GRESB

Navigating Data Center Sustainability with GRESB

Trends and Recommendations for 2025 GRESB Participants

Summary

Data centers are among the fastest-growing and most impactful real asset investments today. In 2025, data centers operators can choose to complete either the GRESB Real Estate or Infrastructure Assessment. This decision hinges on careful consideration of factors such as investment approach, materiality, peer group selection, and data sharing requirements.

This white paper explores current participation trends, scoring insights, and highlights from the GRESB Benchmarks and provides detailed guidance on selecting the most appropriate assessment in 2025. It also sheds light on GRESB's ongoing efforts to address the unique characteristics and sustainability challenges of data centers.

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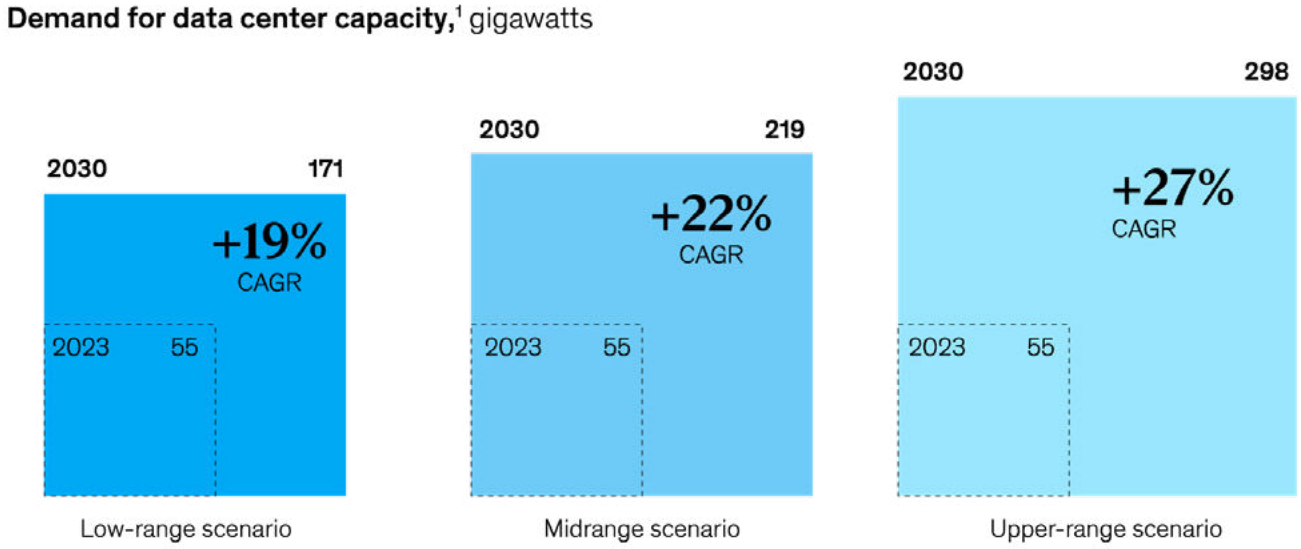
Introduction

Data centers are fast-growing, high-impact facilities, providing services central to modern life. However, they are also massive consumers of energy—clean and otherwise. In some cases, they consume significant amounts of water or have significant land use and community impacts, with these concerns expected to intensify in the future. McKinsey forecasts global demand for data center services tripling by the end of the decade, with their midrange scenario calling for a compound annual growth rate of 22%. Meanwhile, developments such as generative AI are only expected to further increase energy demands (Goldman Sachs 2025), although the exact effects are still uncertain (The Verge).

Figure 1. Data center capacity demand scenarios (McKinsey & Company 2024).



[1] Three scenarios showing the upper–, low–, and midrange estimates of demand, based on analysis of AI adoption trends; growth in shipments of different types of chips (application–specific integrated circuits, graphics processing units, etc) and associated power consumption; and the typical compute storage, and network needs of AI workloads. Demand is measured by power consumption to reflect the number of servers a facility can house.
Source: McKinsey Data Center Demand model

Source: McKinsey & Company, AI power: Expanding data center capacity to meet growing demand, 2024.

Over the past decade, data centers have grown significantly in both size and capacity. The power demand of a typical new data center asset has increased from 30 megawatts to more than 200 megawatts, reflecting the need to support a larger customer base and more data-intensive applications. This scale comes at a commensurate financial cost. The details vary by market, but the broad range encompasses USD 9-to-15 million per megawatt. This translates to new facility costs in excess of USD 1 billion (Cushman & Wakefield 2025).

