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INSIGHT

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Powering AI

Agents, Aircons, Allshoring: All Not Priced In

Global power tightness is set to outpace expectations as industrial and household consumption join AI to lead the next leg of surprise in the electrification supercycle. Powering everything is set to unlock US$0.5trn in value creation, boost street 2028e EPS by 14%, and create the next set of differentiated winners.

Key Takeaways

- Winners: Europe: EDP, RWE; **Asia:** Gulf Development, Keppel, Adani Power, Yangtze Power, Samsung SDI, Hokkaido Electric; **US**: Bloom, Solaris Energy.
- What to avoid: **Asia:** KEPCO, Tata Power, Global Power Synergy, Huaneng Power, Electric Power Development; **Europe:** Enagas, SNAM.

Powering AI → powering everything: We raise our power consumption growth estimates by 10% to ~36tn units by 2030. Data centers and semiconductor fabs led the last three years of consumption upgrades; we now see the electrification story broadening out to the industrial (allshoring of supply chains) and residential (space cooling) sectors – a pivot underappreciated by investors. The ***Three A's*** – ***A****gentic*, ***A****llshoring* and ***A****ircons* – make consumption more versatile, powering the next leg of margin upgrades and multiples for equities. But pricing power is shifting, creating the next leg of winners (power generators and power grid operators) as power spreads expand by ~15% by 2028e, while equipment suppliers see pushback from consumers and policymakers on prices post-two years of cost inflation.

Power markets are changing face again and we see upside surprise not just in consumption but also in changing consumption patterns as the need for stable demand accelerates beyond data centers to industries. Fossil fuel-led generation is becoming a bottleneck in power systems as inflexible nuclear generation rises, battery deployment deflates renewable economics in merchant markets, and access to powergrids becomes critical, making distribution/transmission equities re-rate. Asia will play a critical role in absorbing 15GW of the US power shortfall; Europe and Japan to see sustained higher consumption after years of decline.

How to position? We identify 36 winners (See Exhibit 13) across power infrastructure – dependable power generators, midstream gas pipeline operators, grid companies, and energy storage suppliers. We are selective on equipment providers as pricing power shifts to infrastructure owners. Equities are discounting power consumption growth at a third below our base case and close to mid-cycle consumption levels of the past decade. Changing power consumption patterns and a corresponding step up in margins will be key to differentiating leaders from laggards, with ~14% upside to 2028e Street earnings for our preferred names.

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ASEAN UTILITIES AND INFRASTRUCTURE
Asia Pacific
Industry View **In-Line**

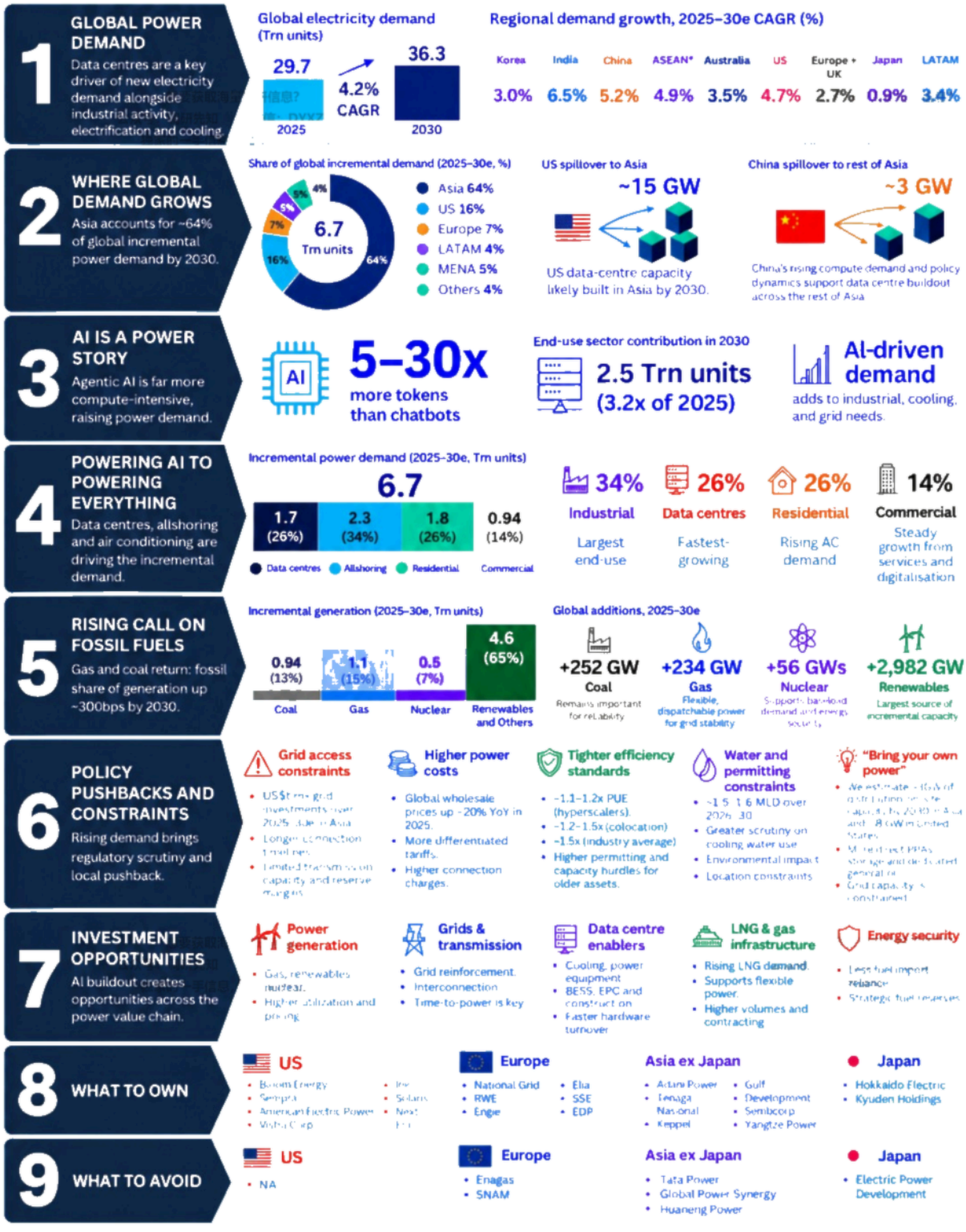
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Powering Agents, Air-Conditioning and Allshoring of Activity

