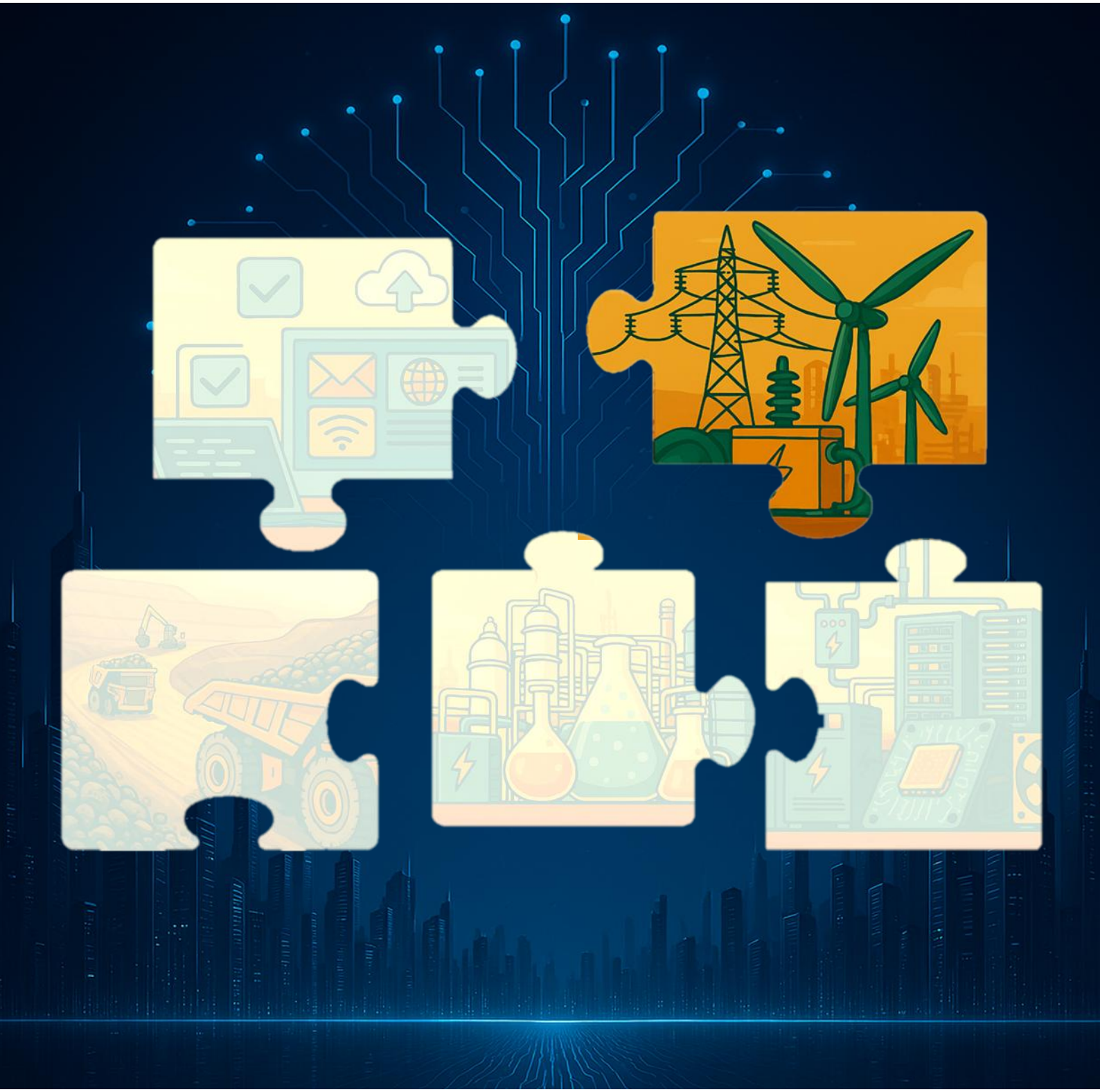
PL Capital
PRABHUDAS LILLADHER

Artificial Intelligence

Cross Sector Thematic



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May 11, 2026

Coverage Universe

Name of the Company	Rating	CMP (INR)	TP (INR)
Adani Energy Solutions	Hold	1,354	1,452
CESC	BUY	184	216
Coal India	Accumulate	456	515
Indian Energy Exchange	Hold	134	135
NTPC	BUY	402	423
Power Grid Corporation of India	BUY	314	348
Tata Power Company	HOLD	436	359

AI Infra: Driver of localized power demand

Quick Pointers

- Data Centre (DC) power demand is expected to rise from 0.7% of total demand in FY25 to 1.6% by FY30E, with upside from faster DC additions in India
- Concentration of data centres in Mumbai MMR and Chennai could increase their power demand CAGR by 100-400bps p.a. over FY25-30E

Installed Data Center capacity is projected to scale from ~1.3GW in FY25 to ~4.5GW by FY30, implying an addition of ~3.1–3.2GW over the next five years. Assuming a PUE of ~1.4x and ~70% utilization, data centre power consumption could rise to ~4.4GW by FY30 from 1.3GW in FY25, accounting for ~4% of India's incremental peak power over FY25–30. The share of DC in power demand is expected to stay at 1.6% by FY30E (upside possible if country adds more capacity). DC build-out remains highly concentrated, with Mumbai/Navi Mumbai and Chennai together accounting for ~60% of existing capacity, and Mumbai emerging as the single largest power-load hub due to hyperscale clustering and submarine cable connectivity. Reflecting this concentration, data centers could account for ~28% of Mumbai's peak demand by FY30, significantly higher than other key hubs, underscoring a distinctly localized grid impact. Mumbai/MMR-focused utilities such as Adani Energy Solutions, Tata Power could benefit from rising hyperscale data-centre power demand and associated grid capex.

Power intensity driven by DC type: Power consumption varies significantly by data centre (DC) type and utilization, with efficiency largely driven by PUE (Power Usage Effectiveness). Hyperscale and colocation facilities, while more efficient (lower PUEs), consume substantially higher absolute power due to higher utilization levels. IT load (Server, Storage, network) accounts for ~40–50% of electricity use, while cooling (Computer Room Air Conditioners, chillers) contribute ~30–40%.

Concentrated load base with emerging secondary hub: India's DC capacity remains heavily concentrated in Mumbai/Navi Mumbai and Chennai, which together account for ~60% of installed capacity. However, Hyderabad, Bengaluru, Pune, and NCR are rapidly emerging as new centres, supported by better infrastructure, land availability. By FY30E, DCs could represent ~28% of Mumbai's peak demand, compared to ~11% in Chennai and ~5-10% in other hubs, highlighting localized power requirement.

AI demand triggers US utilities re-rating: The US utilities sector has seen a re-rating driven by AI-led data centers, electrification and grid upgrades, which are reviving electricity demand after years of stagnation. Since 2024, the S&P 500 Utilities Index has outperformed the broader S&P 500 as markets price in stronger long-term demand visibility. With data centers expected to account for ~12% of US power demand by 2030 (vs ~4.3% in 2024), utilities are increasingly being viewed as structural growth assets rather than defensive yield plays, a trend that could become relevant for India as DC share in power demand rises.

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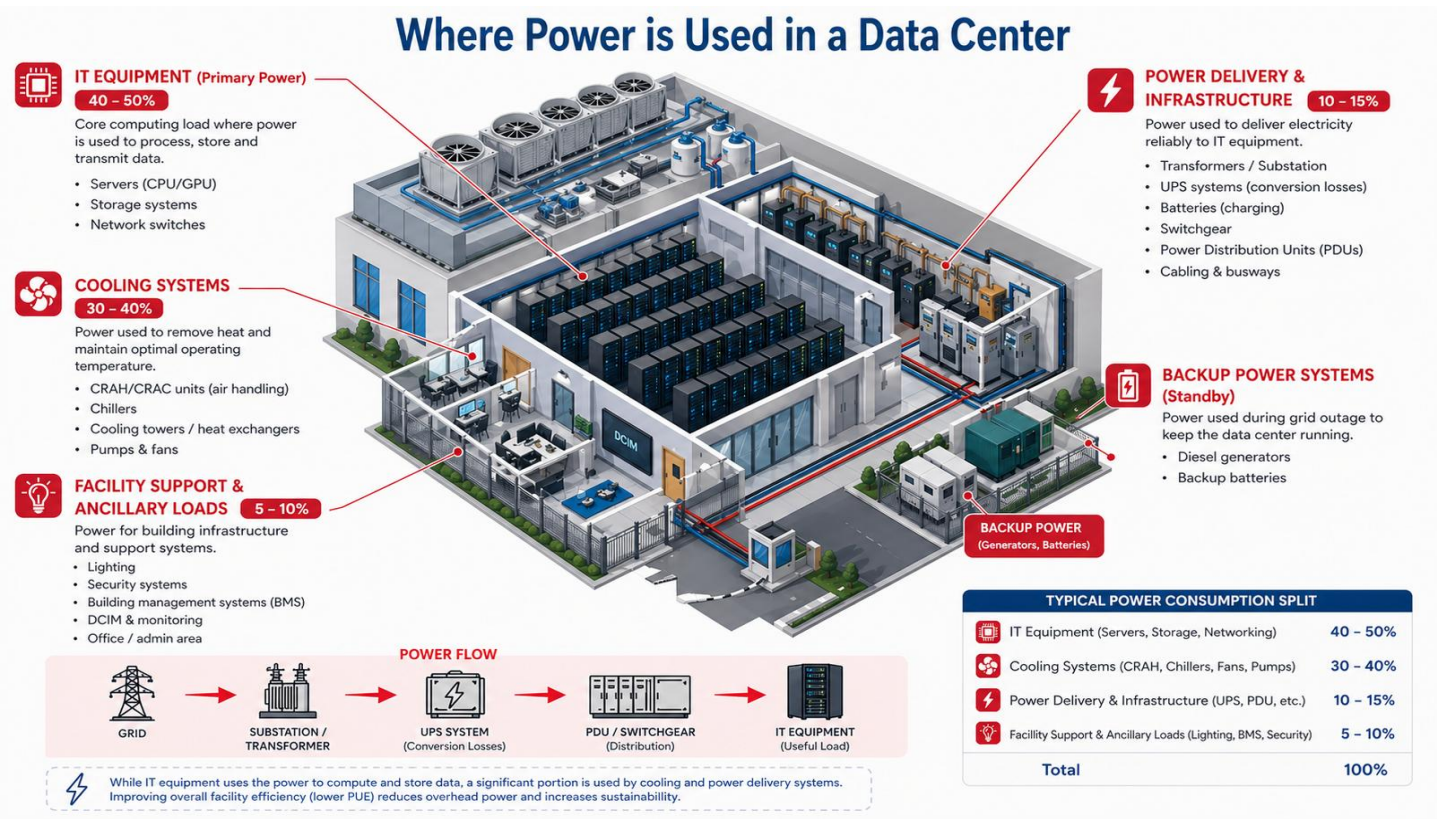
Understanding the Energy Consumption of Data Centers