Data centers fall into different categories based on their ownership and operations:

1. **Hyperscale:** Facilities occupied and managed by the largest tech companies, typically used for cloud services (e.g., Google, Meta, Amazon).

2. **Colocation:** Facilities leased to multiple customers in an off-site location, managed by a dedicated data center company (e.g., QTS, Equinix, Digital Realty).

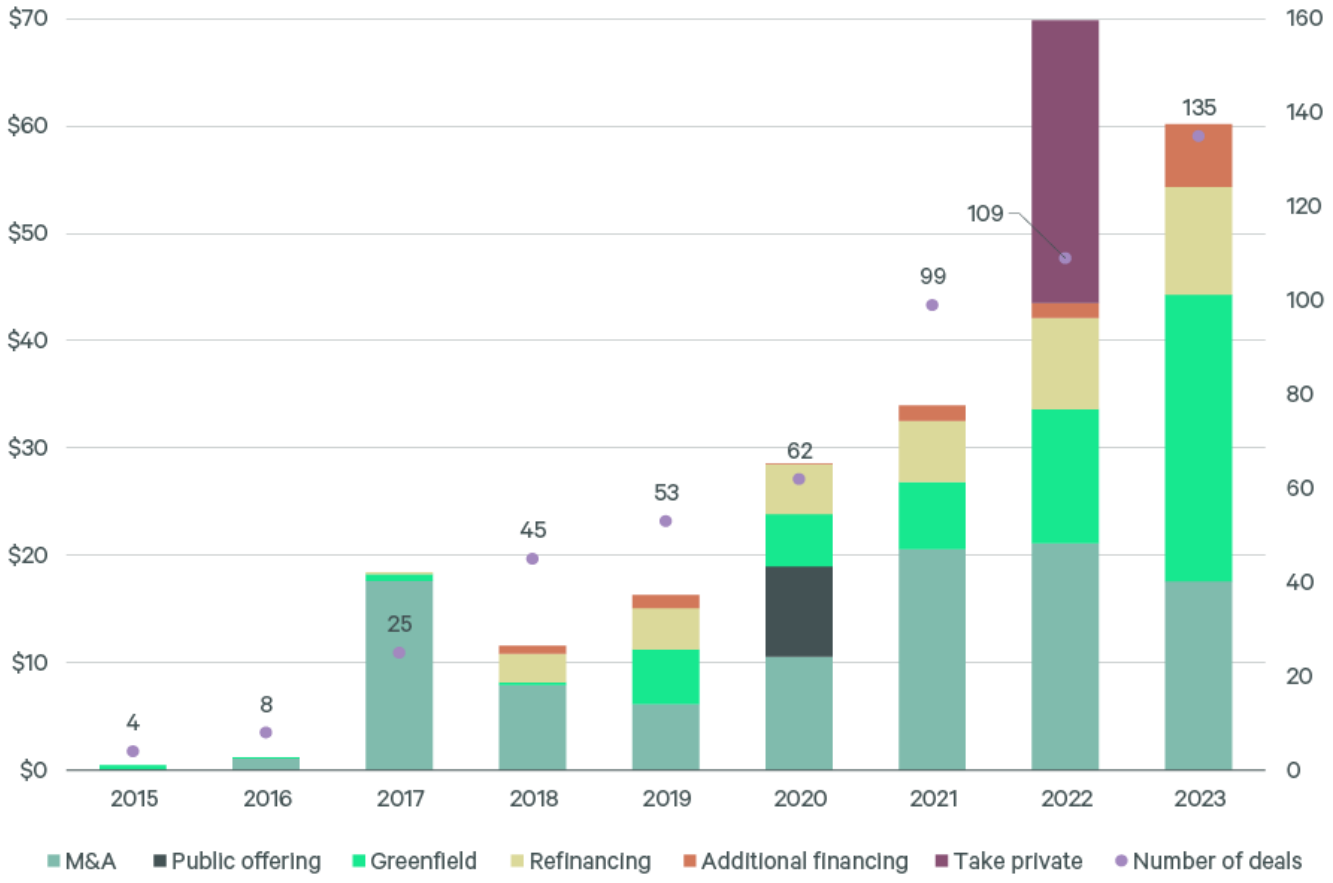
3. **Edge:** Facilities that are strategically located near the end-user's location to decrease latency (e.g., Databank, Tierpoint, T5 Data Centers).