Exhibit 1: The $500bn value creation story: Powering Agents, Air-Conditioning and Allshoring of Activity



Source: Morgan Stanley Research estimates

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Da Wei Lee



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Executive Summary

- Powering AI has added US$1trn in market cap across the supply chain since 2024. Powering everything could add US$0.5trillion in market cap by 2027, we estimate, with a new set of winners emerging - fossil-based power generation companies, gas pipeline players, powergrid operators and integrated energy players.
- Outside China, we forecast growth in power consumption to triple to 23trn units of power consumed, while Asia's power consumption could grow 20% faster than the US.
- Asia will require 84GW (~4x increase over 2025) of compute by 2030e as it absorbs ~15GW of spillover of data centers and semiconductor fabrication needs from the US and the Middle East. Agents to drive a 1.6x rise in power consumption globally by 2030. Thailand has seen commitments of US$25bn in DC investments. Singapore, India and increasingly Japan to surprise on AI infrastructure power needs.
- Demand for dependable power is rising, with 60% of Asia DC capacity powered by coal and natural gas. Energy storage will work with renewables to power a third of DC capacity.
- Data centers to underwrite 20mntpa of LNG imports into Asia by 2030, equivalent to one fifth of new exports of US shale.
- Global power prices have risen ~20% YoY in 2026 and policymakers are tightening the regulations around DCs. Tiered power pricing is helping to drive consumer bills lower.

Power markets are changing face again and we see upside surprises not just in consumption, but in changing consumption patterns. This is leading to accelerating growth in transmission network capex, expanding margins for power generators, increasing demand for fossil fuels and a "bring your own power" thematic. Much is changing in how we assess power market pricing, generation mix and quality of earnings for equities. We raise our above-Street global power consumption growth estimates by a further 10%, implying 15% faster growth than the IEA forecast (Exhibit 17). This is creating the next leg of likely winners in the power supply chain (see Exhibit 13). Power generators, power grid operators and the gas pipeline producers that power the power plants will see pricing power increase, agents get smarter, weather patterns change and onshoring of manufacturing accelerate. We see merchant power spreads rising by ~15% on average amid a backdrop of rising global LNG supply and tighter power markets.

The world of electricity is transforming at an unprecedented pace. Europe and Japan are seeing steady growth in power consumption after nearly two decades of challenges, US power consumption is inflecting and Asia (ex China) is seeing 1.5x higher power needs than during the last decade. Investment in the global power sector reached a new high of



Tech Diffusion

A Morgan Stanley Research
Key Theme of 2026



Future of Energy

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US$1.6trn in 2025, and consumer power prices rose ~15%. The age of electrification, amplified by AI, is reshaping power markets, and, as happened in the 1990s, power prices look set to rise further. Agents will consume a trillion more units of power every year, while the power needed for space cooling is rising fast and will match that of data centers by 2030, we estimate (Exhibit 43 . At the same time, power consumption by the industrial sector is going to rise to 2x that of data center. This tightness in power markets is underappreciated by the market, in our view.

Hyper growth in consumption will redefine the power story as spare capacity reduces by one fifth globally for the rest of the decade. As data centers make power fungible beyond country borders and industrial demand picks up locally due to allshoring, we estimate ~36trn units of power will be consumed by 2030e i.e.,15% faster than street estimates (Exhibit 17). These power needs will increasingly require more coal, energy storage and natural gas, not just renewables. The impact of data centers will be reflected in global natural gas markets, potentially underwriting 20mntpa of LNG imports into Asia by 2030, equivalent to a fifth of new exports of US shale, while also using 0.7TWh of battery storage by 2030 and 1bn tons more of coal (as large as the current size of the global seaborne market for coal).