Exhibit 1 : Typical architecture of a Data centre



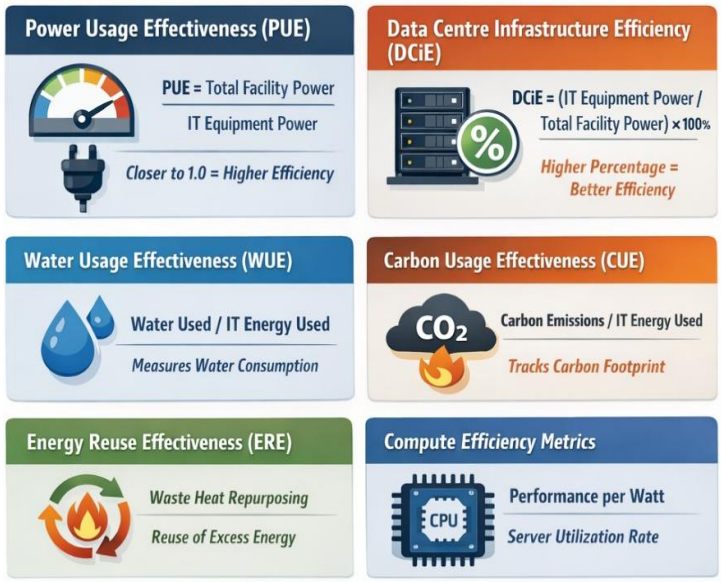
Source: Industry, PL

Exhibit 2 : Types of data centers and Power Draw per 1 MW Installed Capacity

Type	Size (MW)	Utilisation*	PUE*	Actual Power Drawn per 1 MW capacity (MW)	Players
Edge					
Small, decentralized facilities located near the end user. Ideal for low-latency applications	<1 to 5	~55%	1.7	0.935	Global: StackPath, EdgeConneX India: Bharti Airtel, Reliance Jio, Tata Communications
Enterprise					
Privately owned and operated by a single company to run its own internal IT systems	0.5 to 10	~45%	1.7	0.765	Global: JPMorgan Chase, Walmart India: SBI, Infosys, HDFC Bank (Many companies are now moving workloads from enterprise data centers to colocation or cloud)
Colocation					
Rented facilities to suit customer's requirements, reducing capex. Customers install their own servers and networking equipment	5 to 100+	~70%	1.4	0.980	Global: Equinix, Digital Realty, NTT Global Data Centers, CyrusOne India: CtrlS Datacenters, Sify Technologies
Hyperscaler					
Extremely large facilities owned and operated by cloud and internet companies that run global-scale platforms.	50 to 1,000+	~90%	1.2	1.08	Global: Meta Platforms, Alibaba Cloud India/Global: Amazon Web Services, Microsoft Azure, Google Cloud, Oracle Cloud

Source: Industry, PL ** Based on Industry Average*

Exhibit 3 : How is efficiency measured in a data center?



Source: Industry, PL

Electricity is typically the largest operating expense for data centers, often accounting for roughly 40–60% of operating costs, depending on facility type, energy prices, and cooling efficiency. "Power Usage Effectiveness" (PUE) is the most widely used metric for evaluating energy efficiency in data centers. It indicates how efficiently a data centre uses electricity by comparing total facility power consumption to the power consumed purely by IT equipment. It is calculated as:

PUE = Total Facility Power / IT Equipment Power

Exhibit 4 : What does PUE indicate

PUE	Meaning
1.0	Represents perfect efficiency, where all incoming power is used solely by servers and IT systems In practice, additional energy is required for cooling, power conditioning, lighting, and other support infrastructure, resulting in higher PUE values. Lower PUE indicates greater efficiency, as a larger share of power is delivered directly to computing workloads rather than overhead systems.

Source: Industry, PL

- Hyperscale facilities have the lowest PUE among data center types. Hyperscale data centers operated by companies such as Google, Amazon Web Services, and Microsoft report PUE of 1.1-1.2, significantly lower than traditional enterprise data centers, which often operate at 1.8-2.0.

- PUE can be improved by adopting advanced cooling techniques, efficient power infrastructure, and through data center design improvements and location optimization (by building facilities in cooler regions, e.g., hyperscale operators such as Microsoft and Meta Platforms strategically locate data centers where natural cooling can be utilized).

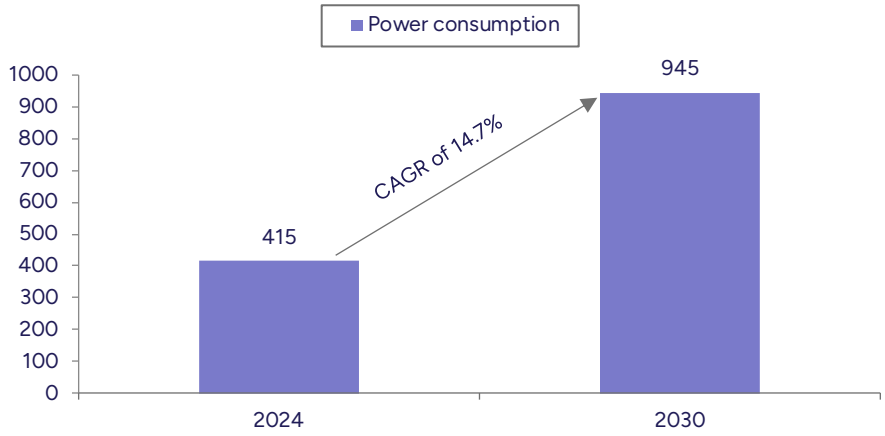
- However, PUE has limitations. It measures the facility's electricity usage efficiency, not the computing efficiency of the servers themselves- i.e., a data centre could achieve a low PUE even if servers are underutilized. Hence, overall facility efficiency must also be assessed alongside PUE

How AI Is Driving Power Demand Across the World

Global

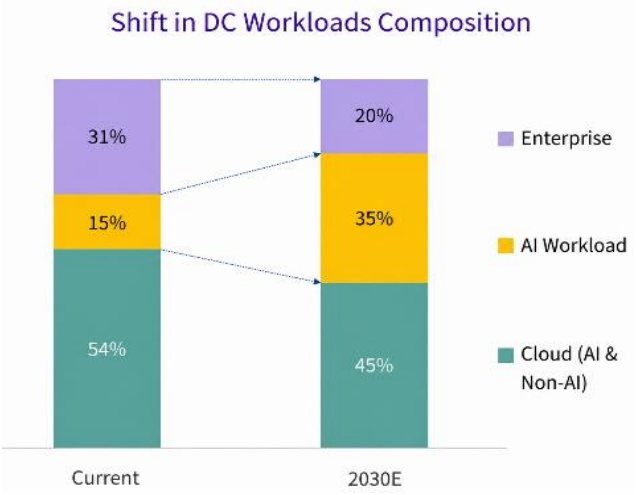
The rapid adoption of AI is further accelerating electricity demand from data centers globally. According to the International Energy Agency, data centre electricity consumption is projected to reach ~945 TWh by 2030 - equivalent to more than half of India's current total electricity consumption. This underscores the scale at which AI-led workloads are intensifying power requirements and reinforces the importance of reliable, high-quality power infrastructure.

Exhibit 5 : Global power consumption by data centers (TWh)



Source: Industry, PL

Exhibit 6 : Global DC capacity to see significant shift with AI workload taking up 35% of capacity versus 15% currently



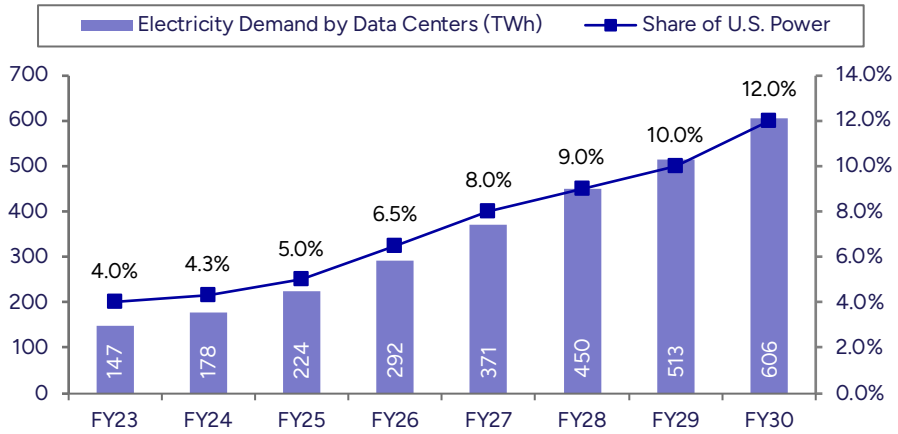
Source: Industry, PL

Global Case Study Scenario: US

The US is the most mature AI and hyperscale data center market, so its electricity demand trends provide an early indication of how large-scale AI infrastructure can reshape power demand.

As AI adoption accelerates globally, similar trends may emerge in other major digital markets - though with a lag reflective of each market's stage of digital build-out. India, currently in the early stages of hyperscale expansion, may follow a comparable trajectory as capacity scales and AI workloads intensify - making the US experience a useful reference point for what lies ahead.

Exhibit 7 : Share of data centers in US's total power consumption

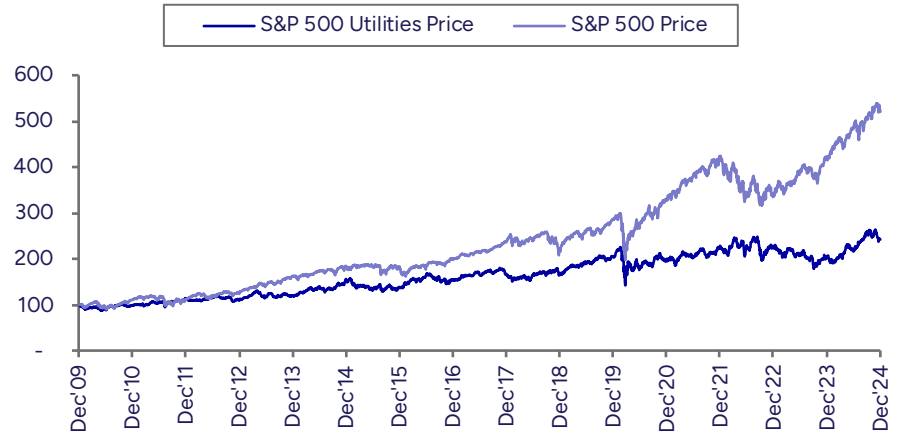


Source: Industry, PL

- Total electricity demand in the US has historically remained relatively flat at ~4,000TWh annually from the mid-2000s to early 2020s. Growth from population and economic activity was offset by efficiency improvements and a shift from manufacturing to service sectors, which consume less energy.

