted, however, that data center operations require a stable base load power supply. Regularly, this cannot be provided by renewable energy sources alone, as their generation is inherently volatile. To ensure base load coverage, additional infrastructure such as energy storage systems, gas-fired power plants or SMRs are necessary. This issue can still arise when connecting directly to the public grid (see above), particularly if there are insufficient base load-capable generation facilities connected to the system.

In the past, data centers were usually built close to urban areas. However, the trend is changing as urban areas often lack sufficient space for power generation installations capable of meeting the required energy demand and, in jurisdictions with end user energy markets, energy tends to be more expensive near urban areas due to peak demand spikes. If a suitable site is identified, it may require planning approvals to allow mixed-use development for both data centers and renewable energy facilities.

Even after project completion, regulatory considerations persist. The operation of energy facilities and microgrids may require permits and trigger various energy law obligations. Moreover, connection to the public grid is typically still necessary to feed excess energy into the grid (unless sufficient on-site storage is available), to draw additional power during periods of high demand or low renewable generation (e.g., during a “dark lull” affecting the output of solar and wind energy plants) and, in the event of a failure of the local grid or on-site generation facilities, as a back-up to maintain the operation of the data center.

This necessitates contractual arrangements with the local grid operator and could result in market participation by the generation assets, subjecting them to applicable regulatory frameworks. Furthermore, if BESS are also installed on-site, additional regulatory requirements could apply.

Finally, arrangements for on-site power generation for data centers could also face regulatory challenges if they may result in unintended consequences for regional power markets. An example of this is the recent denial of approval by a regulator of a physical PPA between the nuclear power plant and to be constructed hyperscaler data center. The regulator denied the request for approval of the arrangement on the ground that removing the material amount of the baseload capacity from the regional energy market clearing will result in a risk of the energy price increasing in the market.

Clean energy solutions

Data centers are under intense scrutiny from regulators, investors and customers to decarbonise. Most operators now pursue a mix of onsite and offsite renewable strategies. Onsite projects—typically solar photovoltaics, wind or CHP—provide cost certainty and reputational benefits, but, as stated above, are often constrained by space and planning restrictions, particularly in urban or suburban markets where demand is highest.

Offsite solutions include physical PPAs and virtual PPAs. Virtual PPAs are financial contracts between a data center operator and a renewable energy developer which do not involve physical delivery of electricity to the data center. Instead, the energy is sold into the local grid, and the data center operator receives renewable energy certificates to claim sustainability benefit. Financial settlements are based on the difference between the agreed fixed price and the market price of electricity.

These solutions allow access to large-scale renewable projects but raise complex (though not unsurmountable) legal and contractual challenges such as:

- **Grid integration and use of system rules** which vary widely between jurisdictions, with reforms under way across a number of jurisdictions to facilitate direct procurement by large energy users.
- **Contract design** for data center PPAs must address long-term volume risk, curtailment, price re-openers and force majeure, given the sheer scale of contracted load.
- **Certification and additionality** are increasingly scrutinised by investors and regulators, with growing pressure on the data center operators to obtain relevant green/renewable energy certificates to confirm the renewable origin of the electricity provided and/or to show that contracted PPAs fund new renewable build rather than simply recycling existing green capacity.

Where renewables cannot guarantee reliability, clean gas is playing a transitional role. Biomethane, hydrogen-ready turbines and synthetic methane offer dispatchable, lower-carbon options, but they carry their own legal considerations.

Feedstock traceability and certification are key to ensuring sustainability; blending and grid injection are constrained by evolving technical standards; and carbon accounting must align with both mandatory disclosure regimes and voluntary ESG frameworks.

SMRs

SMRs as well as other advanced nuclear technologies now offer a compelling solution to the challenges faced by the power sector given the rapid growth in power demand from data centers, and are particularly well suited to address the requirements of the data center industry. Specifically, SMRs have the following offering:

- **Reliable and consistent baseload power:** crucial for data centers as they look to source power that facilitates their strict uptime requirements (which are typically over 99.9%). Most SMRs are being designed with capacity factors (i.e., the ratio of actual energy output over a certain period to the maximum possible energy output if the plant were to operate at its rated capacity continuously) reaching up to around 95%, that are in excess of most other power generation facilities, and far in excess of intermittent renewable power generation.
- **Load-following capability:** allowing for adjustment to output based on demand, contributing to grid stability and allowing for integration with e.g., renewable power sources as part of "off grid" energy systems.
- **Wide range of scalable capacity:** typically up to 300MW for a unit (and microreactors will provide a unit typically less than 50MW), with the ability to deploy multiple units at the same location with economies of scale, offering an attractive proposition for data centers in their analysis of their short, medium and long term energy requirements.
- **Low carbon solution:** supporting decarbonization and sustainability efforts of data centers.
- **Potential for off grid or "behind the meter" solutions:** SMRs are able to operate independently of the grid, and also work efficiently when co-existing with renewable power and supported by digitized energy management systems.
- **Low physical footprint:** the land required to generate power is significantly lower than required by renewable energy.