Power is fungible for the first time as US data center power needs move to Asia: We estimate the US will see a shortfall of 43GW in DC capacity by 2028 and 80GW by 2029, while China hyperscalers plan to grow 2-3GW of capacity outside China annually. Agents will be a US$30trn annual market until 2029, according to Morgan Stanley's US Internet team, and growth in token consumption is growing faster than agentic revenues, making power a critical bottleneck. Our bottom-up work suggests ~15GW of US DC shortages (Exhibit 29) could spill over to the rest of Asia with about 3GW of power capacity being used for semi-conductor fabs that are built in ASEAN/India/Korea. Thailand, India and Japan are seeing more DC commitments. Thailand is also seeing China hyperscalers underwrite capacity. All three countries have ~30GW of spare power capacity as they ramp up natural gas, coal and nuclear output.

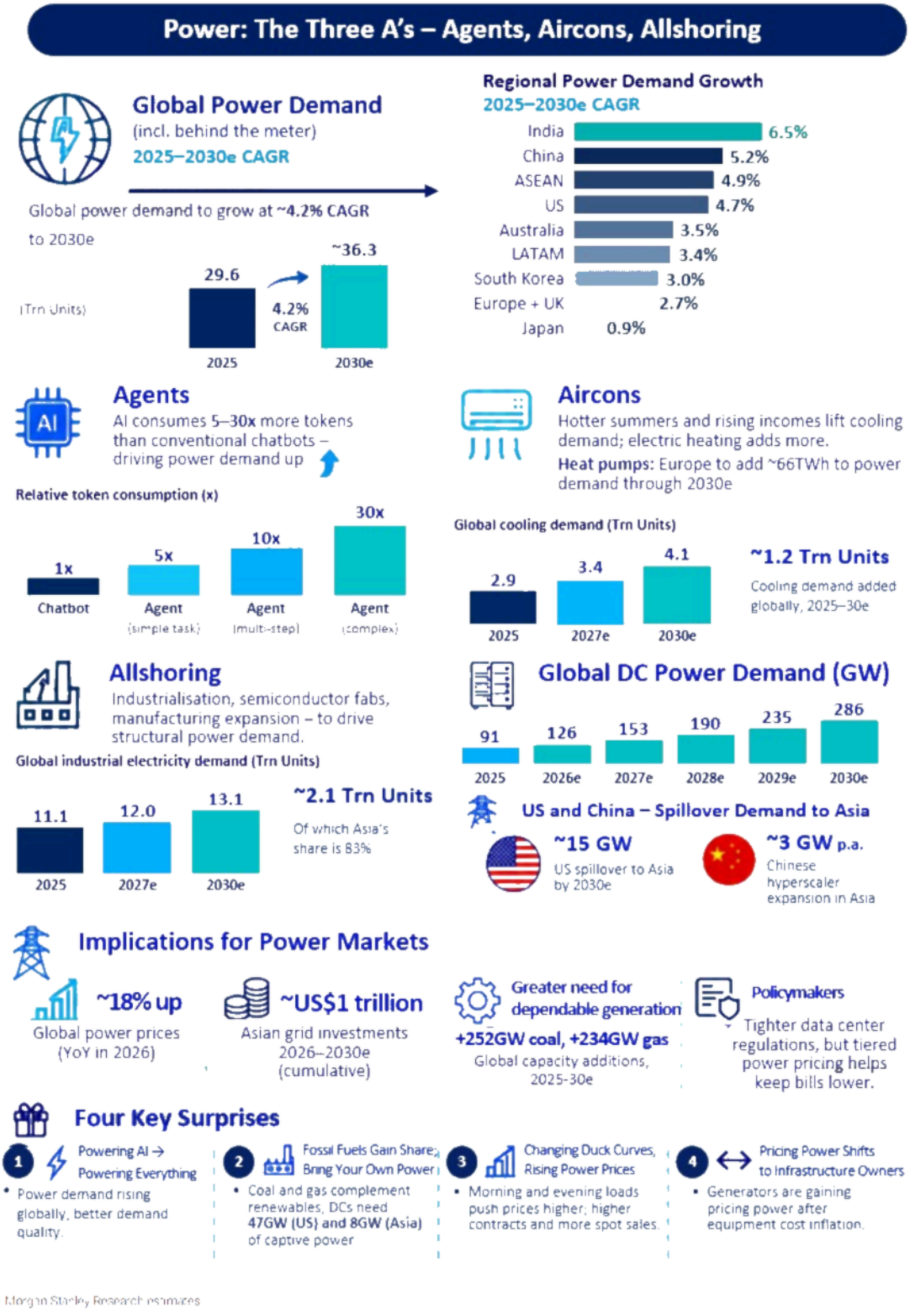
Bring your own power: We estimate behind-the-meter power demand will grow to 8GW in Asia and 47GW in the US by 2030 while power grids remain constrained. Distributed inference pushes compute closer to the end user; distributed power allows those nodes to operate with greater resilience and independence from constrained centralized infrastructure. Australia, Malaysia and Thailand are increasingly encouraging data centers to get their own power, with wholesale power prices rising 8% in the past year. Power generators like Gulf Development, Adani Power and Sembcorp are providing data centers behind the meter as they expand outside the US and China. China, which is a well supplied power market, is encouraging data centers to run on renewable power and is seeing rising deployment of energy storage. Asia refiners, chemical plants will add ~4GW of behind the meter capacity by 2030e, we estimate.