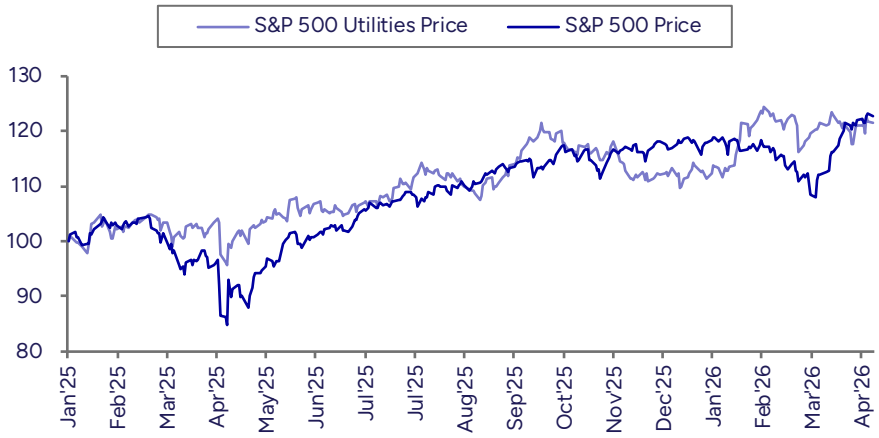
- U.S. electricity demand is expected to rise over the remainder of the decade, driven by transport electrification and rapid growth in digital infrastructure. Data centre electricity consumption is projected to increase from ~147 TWh in 2023 to ~606 TWh by 2030, raising data centres' share of total U.S. power demand from ~4% to ~12%. Industry estimates suggest data centres could account for ~30–40% of incremental electricity demand through 2030, supported by accelerating AI adoption and hyperscale capacity expansion

Exhibit 8 : Decade of muted power demand kept utilities lagging the broader market



Source: Bloomberg. Price return, rebased to 0%

Exhibit 9 : AI and data center-led electricity demand slowly drive utility sector re-rating



Source: Bloomberg. Price return, rebased to 0%

US Utilities Sector to See Re-rating Amid Structural Growth Expectations

The US utilities sector is undergoing a structural re-rating, supported by accelerating electricity demand from AI-led data centre expansion, electrification, and industrial reshoring. After nearly two decades of relatively flat power demand growth, utilities are now benefiting from a multi-year investment cycle centered on generation, transmission, and grid modernization.

Historically, the sector underperformed broader equities for much of the last decade despite steady earnings and defensive characteristics. Between 2010 and 2023, the S&P 500 materially outperformed the S&P 500 Utilities Index, reflecting limited demand growth, regulatory constraints, and investor preference for higher-growth sectors.

While long-term utility sector performance remained below the broader market, utilities have witnessed pockets of relative outperformance during certain periods since 2024, as investors increasingly focused on AI-driven electricity demand, data center expansion, and grid investment themes, according to State Street.

US electricity demand is expected to increase materially over the coming decades, driven primarily by commercial and industrial consumption, particularly data centers. Industry estimates suggest data centers could account for ~12% of total US electricity demand by 2030, versus 4.3% in 2024, implying a requirement for substantial incremental generation and transmission capacity.

While utilities traditionally traded as low-growth, yield-oriented businesses, the emergence of AI-driven power demand has expanded the sector's growth profile. Although valuations have rerated from historical averages, investors increasingly view utilities as a strategic enabler of digital infrastructure expansion.

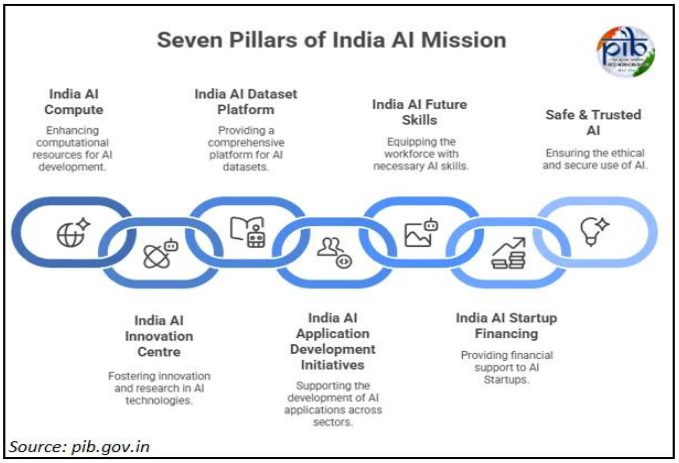
The recent US experience provides an important reference point for other markets. As India enters a similar phase of data centre expansion, electrification, and grid investment, Indian utilities and power infrastructure companies could potentially witness a comparable improvement in growth visibility and market positioning over the medium term, albeit with a lag relative to the US cycle.

Scenario in India

India's AI market is projected to more than triple to ~$17bn by 2027, positioning it among the fastest-growing globally. Growth is driven by rising enterprise tech investments, a strong digital ecosystem, and a deep talent pool. India has over 600,000 AI professionals, expected to scale to ~1.25mn by 2027, accounting for ~16% of global AI talent second only to the US.

AI-led data center demand in India is being driven by a combination of strong end-user adoption and increasing policy support for domestic capability creation.

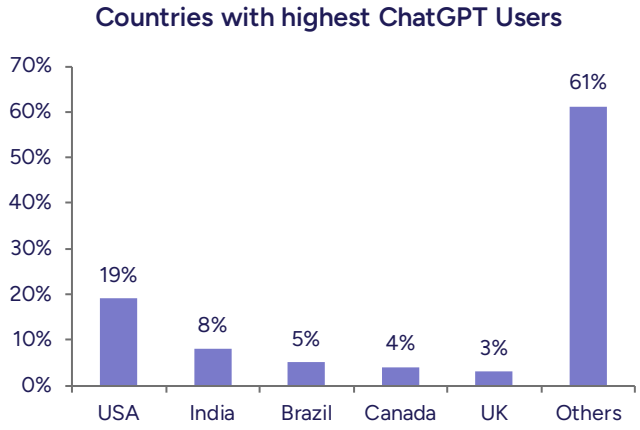
Exhibit 10 : Supply-side push: Government-led AI ecosystem development



Source: Industry, PL

In Mar'24, the Cabinet of Ministers approved a budget outlay of INR104bn over the next 5 years for building AI capability in India focusing on 7 pillars mentioned above.

Exhibit 11 : Demand-side pull: Rapid consumer adoption of AI applications



Source: Industry, PL

India has second highest number of ChatGPT users indicating growing use of AI

With AI adoption is expanding rapidly across the world, the computational intensity of AI workloads is reshaping the energy profile of data centers, resulting in higher RTC electricity demand and new challenges for power infrastructur

AI workloads are far more power intensive than traditional computing:

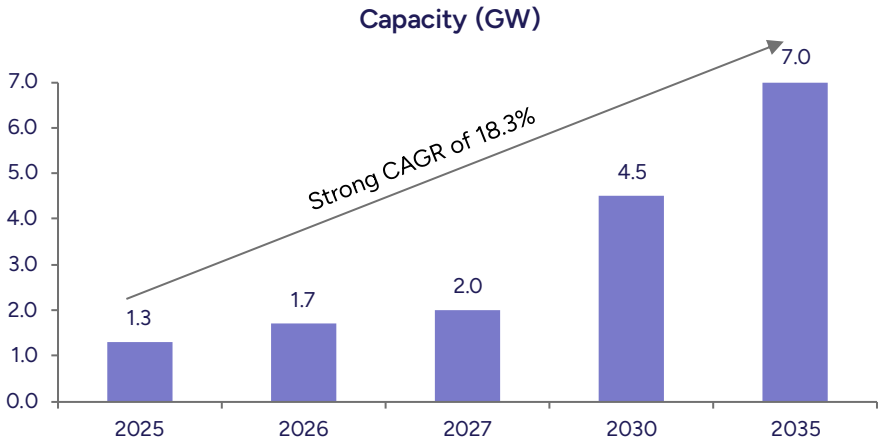
AI-driven data centers rely on GPU-based architectures and high-density server clusters, which materially increase electricity consumption compared to conventional workloads. Rack power density has increased 3–5x, with AI racks typically requiring ~25–40 kW vs ~5–15 kW for traditional workloads

This shift is driving higher overall power demand, need for advanced cooling systems and larger substations and stronger grid connectivity

Growth of Data Centers in India

India's data centre capacity is set to triple to ~4.5 GW by FY30, driven by cloud adoption, digitalization, AI and favorable government polices - creating a large, 24/7 source of incremental power demand.

Exhibit 12 : Data center capacity outlook for India



Source: Industry, PL

Exhibit 13 : Data localization push by Indian regulators

Data localization mandate for the payments sector made by the RBI, 2018

Mandate: RBI's 2018 directive required all payment data to be stored exclusively in India.

Impact: Triggered a surge in demand for domestic data center capacity, as firms scrambled to localize data.

SEBI mandate to all its regulated entities to store data in India, 2023

Mandate: SEBI required all regulated entities—stock exchanges, brokers, mutual funds, depositories, KYC agencies, etc.—to store and process data within India.

Objective: To ensure SEBI's unrestricted access, including search and seizure rights, even when entities adopt cloud services.

The Digital Personal Data Protection Act (DPDP), 2023

Objective: The Digital Personal Data Protection Act (DPDPA), 2023 governs the processing of digital personal data to protect individual privacy while enabling lawful use by organizations.

Key Provisions: Establishes clear obligations for data fiduciaries on collection, storage, and processing. Grants individuals rights to consent, access, correction, and erasure.

Data Localization: While it does not explicitly mandate localization, it empowers the government to restrict cross-border data transfers to specific countries. This creates implicit incentives for domestic data storage and processing.

Draft Data Center Policy 2020

Objective: India's Data Centre Policy 2020 supports the vision of a $1 trillion digital economy.

Operational Benefits: Enhances ease of doing business, ensures reliable power and connectivity, and encourages domestic manufacturing of IT and power equipment.

Cloud adoption in Public Services in Sectors

Drivers: Legacy IT constraints and evolving privacy regulations are pushing government departments toward secure, scalable cloud platforms.

Procurement Framework: To simplify adoption, MeitY has empaneled 22 Cloud Service Providers on GeM, covering public, private, and community cloud models.