4. **Enterprise:** Facilities managed in-house by a company, which may even be as simple as a server room (often used by large multinationals).

Market research indicates rapid growth in the first three categories, with on-premise enterprise facilities declining over time.

Data centers are attractive—albeit complex—investment opportunities. This is reflected in CBRE research on mergers and acquisition trends (CBRE 2024). Each of these transactions is associated with significant issues related to environmental and social performance. The scale and consequences of these transactions suggests the need for due diligence and engagement over the investment lifecycle to establish and manage expectations for risk-adjusted returns.

Figure 2. Trends in data center mergers and acquisitions, 2024 (CBRE Investment Management).



Source: CBRE Investment Management, Decoding Data Centers, 2024.

While energy consumption is an inherent aspect of data center operations, the associated social and environmental impacts can be mitigated through thoughtful design and operation. Data centers have become more efficient and are increasingly powered by clean energy, with many designed and built to minimize embodied carbon and supply chain impacts.

GRESB Assessments

Currently, data centers fall under both the GRESB Real Estate and Infrastructure Assessments, with further distinctions between standing assets and new developments. Participation patterns reflect choices by investors and managers, as data centers are categorized differently across market participants.

GRESB Real Estate

categorizes data centers as a "Technology/Science" property type. Real estate entities are typically comprised of a portfolio of assets that complete the assessment at both the asset and portfolio level. In real estate, an "asset" refers to an individual property or campus. Assessment results cover a combination of aggregated asset-level performance, portfolio-level indicators, and management practices of the organization managing the portfolio.

While some real estate entities exclusively own data centers, most include data centers as one property type among others. In the case of multiple property types, GRESB Real Estate weights the contribution of data centers based on gross asset value (GAV). For example, an entity with a total GAV of USD 1 billion, including USD 333 million in data center GAV, would see a one-third weighting from its data centers and two-thirds from other property types. Assessment results are benchmarked against real estate peers with similar characteristics.

GRESB Infrastructure

categorizes data centers as "Data Infrastructure: Data Storage, Data Centers." There are three Assessments within GRESB Infrastructure: one for funds, one for operational assets, and one for assets in development. In this case, the term "asset" refers to a portfolio company operating one or multiple data center properties.

Funds with data center assets will have part of their overall results based on the performance of those assets, but the data center will also complete their own Asset Assessment, where they are directly benchmarked against other data center companies with similar characteristics. The Asset Assessment uses a built-in materiality approach, that enables data centers to focus on sustainability topics that are most material to them.