Solving the grid challenge - batteries and beyond: Asia is seeing a significant shift in electricity load curves. Duck curves are reshaping into double-humped camels in India (Exhibit 37), Thailand is seeing peak load shift to evenings due to EVs (Exhibit 36), the Australia load curve keeps changing shape, while rising nuclear supply is enabling Japan's powergrid to absorb variability in its renewables load. In Asia, we see US$1trn in new grid investment through 2030e (Exhibit 39), with data center investment helping fund part of the upgrade as tiered power pricing with higher prices for DCs cross-subsidize consumers.

See Energy Security: Supercycle Recharges

While we expect Asia to consume nearly two-thirds of the new power units needed, demand on the global power system will likely come from three main sources (Exhibit 21): power agents, air conditioners and the industrial supercycle. We now estimate Asia's power supplies need to grow at a 5% CAGR by 2030, i.e., ~140bps faster than the current average across most Asian economies. Asia will consume ~20trn units of power by 2030, on our estimates, i.e., more than half of the global power requirement, with data centers taking a 5% share while cooling needs from air-conditioners will rise incrementally and be as large as data-center power demand. (Exhibit 50)

Exhibit 2: What's not Priced In: The Three A's: Agents, Aircons, Allshoring



Source: Morgan Stanley Research estimates

Powering AI, Aircon & Allshoring: What's Priced in?

AI Agents will need 2trn units of additional power to create the US$30trn in annual revenue that Morgan Stanley is forecasting until 2030: the US$11trn Asian industrial supercycle that we forecast will require 2trn more power units, while the 0.2bn new air conditioners/heat pumps will require 0.6trn more power units by 2030 - about half of this power requirement is not yet priced into power generation companies, the gas midstream supply chain or the coal producers that will power these agents. However, the upstream power supply chain and renewables are pricing in a lot of the growth opportunity. We see 14% EPS upgrades across our preferred OWs in 2028, leading to US$0.5trn in value creation.

Asia's incremental power consumption to be 4x US incremental power consumption over 2025-2030e. We see DCs needing 84GW of power by 2030, with a ~70% utilisation rate for DC capacity (Exhibit 26). China is a key contributor to the need for DC power. India, Southeast Asia and increasingly Japan have been consuming more power this year than in the past three years (on a run rate basis, which adjusts for weather shifts). The increased consumption stems not just from DCs but also from new semiconductor manufacturing, which is raising baseload needs. Air-conditioning and industrial demand have shifted the profile of power demand in these markets. In our view, stock multiples for power generators are not pricing in (Exhibit 8) this stronger growth (5% CAGR over 2025-30 in Asia, i.e., 200bps above the five-year averages) from agents & space cooling until 2030 as the opportunity from behind-the-meter power supply for AI DCs grows and the industrial investment supercycle expands the TAM and quality of returns for the power generators. We estimate Asia's power consumption growth will be 2.5x that of Europe+UK and 1.2x that of the US over 2025-30 (Exhibit 17).

However, the debate regarding powering AI is shifting to regulatory headwinds and how consumers are being impacted by the rising need for dependable power. The power system is seeing demand from not just AI, but aircons and the US$11trn industrial investment supercycle (energy security, defence and onshoring outside of AI investments). On average, Asian wholesale power prices have risen by 20% in the last year, with power spreads expanding for generators in most geographies by 2-3x (Exhibit 52). We see slower rates of investment by both grid and power generation companies along with a more variable supply of renewables going forward, leading to inflation in power costs for consumers. Globally, power utilities have seen a stalling in investment growth after significant increases since 2024.