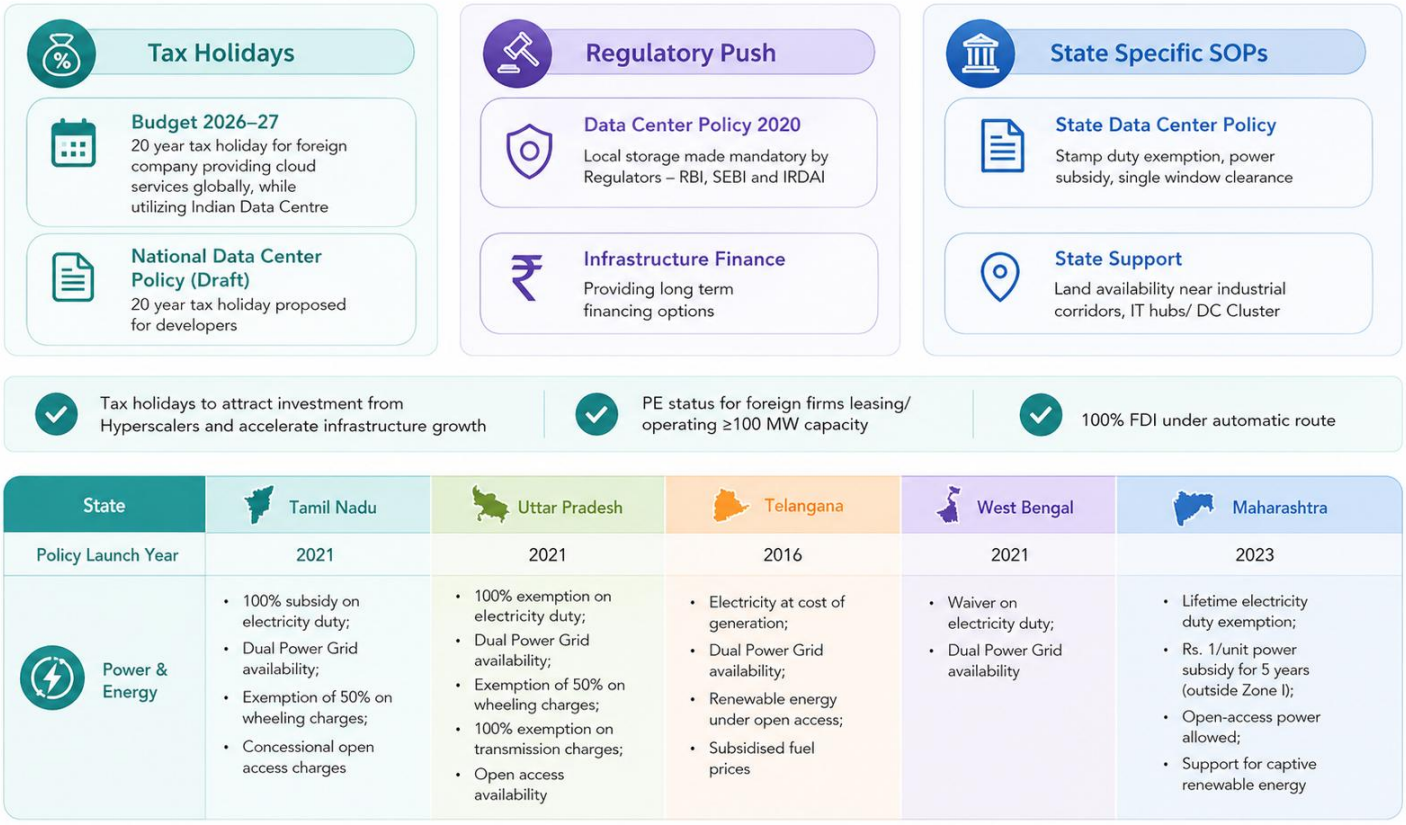
IndiaAI Mission

Mission: The IndiaAI Mission, supported by a ₹219 bn MeitY budget for FY25 (₹5 bn allocated for AI), targets building a $1 trillion AI economy by 2035.

Impact: Expected to drive substantial demand for high-performance, scalable, and compliant cloud and data center infrastructure across India.

Source: Industry, PL

Exhibit 14 : Policy support driving data center expansion in India and States incentivizing data center expansion in India

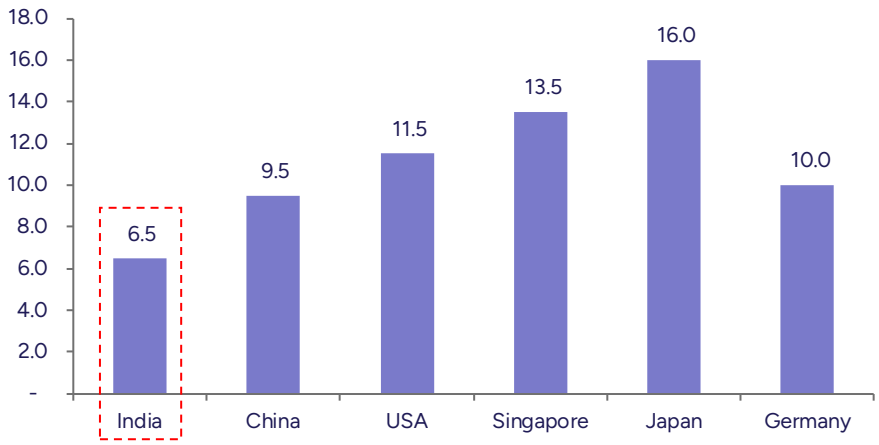


State	Tamil Nadu	Uttar Pradesh	Telangana	West Bengal	Maharashtra
Policy Launch Year	2021	2021	2016	2021	2023
Power & Energy	• 100% subsidy on electricity duty; • Dual Power Grid availability; • Exemption of 50% on wheeling charges; • Concessional open access charges	• 100% exemption on electricity duty; • Dual Power Grid availability; • Exemption of 50% on wheeling charges; • 100% exemption on transmission charges; • Open access availability	• Electricity at cost of generation; • Dual Power Grid availability; • Renewable energy under open access; • Subsidised fuel prices	• Waiver on electricity duty; • Dual Power Grid availability	• Lifetime electricity duty exemption; • Rs. 1/unit power subsidy for 5 years (outside Zone I); • Open-access power allowed; • Support for captive renewable energy

Source: Industry, PL

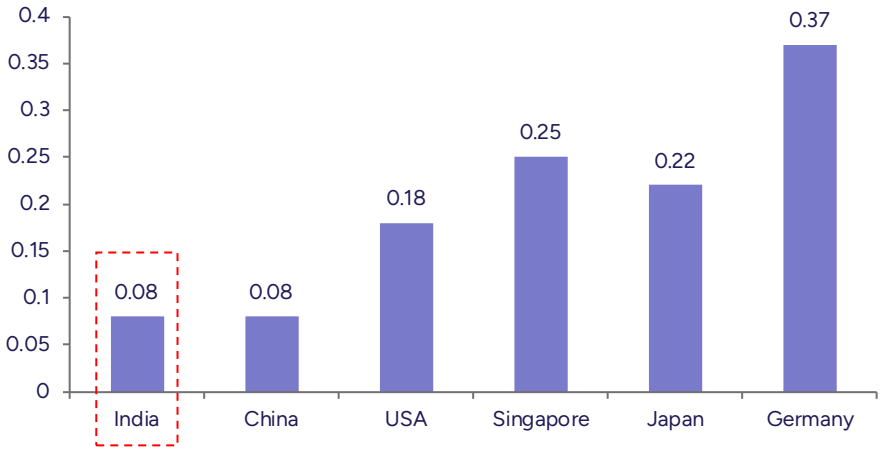
India's data center set-up cost and electricity cost among the lowest globally

Exhibit 15 : Capex cost for data centers across countries (US$ Mn/MW)



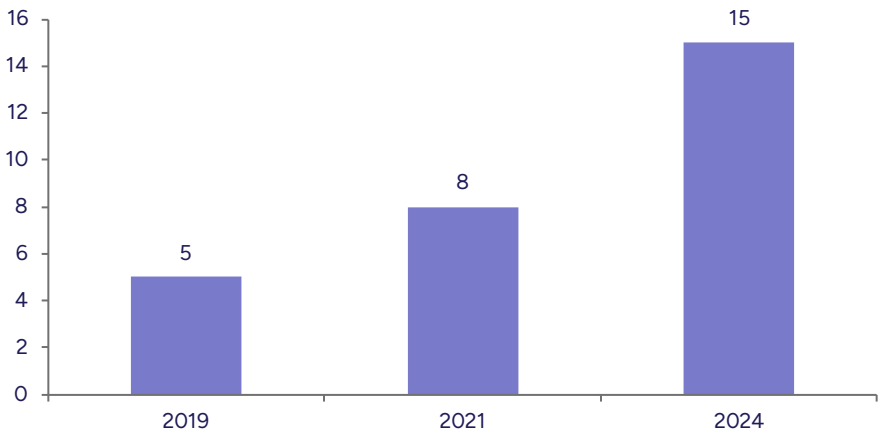
Source: Industry, PL

Exhibit 16 : Electricity cost across countries (US$/kWh)



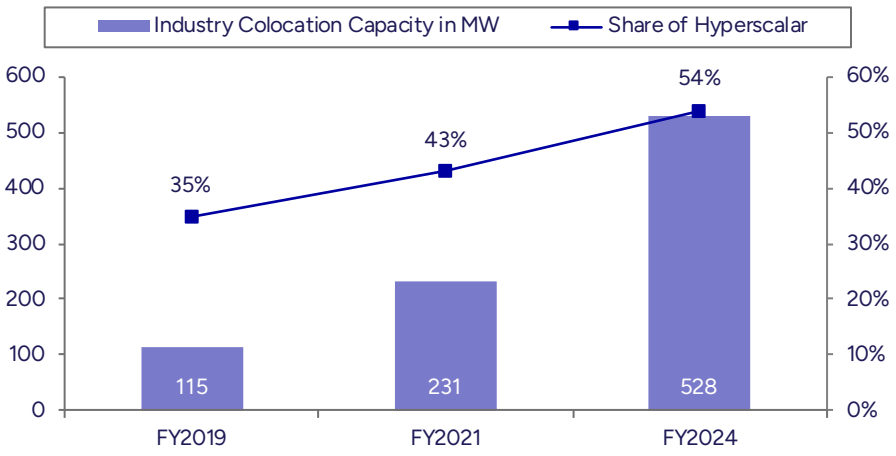
Source: Industry, PL

Exhibit 17 : Number of Players in Hyperscaler DC Development



Source: Industry, PL *Players in Hyperscaler DC development increased to 15 in 2024 owing to burgeoning demand*

Exhibit 18 : Share of Hyperscaler facilities in Colocation Capacities



Source: Industry, PL

Can India become a global hub for data center capacity?

- India is well positioned to emerge as a major data center hub in the Southeast Asia region. Cross-border connectivity is expanding, with 8 new subsea cable landing stations planned (5 in Mumbai and 3 in Chennai), in addition to existing 17, bringing the country closer to established hubs such as Singapore (26 cable landing stations).
- India also offers cost advantages, with data center capex of ~US$6.5mn/MW, lower than China, alongside competitive power tariffs, government policy push and a large technical talent pool.
- In addition, India's power capacity is expanding rapidly, with installed capacity expected to grow to 700GW by 2030, including a significant increase in renewable energy capacity to support sustainable data center operations.
- Historical trends also indicate rising hyperscaler participation in India's data center ecosystem, with the number of hyperscalers increasing from 5 to 15 between 2019 and 2024 and their share of colocation capacity rising from 35% to 54%, highlighting a structural shift toward large-scale cloud demand and reinforcing India's positioning as a high-growth data center market.
- India accounts for nearly 20% of global data consumption but hosts less than 5% of the world's data centers, underscoring a headroom for expansion

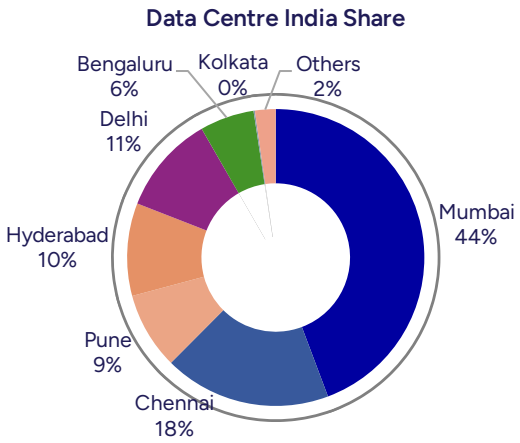
Exhibit 19 : **Upcoming AI infra projects in India over the next decade : ~8-9GW+**