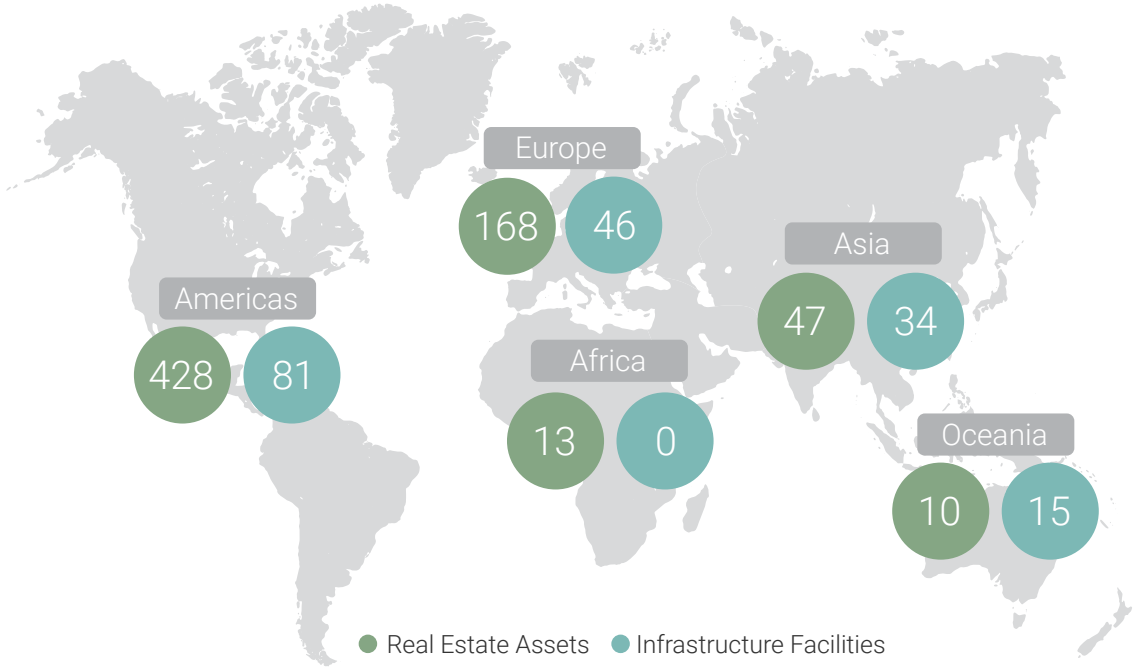
Participation

In 2024, a total of 41 entities reported data centers to the GRESB Assessments, with 17 reporting under Real Estate and 24 under Infrastructure Asset, representing 842 sites worldwide. Overall, data center participation increased by 28% in 2024 compared to 2023 (Figure 1).

Figure 1. GRESB data center participation growth (2018-2024).

The geographic distribution of GRESB data center participants mirrors global patterns in data center development and operations (Figure 2). Data center sites are referred to as "facilities" in the Infrastructure Asset Assessment and "assets" in the Real Estate Assessment.

Figure 2. Geographic distribution of data centers reporting to the 2024 GRESB Real Estate and Infrastructure Assessments.



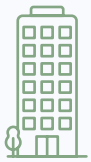
Understanding Energy Use in Data Centers

Data centers are among the most energy-intensive real assets, significantly outpacing traditional buildings in energy consumption and intensity. Data from GRESB REAL Statistics—GRESB's global dataset covering energy and GHG intensity values and trends—over the last four years[1] illustrates this distinction: the median energy consumption for a data center reporting under real estate ranged from 17.10 to 39.15 million kWh per year, compared to just 1.46 to 1.62 million kWh for office buildings. Energy Use Intensity (EUI), which measures energy consumption per square meter, further underscores the difference—these data centers reported a median EUI between 1184.00 and 3095.00 kWh/m², while offices ranged from 137.00 to 159.00 kWh/m². However, EUI alone is not the most accurate indicator of efficiency in data centers, as it does not account for operational load or utilization factors.

17.10 to 39.15
million kWh/year

median energy consumption
for **data centers**

VS



1.46 to 1.62
million kWh/year

median energy consumption
for **office buildings**

The energy demands of data centers are not uniform. Variability exists based on size, design, and operational efficiency. Among data centers reporting to GRESB real estate over the past four years:

1. The highest 10% in EUI consumed **199.0 million kWh/year at 9522.1 kWh/m²/year**.
2. The lowest 10% in EUI consumed **4.8 million kWh/year at 199.7 kWh/m²/year**.
3. The largest 10% of data centers by size averaged **229.1 million kWh/year at 6854.5 kWh/m²**.
4. The smallest 10% by size averaged **8.1 million kWh/year at 1997.9 kWh/m²**.

Overall, the energy consumption of data centers in the GRESB Real Estate Benchmark is increasing, reflecting both the growth of the sector and the addition of larger facilities: the average energy use per asset rose from 59.6 million kWh in 2020 to 76.0 million kWh in 2024. Geographically, the highest energy consumption was recorded in the United States, Singapore, Germany, China, and the Netherlands. For context, the 23.0 TWh of electricity consumed by GRESB-reporting data centers in 2023 was equivalent to approximately 19.2% of the Netherlands' total electricity generation in 2022.

[1]Data from REAL Statistics in this document covers the GRESB Assessments from 2020 to 2024, corresponding to data collected during the period from 2019 to 2023.

Example of a GRESB Data Center Participant

GRESB Real Estate Sector Leader: K-square Data Center PFV Co. Ltd. (Koramco Asset Management Co, Ltd.)

K-square Data Center is a 5-Star participant in the 2024 Real Estate Development Assessment.

K-Square Data Center Gasan is a data center with a total floor area of about 41,214 square meters with three basement floors and 11 ground floors located in 319-19 Gasan-dong, Geumcheon-gu, Seoul.

Koramco Asset Management has prioritized new and renewable energy efficiency and sustainability features including solar power, fuel cells, and indoor and outdoor water recycling.