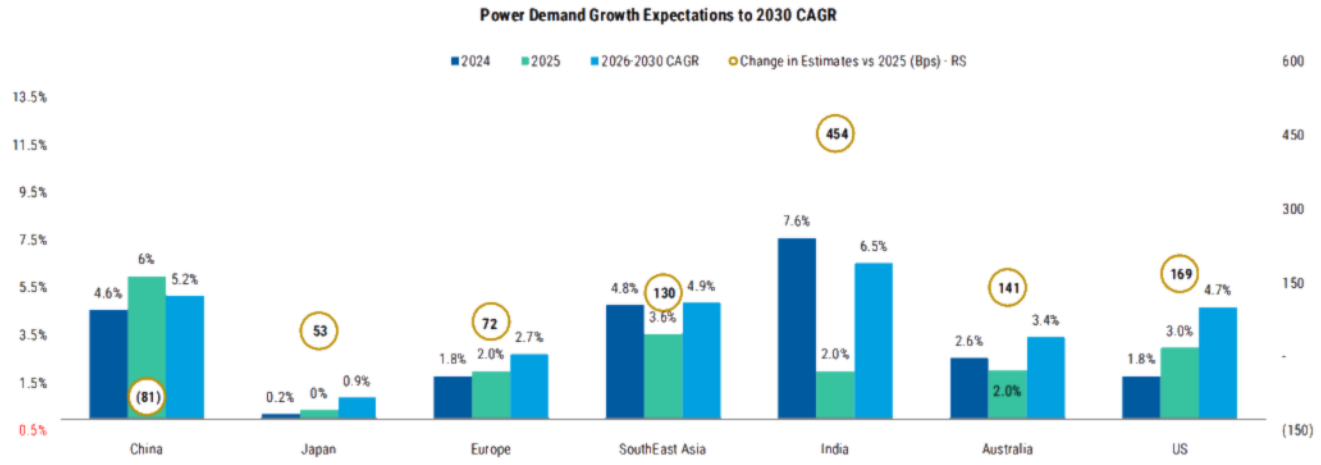
The need for air-conditioning/heat pumps will add ~40bps to power consumption growth (Exhibit 43), we estimate, and could be as large as the incremental power needs of data centers, with ~50mn air conditioners to be installed annually in India, China, Southeast Asia and Japan while Europe sees heat pumps leading to 20% faster growth in power needs. For context, we note that during the summer, cooling accounts for up to 40% of India's peak power consumption.

The dispersion in equity performance between equipment and power generation companies should rise as power generators gain pricing power and push back on the high cost of equipment by refurbishing existing equipment or delaying the deployment of new capacity. We do not see this shift in the dynamics of pricing power as priced into fossil

fuels based on power gencos and gas midstream operators. Equipment players have seen multiples correct due to this shift in dynamics. In addition, announcements around expanding turbine/transformer capacity should help alleviate concerns about supply chain for both powergrid and generation operators (Exhibit 9).

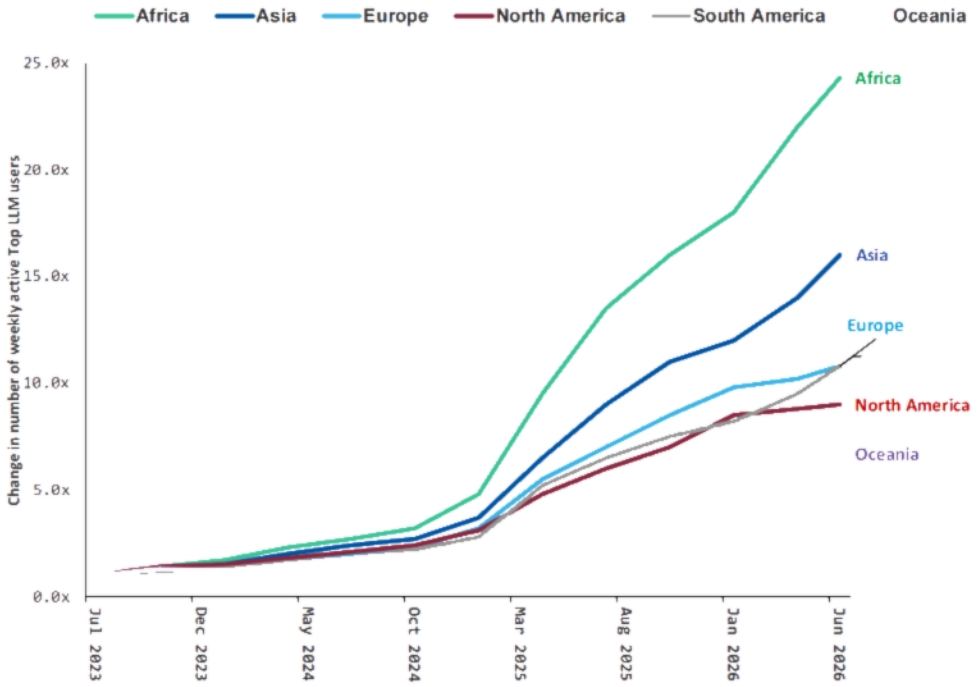
"As the revitalization of manufacturing restores the link between electricity demand and GDP growth, large-scale demand from data centers creates an even greater opportunity for JERA to expand its LNG value chain and power supply businesses. To capitalize on this opportunity, we need to identify changes in demand early and flexibly secure the necessary fuel, power generation facilities, and related infrastructure to achieve both stable supply and decarbonization."- JERA, Chief Global Strategist.