Company/Entity	Amount (USD/INR equiv)	Announcement Date	Purpose/Objective	Location(s)	Timeline	Additional Context
Adani Group (Indian)	USD100bn overall; USD15bn AI campus	Feb 17, 2026	Renewable energy-driven, AI-ready data centers. 1GW+ AI data centers w/ green energy	Visakhapatnam, Chennai, Noida	CY26-35	Partnerships with Google; expected to spur USD150bn in related investments like server manufacturing; aligns with Budget 2026 incentives
Google (global)	USD15bn (~Rs1.25trn)	Oct 2025	AI data center hub (1GW capacity)	Southern India / Visakhapatnam	CY26-30 in phases	Largest AI facility outside US; partners with AdaniConneX and Airtel for TPU/GPU compute
Reliance Industries (Indian)	USD110bn tabled; 1GW DC	Feb 2026 / Nov 2025	1GW AI data center	Visakhapatnam	5-7 years	Partnership with Brookfield and Digital Realty; follows 1GW Jamnagar project
Microsoft (global)	USD3bn (~Rs25,000cr) initial, up to USD17.5bn investing	Jan 6, 2025	Cloud and AI infrastructure expansion (data center campuses)	Hyderabad, Pune, Mumbai, Chennai	Over 2-4 years	Builds scalable AI ecosystem for startups; largest hyperscale footprint in India
SAP Labs India (global)	EUR80mn (~Rs720cr) Phase 1	Sep 23, 2024	AI R&D campus expansion (custom AI, multi-agent AI)	Bengaluru	Q2CY25 Phase 1	Largest R&D hub outside HQ (40% global workforce); 41-acre campus in 3 phases
Tata Group (Indian) / TCS (HyperVault JV with TPG)	Rs18,000cr (~USD2.2bn); broader AI infra	CY25-26	1.2GW AI data centers; AI-optimized facilities	Mumbai region	Next 5-7 years	Partnership with OpenAI; first large-scale AI data center for training/inference
Amazon AWS (global)	USD12.7bn (~Rs1.05trn)	2023 (ongoing till 2030)	Cloud infrastructure for AI innovation	Chennai, Hyderabad, Kolkata, Pune	Till CY30	Low-latency AI; 5.9mn trained
Bharti Airtel (Indian, in Google JV)	Part of USD15bn (~Rs1.25trn)	Oct 13, 2025	Dedicated data center, cable landing station, fiber network for AI hub	Visakhapatnam	Over 5 years	Google JV; edge AI
Yotta Infrastructure (Indian, Hiranandani Group)	USD1bn (~Rs8,300cr) expansion	CY25	Hyperscale AI data centers (part of Greater Mumbai DC)	Panvel, Mumbai	Ongoing till CY26	World's largest data center at launch; GPU cloud for AI training; govt-backed power incentives
EdgeConneX (Global, Adani JV)	Part of multi-GW expansions (AdaniConneX)	CY25-26	AI data center infrastructure with green energy	Chennai, Noida, Visakhapatnam	3-5 years	JV with Adani; supports Google/Nvidia workloads; 1GW+ capacity pipeline
ST Telemedia GDC (Global)	Rs450cr (~USD54mn); campus expansion	Mar-25	AI-ready high-density DC (10MW)	Kolkata New Town	Q2CY25	Modular cooling; 390MW total portfolio
CtrlS Datacenters (Indian)	Rs500cr (~USD60mn)	Apr 2025	12MW AI-ready DC	Bhopal Badwai IT Park	Under construction 2026	MP Global Capability Centers Policy; high uptime
Anant Raj Ltd (Indian)	~Rs10,000cr planned DC investment	Nov 15, 2025	build data centers & IT park with ~Rs4,500cr investment	Andhra Pradesh / Haryana	CY25–28	Focus on multi-phase hyperscale data center campuses
		Dec 18, 2025	launched 7MW DC in Panchkula; total DC capacity ~28MW across locations	Manesar, Panchkula	Ongoing	Targeting 307MW total by FY32

Company/Entity	Amount (USD/INR equiv)	Announcement Date	Purpose/Objective	Location(s)	Timeline	Additional Context
Netweb Technologies India Ltd (Indian)	Rs1,734cr Nvidia server contract (2025)	Feb 12, 2025	secured Rs1,734cr order for Nvidia GPU AI servers	Faridabad (manufacturing)	CY25–26	AI server supply backbone for sovereign AI build-out
		Sep 3, 2025	introduced Nvidia MGX GPU platforms for AI cloud & enterprise DCs	India	CY25	Partnerships with Nvidia, Intel, AMD
Black Box Ltd (Indian)	~Rs100cr earmarked expansion	Sep-25	Rs100cr allocated to deepen India presence, support DC networking & digital infra	Bengaluru, Pan India	CY25–26	Integrator for DC networking & edge compute
E2E Networks Ltd (Indian)	~Mixed GPU & cloud investment (~Rs1,000cr est)	Jan 18, 2026	E2E expands Nvidia Blackwell AI infrastructure; share price up ~18%	Chennai, Delhi NCR	CY25–26	AI GPU cloud provider thrust
		Oct-25	acquires 1024 Nvidia B200 GPU cluster at Chennai DC	Chennai	Ongoing	Competes with hyperscale cloud providers
Nelco Ltd (Indian, Tata Group)	Rs200–300cr network build (est)	Jul 15, 2025	plans expansion of satellite & enterprise connectivity for DC support	Pan India	CY25–27	Enables remote DC connectivity
Tejas Networks Ltd (Indian, Tata Group)	Rs750cr+ manufacturing expansion	Sep 9, 2025	PLI-linked optical networking gear expansion supports DC fiber backbones	Tamil Nadu	CY25–26	Connectivity backbone for AI DCs

Source: Industry, PL

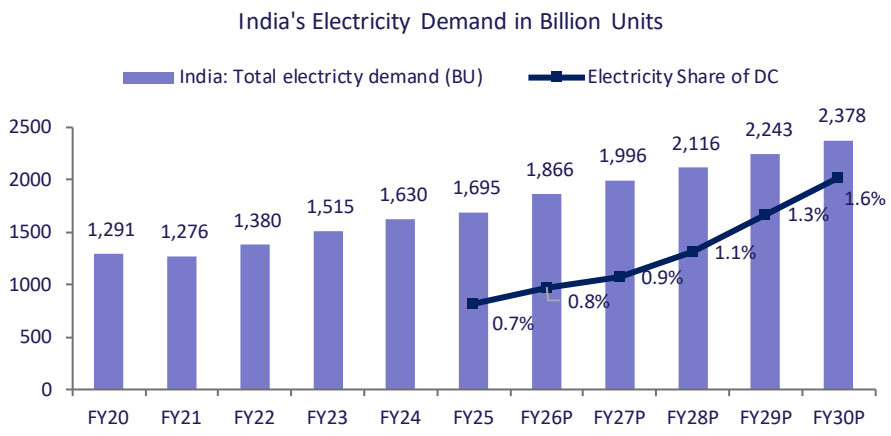
Exhibit 20 : Data Centre Concentration in India



Source: Industry, PL

Subsea cables are available in several Indian cities, but Mumbai and Chennai have the highest concentration and connectivity density, making them the primary hubs for data center development

Exhibit 21 : India's electricity demand (BU) and Electricity share of DCs



Source: Industry, PL

- India's energy demand is witnessing strong and sustained growth, driven by economic expansion and rising population. Electricity demand reached 1,695bn units (BU) in FY25, growing at a CAGR of 5.6% (FY20-25).

- As per CEA, demand is expected to accelerate further and reach 2,378 BU by 2030, implying a CAGR of 7.0% over FY25-30. Based on projected data center capacity of ~4.5 GW by 2030, assuming ~70% utilization and a PUE of ~1.4, the sector could consume ~38–40 BU of electricity annually by FY30. This translates to ~4% of incremental electricity demand over the period.

Exhibit 22 : Power share of DCs in India's Incremental Electricity demand FY25-30

	FY25	FY26	FY27	FY28	FY29	FY30
Total DC Capacity (GW)	1.3	1.7	2.0	2.6	3.5	4.5
Yearly Addition (GW)		0.4	0.3	0.6	0.9	1.0
Power Utilisation* by DCs (GW)	**1.3**	**1.7**	**2.0**	**2.5**	**3.4**	**4.4**
Peak Power demand in India (GW)	249	256	277	295	313	335
Total Power demand in India (BU)	1,695	1,866	1,996	2,116	2,243	2,378
Share of DC in Peak demand	***0.5%***	***0.7%***	***0.7%***	***0.9%***	***1.1%***	***1.3%***
Share of DC in Total Power demand	***0.7%***	***0.8%***	***0.9%***	***1.1%***	***1.3%***	***1.6%***
DC power share in incremental power demand						
India Power demand (BU)	1,695	1,866	1,996	2,116	2,243	2,378
Incremental demand (BU) FY25-30						683
Power Consumption by DC (BU)	11					39
Incremental Power Utilisation (BU) FY25-30						27
%						*4.0%*
India Peak Demand (GW)	249	256	277	295	313	335
Incremental demand (GW) FY25-30						86
Power Consumption by DC (GW)	1.3					4.4
Incremental Power Utilisation (GW) FY25-30						3
%						*3.6%*

Source: Industry, PL Assumptions: 1. PUE of 1.4 and Capacity Utilisation of 70% / 2. Capacity addition between FY26-30 is an average assumption

Exhibit 23 : Region wise split of DC Capacity and their share in Peak Demand

Region wise stack up of DC Capacity	2025		2030E		Peak Power Demand CAGR over FY25-30E	
	DC Capacity (MW)	Power Share of DC in Peak Demand (%)	DC Capacity (MW)	Power Share of DC in Peak Demand (%)	Normal Demand	Post factoring DC
Mumbai / Navi Mumbai	592	13%	1,993	28%	7%	10%
Chennai	243	5%	818	11%	7%	8%
Bengaluru	79	3%	266	6%	7%	7%
Hyderabad	135	3%	454	7%	7%	7%
Delhi NCR / Noida	144	2%	485	5%	7%	7%
Pune	112	4%	377	10%	7%	8%
Kolkata	2	0.1%	7	0.2%	7%	7%
Others	30	NA	101	NA	NA	NA
Total DC Capacity	**1,337**		**4,500**			

Source: Industry, PL Assumptions Note: 1. FY25 region wise split to be maintained in FY30 / 2. 6.5% CAGR consider in peak demand projections / 3. 70% utilisation and PUE of 1.4

Mumbai Case Study

Exhibit 24 : Data Center Load - Already High

	2025	2030
All India DC Capacity (GW)	**1.3**	**4.5**
Mumbai share in DC capacity %	44%	44%
DC capacity in Mumbai (GW)	0.6	2.0
PUE assumption	1.4	1.4
Utilisation	70%	70%
Power usage (GW)	0.6	2.0
Mumbai Peak demand (GW)	4.3	7.0
DC Share in current peak demand	13%	28%

Source: Industry, PL

Mumbai accounts for 40-45% of India's data center capacity. Data centers in Mumbai currently account for ~13% of the city's peak demand. Based on announced capacity additions to ~4.5 GW by FY30, and assuming Mumbai maintains its FY25 capacity share (%) with a 1.4 PUE & 70% utilisation, data centre load could rise to ~28% of the city's peak demand (assumed a 6.5% CAGR in peak demand) - highlighting the scale of incremental infrastructure required.

Key beneficiaries in Mumbai:

Mumbai's rapid data centre expansion (~40–45% of India's capacity) creates a clear power-sector beneficiary chain. **Adani Energy Solutions (via AEML)** and **Tata Power Distribution** benefit from rising high-load commercial demand in Mumbai's licensed areas, translating into steady regulated revenue growth and higher capex requirements for network strengthening. On the transmission side, **Power Grid Corporation of India (PGCIL)** and Maharashtra transmission utilities support expanding evacuation and corridor capacity into Mumbai's constrained urban load pocket.

Sector impact:

The data center-driven demand shift reinforces a structural transition in India's power sector – from generation adequacy to grid delivery and firm power availability.