It is also widely understood that SMRs seek to address many of the perceived challenges faced by gigawatt scale nuclear projects (and which can deter capital investors, strategic investors and financing). Specifically, they are designed to be significantly cheaper to build than conventional gigawatt scale reactors, owing largely to the modular and simplified construction techniques, involving off site manufacturing and onsite assembly.

SMRs also market their ability to use largely well established and existing supply chains for the majority of the construction. The hope is that through modular and repeat builds using increasingly standardized components this will significantly drive down costs, result in significantly shorter and predictable timeframes to deployment and operation, and thereby make SMRs a bankable, and cost competitive solution that can be deployed in a relatively short time frame.

While the perceived benefits of SMRs (and other advanced nuclear technologies), and their use case for data centers, is highly attractive, a number of challenges remain to be addressed before the benefits of SMRs are realized in the data center industry.

Firstly, SMRs are as yet unproven at scale outside of China and Russia. While a number of SMR designs are progressing through the licensing process in a number of jurisdictions, the uncertainties and risks associated with first of a kind (FOAK) projects make the case for SMRs more complex when compared to other power generation sources.

Additionally, most jurisdictions lack a regulatory framework adapted to SMR characteristics; traditional regulatory regimes developed for conventional gigawatt scale reactors that focus on site-specific licensing, large-scale construction oversight and complex emergency planning are not wholly appropriate to SMRs where e.g., development risk, operating profiles and different safety approaches (e.g., through passive safety systems) are different.

Aside from FOAK challenges and lack of adapted regulatory regimes, a number of regulatory and legal considerations will be relevant to any potential project stakeholder (including developers, investors and lenders) when analyzing the viability/suitability of a particular SMR to the proposed data center. These will include:

- An understanding of the relevant jurisdiction's nuclear regulatory framework, and the extent to which it is consistent with international standards and best practice, particularly around nuclear safety, security and safeguards issues as well as nuclear third-party liability. Any gaps or shortfalls as compared to international best practice will be a key risk issue for stakeholders.
- Licensing and approval process for the proposed SMR design in the relevant jurisdiction, including timeline for obtaining construction and operation permits.
- Understanding decommissioning requirements, including funding obligations and any resulting potential exposure.
- Proposed strategy (and estimated costs) for handling and disposing of nuclear waste and spent fuel.
- Clarity on the proposed fuel supply strategy and security of supply.
- Site selection and suitability requirements of each jurisdiction for deployment of both the SMR and the data center (e.g., some jurisdictions have specific sites or prescriptive site criteria when assessing suitability of SMRs to a particular site).

BESS

If SMRs provide clean baseload and renewables deliver low-cost green power, storage is the glue that holds the system together. BESS is now central to data center strategy, serving both as resilience infrastructure and as a commercial enabler:

- **Load shifting and peak shaving** reduce exposure to volatile wholesale prices and network charges by charging during low-cost or high-renewable periods and discharging power at peak demand.
- **Backup power** offers instantaneous response during outages, supplementing or replacing diesel back-up fleets.
- **Grid services participation** enables operators, where permitted, to earn additional revenue by providing frequency regulation, voltage support and capacity services.

There are numerous contracting models for BESS already in existence– and new models continue to emerge as operators look to optimise their revenues (for example, revenue stacking — using the same BESS assets for peak shaving, resilience and grid services). Each of these models have their own advantages and challenges which could include (among many others):

- **Permitting and safety:** large-scale BESS raises environmental and fire safety issues, particularly acute when co-located with nuclear or high-voltage facilities.
- **Grid connection:** storage's dual role as both consumer and generator requires bespoke interconnection agreements, with evolving treatment under applicable network codes.
- **Service models:** where BESS is delivered via third-party "energy-as-a-service" contracts, drafting must allocate performance risk, maintenance obligations and liability for outages.

Advances in chemistry, including flow batteries, are improving economics and extending lifespans, but raise new issues around recycling, hazardous materials and supply chain sustainability.

Outlook

The future of data center power lies in layered strategies: renewables for cost and ESG credibility; clean gas as a transitional bridge; SMRs for reliable baseload in the next decade; and BESS and fuel cells to knit the system together, at least for now.

For developers and investors, the challenge is not whether to adopt these technologies, but how to structure them legally and commercially across multiple jurisdictions. With demand only accelerating, the winners will be those who align technical innovation, regulatory compliance and contractual precision at scale.

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