Exhibit 3: MSe Power demand estimates have been raised in most regions in 2026



Source Statistical Review of World Energy, NSB EPPO, EIA, Morgan Stanley Research Estimates

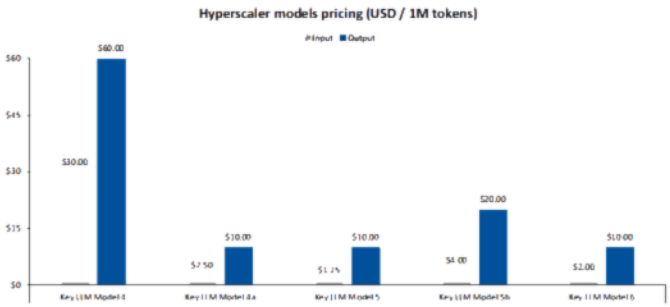
Exhibit 4: AI adoption: Asia has one of the fastest adoption curves globally, making the case for more hyperscaler investment in Asia, while also helping resolve US power constraints



Source: Various hyperscalers, Morgan Stanley Research

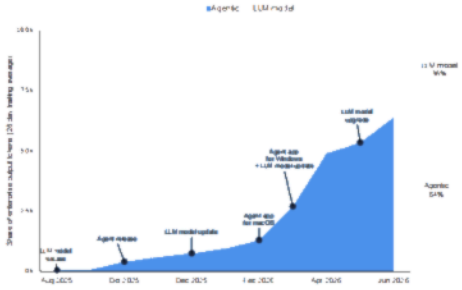
A conventional chatbot may require one primary model response, while an agentic system may perform repeated reasoning, subagent creation, retrieval, tool use, code execution, and verification. Cost per token may fall, but cost per task can rise as each task requires more tokens and more model calls. Illustratively, if a complex enterprise workflow deploys 5–7 agent instances, each using ~15x the tokens of a conventional ~5,000-token query, aggregate token consumption could reach ~375,000–525,000 tokens per end-to-end task completed. The combination of lower prices, broader adoption, and more compute-intensive agentic workloads should continue to drive the surge in power requirements.

Exhibit 5: Cost per token has declined with new models, however...



Source: Various hyperscalers, Morgan Stanley Research

Exhibit 6: ...Agentic workloads already account for ~64% of enterprise output tokens, which would increase cost per task



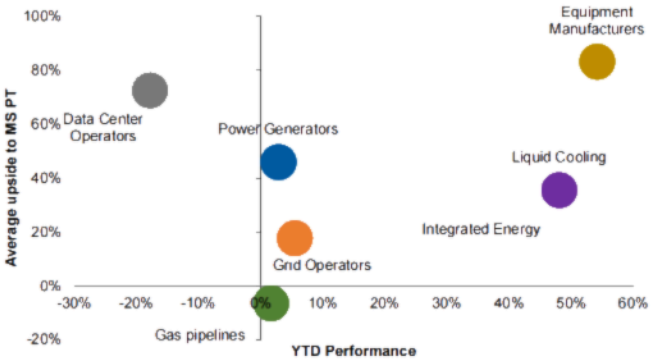
Source: Various hyperscalers, Morgan Stanley Research

Natural gas is key to powering AI and its infrastructure: It is addressing the time to power as well as energy security. We estimate ~19GW of natural gas-based generation capacity to ramp up in Asia (ex-China) over 2025-2030e (Exhibit 39), underwriting

20mntpa of imported LNG consumption. Gas, renewables and storage increasingly work together rather than compete to power the AI adoption curve. Gas midstream equities – gas pipelines, LNG importers and associated infrastructure players – should see earnings inflect, something the market is not ready to price in as global conflict keeps LNG costs high vs alternative fuels.

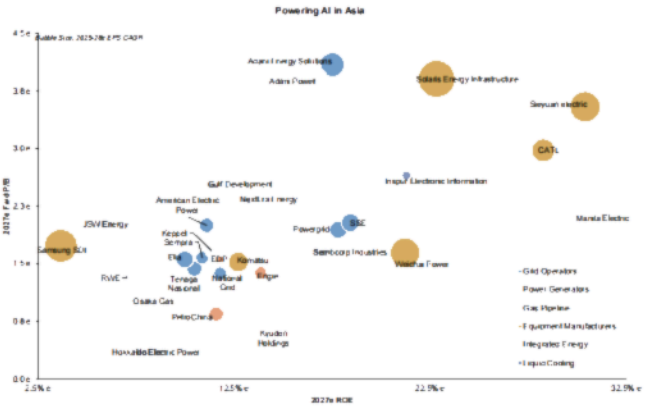
What's priced in? Gas and power utilities with grid exposure in Asia outperformed benchmarks in 2026, but have still de-rated YTD. It's interesting, though, that two-year forward earnings expectations continue to rise as new DC capacity and growth in overall power demand surprises in the region, and power margins have expanded. Stronger local currencies have also supported power utility earnings. We see opportunities – especially in grid operators and power utilities – to play the theme as AI stocks come back into focus. Below, we highlight our 36 'Powering AI' preferred picks in Asia for exposure to the theme across the value chain.