- Transmission utilities, such as **Power Grid Corporation of India and Adani Energy Solutions**, are likely to be key beneficiaries, given the need for sustained investment in high-voltage networks, substations, and dedicated connectivity.
- On the generation side, the requirement for uninterrupted, RTC supply supports demand visibility for baseload providers, including **NTPC, JSW Energy, Adani Power and Tata Power**, while accelerating the adoption of hybrid renewable solutions offered by players such as **Adani Green Energy**.
- Distribution utilities in key urban centers may benefit from an improved consumer mix, although this is likely to be partly offset by the need for continued capital expenditure to strengthen last-mile infrastructure.

Overall, the data center opportunity is likely to drive a multi-year investment cycle in transmission, grid infrastructure, and firm power solutions, rather than materially altering the trajectory of generation capacity addition.

Google received discom license for its data centre

Google's upcoming ~1 GW data centre campus in Andhra Pradesh is power-intensive that the state allowed it to act like a mini private distribution utility inside its own campus. Google received "deemed discom" (i.e. serves a specific closed ecosystem or captive zone) licence for the same.

The licence allows Google to procure power directly from generators, exchanges or renewable developers, build and operate its own internal transmission/distribution network, avoid dependence on local discoms for reliability and sourcing flexibility.

The key reason is AI/data centres need extremely reliable, uninterrupted, scalable power and has rapidly rising load requirements. Since it needs 24x7 renewable power plus storage and often wants dedicated substations and transmission connectivity.

Google will act like a C&I consumer and need to source its own power and this is a risk to discoms as large premium-paying industrial/commercial consumers may increasingly bypass traditional discoms through open access, captive generation.

Here, deemed license is somewhat similar to how airports, metros, SEZ, large industrial parks get special utility status.

Exhibit 25 : Valuation Table (Indian Stocks)

Stocks	Mcap (INR bn)	CMP (INR)	TP (INR)	% Chng.	Rating	PAT CAGR FY26-28E	P/B (x)		EV/EBITDA (x)		P/E (x)		ROE (%)	
							FY27E	FY28E	FY27E	FY28E	FY27E	FY28E	FY27E	FY28E
CESC	246	184	216	17%	BUY	7%	1.8	1.7	9.0	8.0	14.0	13.0	13.0	13.0
COAL	2,813	456	515	13%	ACCUMULATE	5%	2.1	1.8	5.0	5.0	8.0	8.0	27.0	25.0
IEX	119	134	135	0%	HOLD	13%	8.0	7.0	16.0	14.0	22.0	20.0	38.0	38.0
NTPC (S)	3,900	402	423	5%	BUY	7%	2.1	2.0	11.0	11.0	19.0	18.0	11.0	12.0
PWGR	2,920	314	348	11%	BUY	8%	2.7	2.5	9.0	9.0	17.0	16.0	16.0	17.0
TPWR	1,393	436	390	-11%	HOLD	9%	3.2	3.0	13.0	12.0	25.0	21.0	14.0	15.0
AESL	1,626	1,354	1,452	7%	HOLD	37%	5.6	4.9	20.0	17.0	45.0	36.0	13.0	14.0
JSW	1,004	571	NA	NA	NA	27%	3.0	2.7	13.0	11.0	34.0	29.0	9.0	10.0
NHPC	811	81	NA	NA	NA	33%	1.8	1.7	12.0	7.0	17.0	14.0	11.0	13.0
TPW	869	1,724	NA	NA	NA	10%	4.1	3.7	15.0	14.0	30.0	27.0	14.0	14.0
SJVN	310	79	NA	NA	NA	58%	1.9	1.8	13.0	11.0	16.0	14.0	12.0	13.0
Adani Power	4,345	225	NA	NA	NA	19%	5.3	4.4	20.0	16.0	33.0	27.0	18.0	18.0
Clean Max Enviro	140	1,199	NA	NA	NA	105%	3.5	3.4	11.0	7.0	115.0	40.0	2.0	9.0

Source: Company, PL

Exhibit 26 : Valuation Table (USA Stocks)

Stock	Mcap (US$ bn)	CMP (US$)	PAT CAGR CY25-27E	P/B (x)		EV/EBITDA (x)		P/E (x)		ROE (%)	
				CY26E	CY27E	CY26E	CY27E	CY26E	CY27E	CY26E	CY27E
NextEra Energy, Inc.	195	93	10%	2.9	2.7	16.2	14.6	23.0	20.9	13.0	13.1
Duke Energy Corporation	97	125	7%	1.8	1.6	11.8	11.0	18.5	17.1	9.8	9.8
American Electric Power Company, Inc.	72	132	10%	2.1	2.0	12.8	11.7	20.4	18.5	10.7	10.9
Exelon Corporation	45	44	6%	1.5	1.4	10.0	9.4	15.5	14.3	9.7	9.7
The Southern Company	104	92	9%	2.7	2.5	13.1	12.0	20.3	18.6	12.3	12.3
Sempra	60	92	9%	1.6	1.6	16.9	17.1	17.8	16.4	9.8	9.9
Constellation Energy Corporation	113	311	27%	4.2	3.8	14.5	13.2	27.5	23.8	20.2	17.9

Source: Bloomberg, PL

Analyst Coverage Universe

Sr. No.	Company Name	Rating	TP (INR)	Share Price (INR)
1	Adani Energy Solutions	Hold	1452	1412
2	Ashoka Buildcon	BUY	161	112
3	CESC	BUY	216	185
4	Coal India	Accumulate	515	481
5	Dilip Buildcon	Accumulate	478	407
6	H.G. Infra Engineering	Accumulate	556	485
7	Indian Energy Exchange	Hold	135	123
8	IRCON International	HOLD	143	126
9	KNR Constructions	HOLD	124	114
10	NCC	BUY	200	140
11	NTPC	BUY	423	369
12	PNC Infratech	BUY	254	172
13	Power Grid Corporation of India	BUY	348	295
14	PSP Projects	BUY	956	787
15	Rail Vikas Nigam	Sell	183	261
16	RITES	BUY	276	192
17	Tata Power Company	HOLD	359	388

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Artificial Intelligence

Cross Sector Thematic

May 11, 2026

Coverage Universe

Name of the Company	Rating	CMP (INR)	TP (INR)
Premier Energies	Hold	1,012	905
Vikram Solar	Accumulate	215	226
Waaree Energies	BUY	3,230	3,713

Surging AI Power Demand Hinges on BESS Infra

Quick Pointers

- India's data center capacity is projected to jump from 1.3GW in FY25 to 4.5GW by FY30, accounting for ~4% of incremental power demand.
- Data center power consumption could rise to ~39BU by FY30 from ~11BU in FY25.
- CEA projects total BESS demand of 236GWh by 2031-32.

India's data center sector is entering a multi-year hyperscale expansion cycle, with operational capacity surpassing ~1.3GW in 2025 and projected to exceed 4.5GW by 2030. Assuming power usage effectiveness (PUE) of ~1.4x and ~70% utilization, data center power consumption could rise to ~39BU by FY30 from ~11BU in FY25, accounting for ~4% of India's incremental electricity demand over the period. This creates a structural opportunity for battery energy storage system (BESS) across backup replacement, peak shaving, renewable integration, and grid services. Supported by policies like VGF, Energy Storage Obligation, and domestic manufacturing incentives—similar to the US model—BESS is set to evolve from backup to mission-critical infrastructure in India's digital growth story.

Domestic Data Center Growth to Boost BESS Demand

India's operational data center capacity increased from ~1.2GW in 2024 to ~1.3GW in 2025, supported by rising demand from cloud computing, AI, 5G, and digital sovereignty initiatives. By 2030, capacity is expected to exceed 4.5GW, creating substantial demand for reliable power infrastructure. To meet these requirements, data centers are increasingly adopting behind-the-meter BESS for UPS modernization, peak demand reduction, renewable energy integration, and improved microgrid resiliency, making storage a critical component of data center expansion.

BESS Market Opportunity Estimated at 174GWh by FY30

India's BESS market is at an early but rapidly expanding stage, with an installed base of ~0.5GWh in CY24. Government support through VGF is expected to significantly increase capacity from 0.7GWh in CY25 to 174GWh by FY30, while the National Electricity Plan Vol. 1 - Generation document released in CY23 highlights the need for 236GWh of BESS by CY32. Declining battery prices and stronger policy support are further improving the economic viability of BESS adoption for data center operators. Waaree Energies, Premier Energies and Vikram Solar are likely key beneficiaries, given their ability to integrate solar modules with BESS solutions, enabling hybrid project offerings. Industry growth will further lead to better project IRRs, higher wallet share in EPC/IPP projects, and improved execution visibility, positioning them to capture incremental value as storage adoption scales, while Polycab India, KEI Industries and RR Kabel have indirect exposure via cables, transmission and EPC-led grid connectivity linked to BESS deployment.

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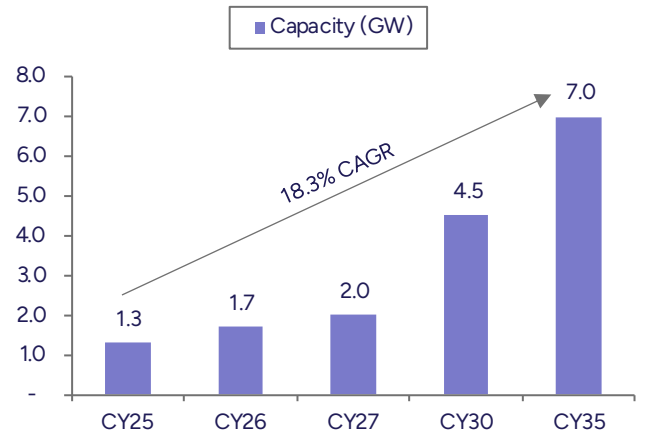
Domestic Data Center Growth to Boost BESS Demand

India's operational data center capacity expanded from ~1.2GW in 2024 to ~1.3GW in 2025, driven by rapid growth in cloud computing, AI workloads, 5G deployment, and increasing emphasis on digital sovereignty. The momentum is expected to continue, with India's total data center capacity projected to exceed 4.5GW by 2030. Such large-scale expansion will significantly increase the need for highly reliable, uninterrupted power infrastructure to support mission-critical digital operations.

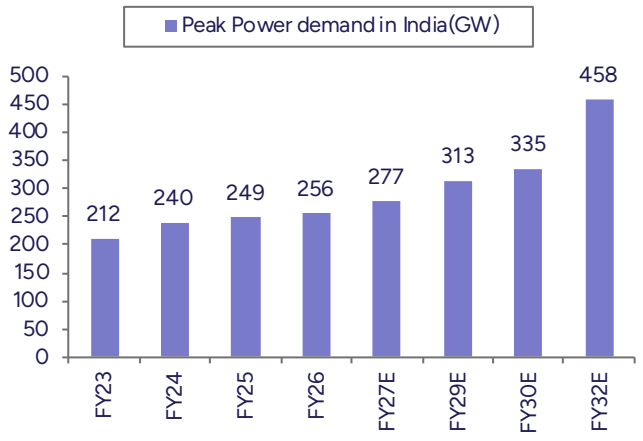
As a result, data centers are increasingly adopting behind-the-meter BESS as an essential part of their power strategy. BESS solutions are being deployed to modernize traditional UPS systems through lithium-ion replacement, reduce peak power demand and associated energy costs, enable greater renewable energy integration, and strengthen microgrid capabilities for enhanced resilience and backup support. This evolution positions BESS as a critical enabler of efficient, reliable, and sustainable data center growth in India.