Learn more about the K-square Data Center and Koramco Asset Management.

2025 Considerations for GRESB Participation

In 2025, data center operators have the option to use either the Real Estate or Infrastructure Asset Assessment. GRESB leaves it to the discretion of participants to select the assessment that best fits their investment approach. Nevertheless, managers may take the following factors into consideration when making their decision:

01. **Investor interest and data sharing**
Investors and other data end-users can subscribe to specific GRESB business lines (i.e., Real Estate or Infrastructure) as "information takers." This means that they can request access to the Benchmark Report of a reporting entity via the GRESB Portal. If the aim of reporting is to share data with a GRESB Investor Member, it is logical to choose the assessment to which this Investor Member has access. Since data centers can be classified as either Infrastructure or Real Estate, access will depend on the investor's subscription and allocation.

02. **Investment approach**
Many participants make this choice based on how they describe or designate their investments. For example, data center REITs may choose the Real Estate Assessment. Alternatively, data centers in infrastructure funds may select the Infrastructure Assessment.

03. **Data granularity**
Another consideration is the level of aggregation managers prefer in their reporting. The GRESB Real Estate Assessment is rooted in building performance. Consequently, it emphasizes the collection of building-level performance data for energy, emissions, water, waste, efficiency measures, and building certifications. The GRESB Infrastructure Asset Assessment emphasizes reporting at the fund or portfolio company level. Consequently, managers may select the Real Estate Assessment to emphasize asset performance or the Infrastructure Assessment to prioritize company or fund-level reporting.

04. **Materiality**
The GRESB Infrastructure Assessments feature a materiality-based approach, where the asset's characteristics, such as its sector, location, and number of workers, among other things, determine the weighting of indicators and metrics. Alternatively, the GRESB Real Estate Assessment applies uniform reporting requirements and scoring methodologies to all real estate sub-sectors. This provides comparability, say, across REITs. However, it does not take into account the specific sustainability performance of data centers.

05. **Normalization**
The GRESB Infrastructure Assessment normalizes performance data based on three metrics; GAV, revenue, and output. For data centers, output is the amount of data stored by a portfolio company. This provides the option to compare data points between assets of the same sector type (i.e., those that share the same output metric) and assets of different sector types. In the Real Estate Assessment, performance data (e.g. consumption, emissions) is normalized by floor area.

06. **Benchmarking**
The GRESB Real Estate Assessment compares the reported information against funds or portfolios with similar sector/property type but also allows for comparison against all other real estate REITs, funds, and portfolios. In contrast, the Infrastructure Assessments allow for comparisons against both data center portfolio companies as well as all infrastructure assets, which cover sectors from energy to transport. A data center portfolio that also contains other asset types may take this into account when choosing which assessment is most appropriate.

The Future of Data Centers at GRESB

Data centers currently participate in the Real Estate and Infrastructure Assessments, but neither approach fully captures the unique operational and sustainability characteristics of the sector. Unlike traditional buildings, data centers have different energy use patterns, stakeholder relationships, and performance metrics, making direct comparisons with other asset types challenging.

Recognizing this, GRESB has launched a Data Center Working Group in partnership with iMasons to develop an assessment solution tailored to the data center sector. This initiative aims to identify key sustainability priorities and address the unique circumstances in which data centers operate.

In 2026, GRESB and iMasons anticipate adding new assessment options. These will complement existing Standards and provide a more tailored, sector-specific set of indicators, metrics, and weights. There are likely to be trade-offs between assessment strategies (e.g., differences in peer groups or comparison sets), and it will be important for investors and managers to follow developments closely to make the best choices for their companies and operational circumstances.

Learn More

Please reach out to Cathy Granneman at GRESB for more information.

About GRESB

As a trusted partner to financial markets across real assets and climate-critical industries, GRESB delivers assessment-based solutions, actionable insights, and granular asset-level data to drive informed investment decisions and support the transition to a more sustainable, robust economy.

Since 2009, GRESB has been the premier provider of sustainability data and benchmarks across real assets, serving more than 150 financial institutions and investors worldwide. Our comprehensive and complementary datasets cover more than 2,200 real estate portfolios, 167 infrastructure funds, and 720 infrastructure assets through the annual GRESB Assessments, collectively valued at USD 9 trillion.

Learn more at gresb.com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