Exhibit 27 : Data center capacity to grow by 18.3% till CY35



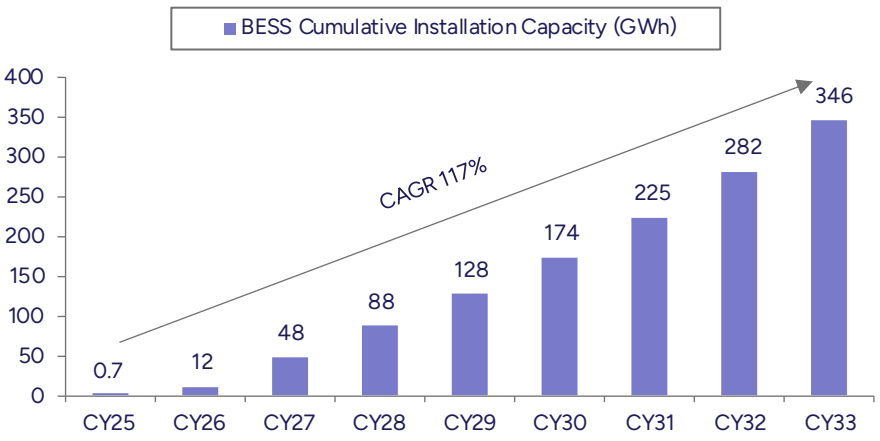
Source: Industry, PL

Exhibit 28 : Peak power demand to reach 458GW by FY32



Source: Industry, PL

Exhibit 29 : Installed BESS capacity in India to reach ~346GWh by CY33



Source: Industry, PL

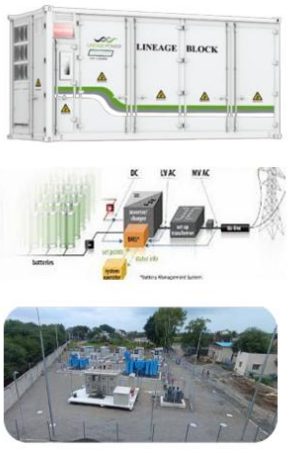
BESS Market Opportunity Estimated at 236GWh by CY32

India's BESS market is currently at an early but rapidly expanding stage, with an installed base of ~0.5GWh in CY24. Government support through VGF is expected to significantly increase capacity from 0.7GWh in CY25 to 174GWh by FY30, while CEA projects total BESS demand of 236GWh by CY32. Declining battery prices and stronger policy support are further improving the economic viability of BESS adoption for data center operators.

BESS has multiple high-value applications across India's evolving power ecosystem. It plays a critical role in renewable energy integration by storing excess solar and wind power for use during periods of low generation, improving grid stability and renewable utilization. BESS also supports peak shaving by supplying stored power during high-demand hours, reducing electricity costs and easing grid pressure. Its fast-response capabilities make it valuable for frequency and voltage regulation, helping stabilize grid fluctuations. Additionally, BESS is increasingly being adopted as a cleaner alternative to diesel generators for backup power across industries, hospitals and data centers. Other growing applications include energy arbitrage, where storage systems charge during low-price periods and discharge during high-price periods, as well as supporting EV fast-charging infrastructure without placing excessive strain on the grid.

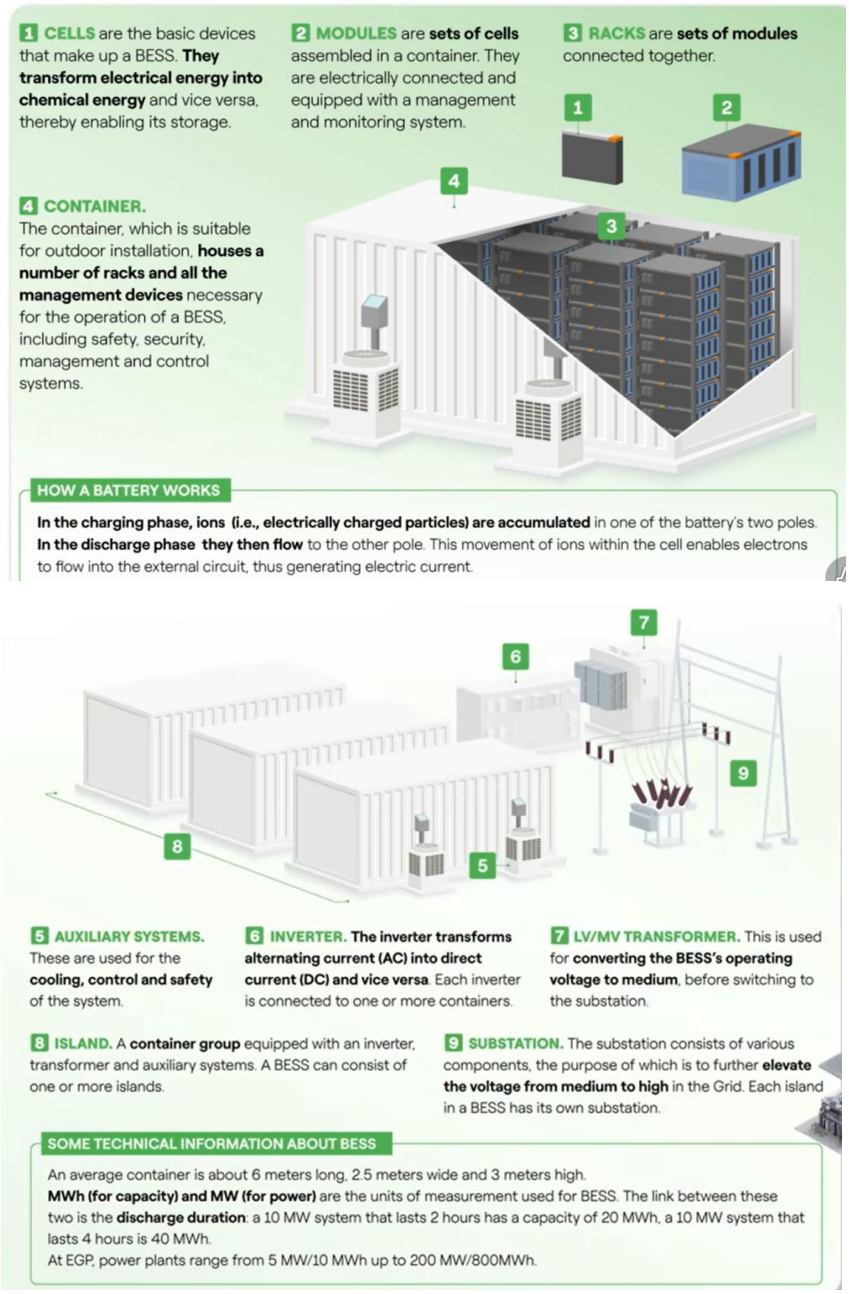
BESS is gaining importance with the rise in energy penetration, creating greater intermittency and a stronger need for reliable storage solutions. Rapid declines in battery costs, particularly lithium-ion technologies, are improving affordability and accelerating deployment. Government incentives and supportive policies, including the National Energy Storage Mission, are further driving market expansion. At the same time, the transition toward decentralized grids, microgrids, and widespread EV adoption is increasing the strategic relevance of storage systems. In essence, BESS is becoming the backbone of future power systems by enabling round-the-clock renewable energy integration, enhancing grid reliability, and strengthening long-term energy independence.

Exhibit 30 : BESS – Business model



Source: Industry, PL

Exhibit 31 : BESS – Value chain



Source: Industry, PL

Exhibit 32 : BESS – Indian landscape

Segment	Products/Process	Key Indian Players
Raw Materials & Active Materials	Making the ingredients — anode, cathode, electrolyte, binders.	HEG (anode graphite), Neogen (electrolyte salts), Gujarat Fluorochem (binders, LiPF salts).
Cell Manufacturing	Converting those ingredients into battery cells (the basic energy units).	Reliance Industries, Waaree, Exide Energy, Adani New Industries, Ola Electric (building factories).
Module & Pack Assembly	Combining many cells into modules and battery packs with electronics & cooling.	GPIL, PACE Digitek, Premier Energies.
System Integration / BESS Manufacturing	Installing packs into racks or containers with power controls, EMS, and safety systems.	Waaree (utility BESS), Exide Energy (grid units), Tata Power Renewables, Hitachi Energy India.
EPC / Project Developers	Designing, building, and operating complete solar-plus-storage or grid projects.	ACME Solar, Oriana Power, JSW Energy, Greenko, ReNew Power.
End-Users / Applications	Where stored energy is finally used — EV charging, grid balancing, datacentres, factories.	Utilities, EVs (Tata Motors, Ola EVs), datacentres, industries.

Source: Industry, PL

Exhibit 33 : Indian BESS ecosystem: Key players across value chain

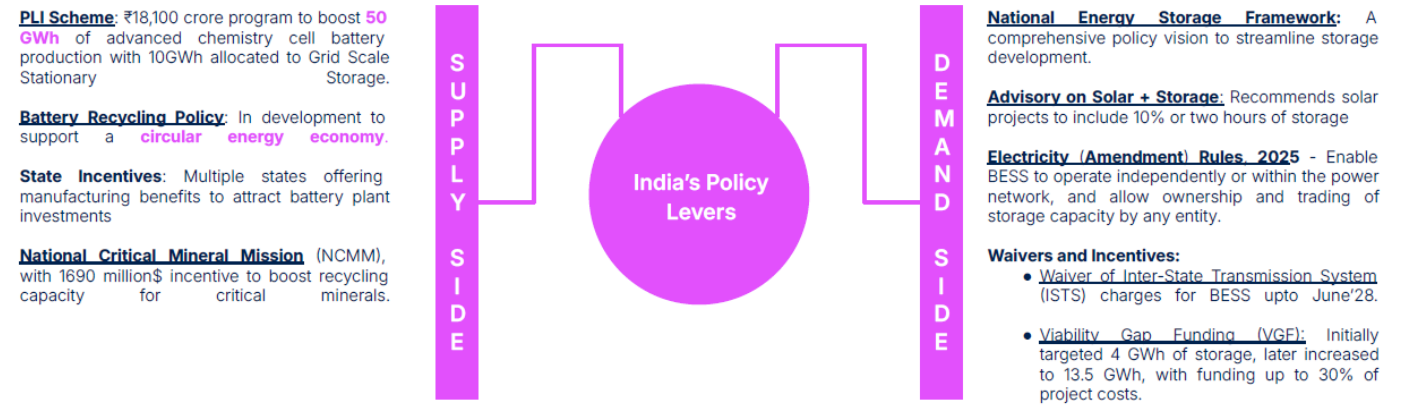
Company	Position in BESS value chain	Key activity / Capex plan
HEG (via TACC Ltd)	Upstream – Anode active material	INR18–20bn
Neogen Chemicals	Upstream – Electrolyte & salts	INR5bn JV with Morita
Gujarat Fluorochemicals (GFCL EV)	Upstream – Battery chemicals, binders	INR20bn EV division
Waaree Energies	Cell + Module manufacturing	INR100bn capex
Exide Energy	Cell manufacturing + BESS integrator	6GWh Phase 1 (Bengaluru)
GPIL (Godawari Power & Ispat)	System integration (BESS containers)	INR10bn
PACE Digitek	Small ESS / BMS / Pack manufacturing	INR1bn cumulative
Ola Electric	Utility-scale BESS solutions	In-house capex (undisclosed)
ACME Solar	Developer – Solar + Storage IPP	Multi-GWh
Oriana Power	EPC / Developer – Solar hybrid BESS	INR5bn pipeline
Premier Energies	OEM / System integrator (planned)	INR30bn
Reliance Industries	Fully integrated gigafactory	INR200bn+ (Dholera, Gujarat)
Adani Group (Adani New Industries Ltd)	End-to-end renewable + BESS ecosystem	INR300bn+ (Mundra, Gujarat)

Source: Industry, PL

GoI initiatives to drive BESS – Supporting policy measures

India's policy framework is rapidly strengthening BESS deployment through a combination of mandates, financial incentives, and domestic manufacturing support. The Ministry of Power has mandated co-located storage for new solar tenders, while the Energy Storage Obligation for discoms will rise from 1% in FY24 to 4% by FY30, creating long-term demand visibility. Under the VGF scheme, an initial INR37.6bn allocation for 4GWh was significantly expanded in 2025 with additional INR54bn to support ~30GWh of standalone BESS capacity by 2028. Simultaneously, the INR181bn PLI scheme for advanced chemistry cells is boosting domestic battery manufacturing and reducing import dependence. ISTS charge waivers for BESS and co-located renewable projects until Jun'28 further enhance project economics. Alongside regulations to replace diesel generators with cleaner storage-backed solutions and local software requirements for BESS management systems, these measures collectively create a highly supportive ecosystem for large-scale BESS growth in India.

Exhibit 34 : India's battery policy and regulatory landscape



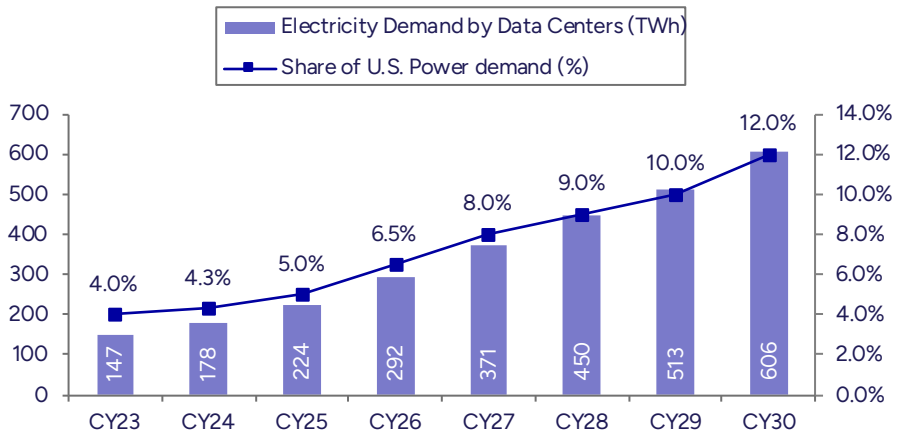
Source: Industry, PL

US evolution: Blueprint for India

The US BESS market evolved through a clear three-stage progression that transformed storage into a critical energy infrastructure asset. First, regulatory reforms such as FERC Order 841 enabled battery storage participation in wholesale electricity markets, unlocking new revenue opportunities. Second, the Inflation Reduction Act (IRA) of 2022 accelerated deployment by introducing standalone investment tax credits (ITC) for energy storage, significantly improving project economics. Third, the rapid expansion of AI, cloud, and hyperscale data centers created growing power bottlenecks, driving large-scale adoption of BESS and microgrids for reliable power supply. The key takeaway from the US experience is that BESS evolved from mere a backup power solution into a revenue-generating infrastructure platform through grid services, demand response, and energy arbitrage.

Total electricity demand in the US has historically remained relatively flat at ~4,000TWh annually from the mid-2000s to early 2020s. Demand from growing population and economic activity was offset by efficiency improvements and a shift from manufacturing to service sectors, which consume less energy.

Exhibit 35 : Rising US data center power demand



Source: Industry, PL

Exhibit 36 : Policy/Regulation comparison

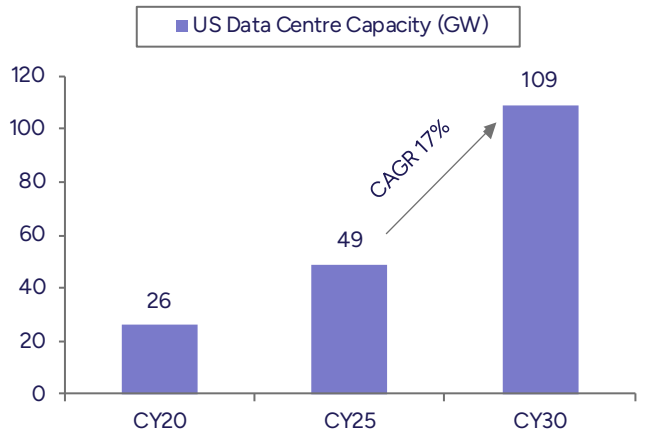
Policy / Regulation	US	India
Market participation	FERC Order 841	Ancillary services + ESO emerging
Capital subsidy	IRA standalone ITC	VGF + state tenders
Domestic manufacturing	IRA local incentives	PLI + Make in India
Data center integration	Microgrids, behind-the-meter BESS	Early stage, large future opportunity

Source: Industry, PL

BESS adoption is rising across data centers in North America, driven by increasing power reliability needs and grid access constraints. Data center operators are expected to expand behind-the-meter power arrangements and evaluate co-located battery storage solutions, particularly as average grid interconnection timelines in key US data center markets now exceed 4 years.

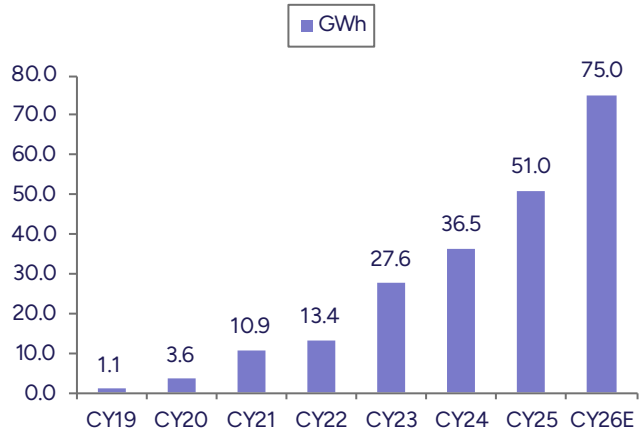
Natural gas is also expected to play a significant role in addressing near-term grid constraints in the US, both as temporary bridge power and, increasingly, as permanent on-site generation. This trend is reflected in the sharp rise in global turbine orders. However, adoption may remain selective, as several large data center tenants are reluctant to pursue natural gas-based solutions due to sustainability considerations.

Exhibit 37 : Evolution of data centers in US – 17% CAGR in capacity expected over CY25-30



Source: Industry, PL

Exhibit 38 : US energy storage additions at 144GWh over CY19-25



Source: Industry, PL

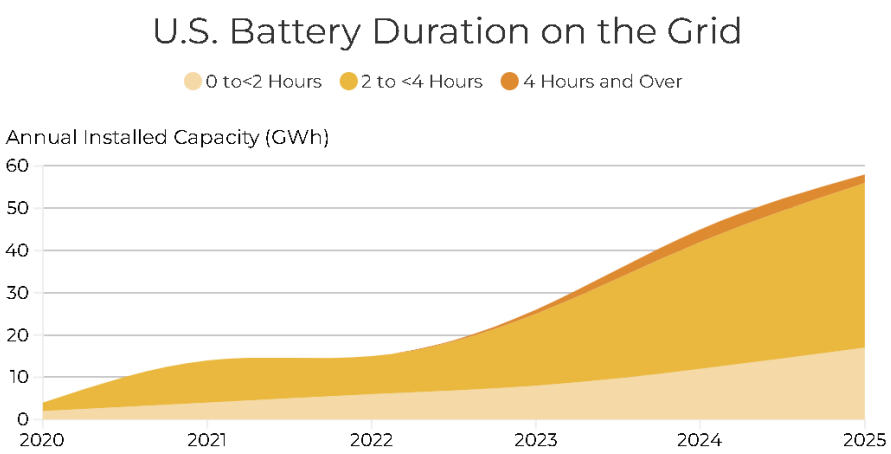
The structural case for BESS demand from data centers is further supported by the sharp expansion in US data center capacity and accelerating energy storage deployments. US data center capacity is estimated to rise from 26GW in CY20 to 49GW in CY25 and further to 109GW by CY30, implying ~17% CAGR over CY25-30. This rapid capacity build-out is expected to materially increase demand for reliable and flexible power solutions.

In parallel, US energy storage deployments have scaled meaningfully, rising from 592MWh in CY19 to ~50,097MWh in CY25, indicating improving ecosystem readiness, declining costs, and stronger acceptance of battery-backed power infrastructure. The convergence of rising data center power intensity and an expanding storage base positions BESS as a key enabler for future data center growth in the US.

Developers plan to add 24GW of utility-scale battery storage to the grid this year, compared with a record 15GW added in 2025. US battery storage capacity has grown exponentially over the last 5 years with more than 40GW added to the grid during this period.

Projects in three states will make up for the bulk of planned battery storage capacity in 2026, accounting for about 80% of the new US battery storage capacity: 53%, or 12.9GW, in Texas; 14%, or 3.4GW, in California; and 13%, or 3.2GW, in Arizona.

Exhibit 39 : US BESS trending toward longer duration BESS for reliable, consistent power



Source: Industry, PL

Analyst Coverage Universe

Sr. No.	Company Name	Rating	TP (INR)	Share Price (INR)
1	Amber Enterprises India	BUY	8646	6405
2	Astral Ltd.	BUY	1876	1554
3	Avalon Technologies	Hold	1233	1256
4	Bajaj Electricals	BUY	449	349
5	Cello World	BUY	621	405
6	Century Plyboard (I)	BUY	841	720
7	Cera Sanitaryware	Buy	7429	5782
8	Crompton Greaves Consumer Electricals	BUY	344	232
9	Cyient DLM	HOLD	370	358
10	Finolex Industries	BUY	203	159
11	Greenpanel Industries	BUY	370	182
12	Havells India	Accumulate	1505	1349
13	Kajaria Ceramics	Accumulate	1323	1188
14	Kaynes Technology India	BUY	5444	3707
15	KEI Industries	Accumulate	5660	5018
16	LG Electronics India	BUY	1813	1319
17	Polycab India	BUY	10282	8416
18	Premier Energies	Hold	905	943
19	R R Kabel	BUY	1964	1571
20	Supreme Industries	BUY	4626	3692
21	Syrma SGS Technology	BUY	905	809
22	Vikram Solar	Accumulate	226	215
23	Voltas	Accumulate	1423	1235
24	Waaree Energies	BUY	3713	3119

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Accumulate	:	5% to 15%
Hold	:	+5% to -5%
Reduce	:	-5% to -15%
Sell	:	< -15%
Not Rated (NR)	:	No specific call on the stock
Under Review (UR)	:	Rating likely to change shortly

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