Exhibit 7: What we like? Attractive themes in the global value chain – YTD performance vs average upside to our price targets



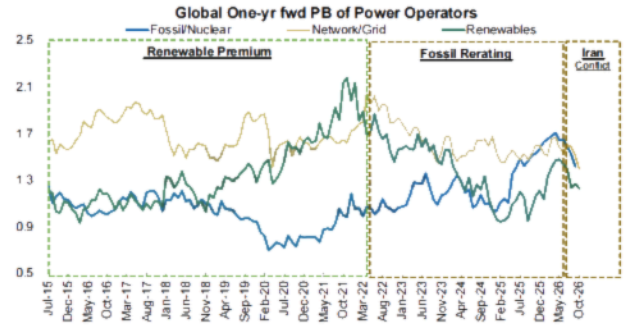
Source Refinitiv, Morgan Stanley Research estimates. Priced at 12 Oct 2026

Exhibit 8: How Global Powering AI names stack up on valuations



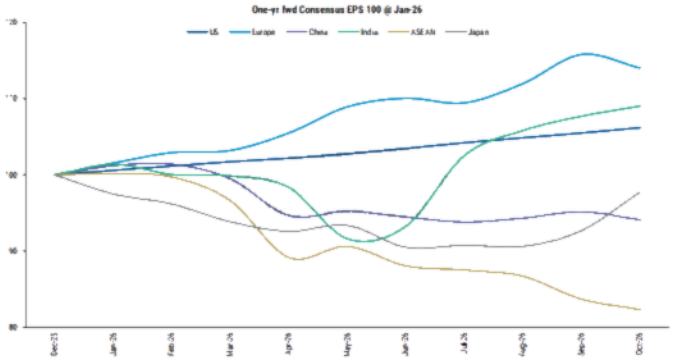
Source Refinitiv, Company data, Morgan Stanley Research estimates, Priced at 12 Oct 2026

Exhibit 9: Renewable power generators have started to re-rate globally as investors price in a more diversified energy mix



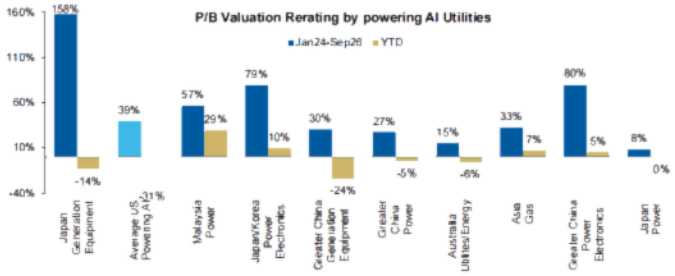
Source Refinitiv, Morgan Stanley Research estimates

Exhibit 10: Power utilities in India, the US and Europe have seen upside earnings revision, YTD 2026



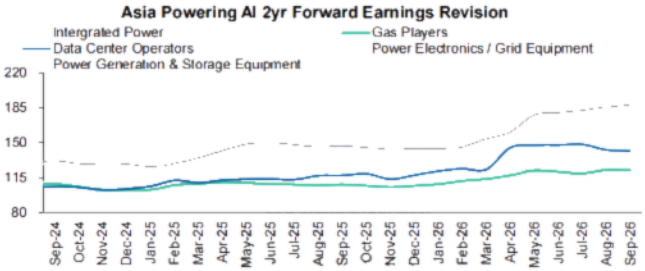
Source Refinitiv, Morgan Stanley Research estimates

Exhibit 11: Asia Powering AI beneficiaries have de-rated YTD...



Source: Refinitiv, Morgan Stanley Research

Exhibit 12: ...despite continued earnings revisions



Source: Refinitiv, Morgan Stanley Research

Exhibit 13:

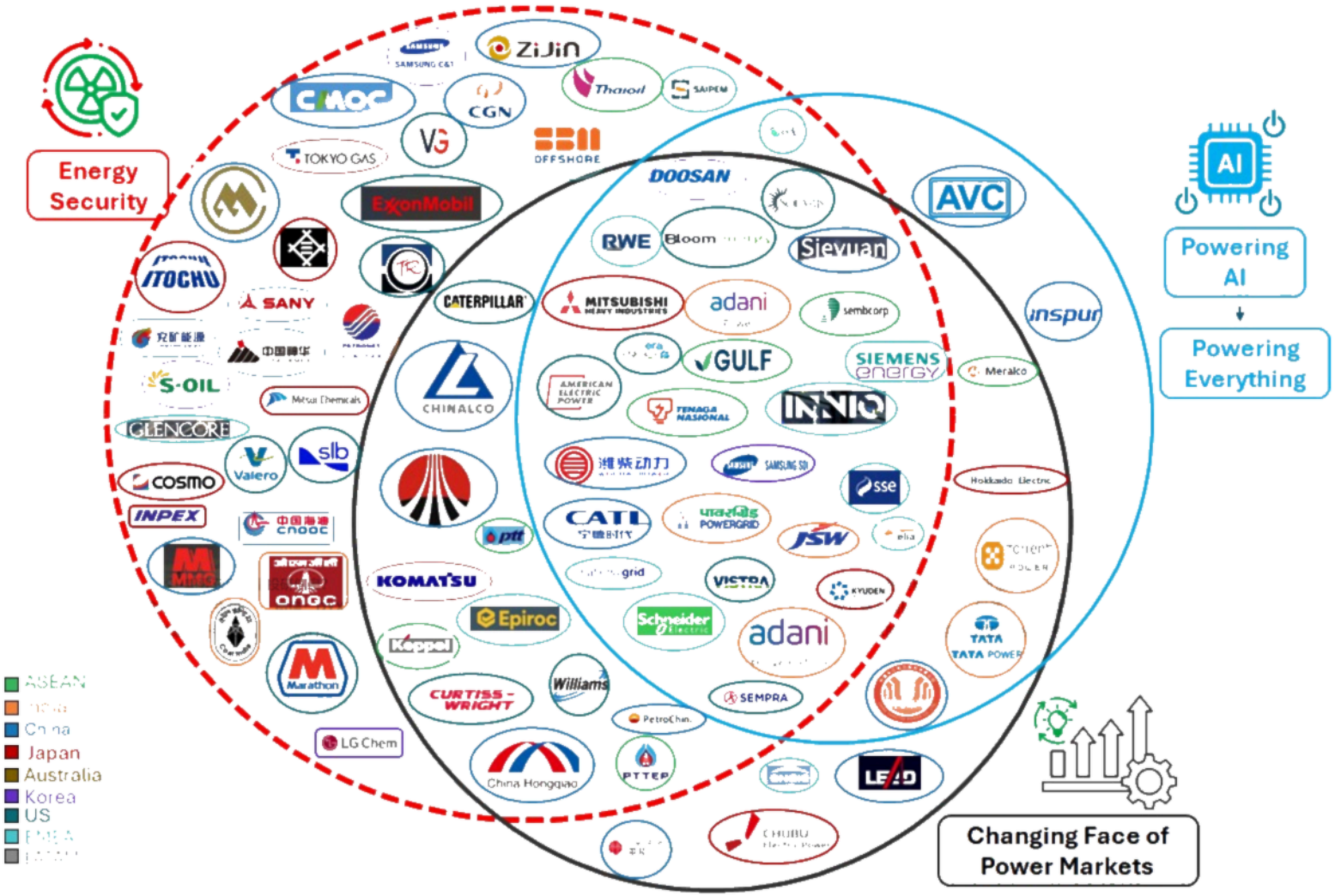
Global Power: We see ~14% upside to Street 2028 estimates and US$0.5trn in value creation

Company Name	Ticker	Market cap, current, USD (MM)	3M ADTV, USD (MM)	Rating	Price Target (Local CCY)	% Upside from last close	Country	Sub-Sector	MS Analyst
What to Own									
Grid Operators									
Tenaga Nasional	TENA.KL	18,923	24	Overweight	15.90	21.7%	Malaysia	Grid Operator	Mayank Maheshwari
Powergrid	PGRD.NS	24,458	26	Equal-Weight	264.00	5.5%	India	Grid Operator	Vivek Rajamani
Adani Energy Solutions	ADAI.NS	16,708	41	Overweight	1,567.00	28.4%	India	Grid Operator	Vivek Rajamani
National Grid	NG.L	82,413	158	Overweight	1,400.00 GBp	15.7%	United Kingdom	Grid Operator	Robert Pulleyn
Elia	ELI.BR	15,326	14	Overweight	150.00	20.7%	Belgium	Grid Operator	Arthur Sitbon
SSE	SSE.L	41,931	81	Overweight	2,900.00 GBp	13.5%	United Kingdom	Grid Operator	Robert Pulleyn
Sempra	SRE.N	55,431	105	Overweight	100.00	19.8%	United States	Grid Operator	David Arcaro
American Electric Power	AEP.O	71,120	458	Overweight	130.00	2.0%	United States	Grid Operator	David Arcaro
Power Generators									
Hokkaido Electric Power	9509.T	1,485	14	Overweight	1,980.00	80.2%	Japan	Integrated Power Utility	Reiji Ogino
Kyuden Holdings	642A.T	6,029	25	Overweight	2,800.00	41.4%	Japan	Integrated Power Utility	Reiji Ogino
Sembcorp Industries	SCIL.SI	8,399	37	Overweight	6.60	10.0%	Singapore	Hybrid Power	Mayank Maheshwari
Keppel	KPLM.SI	14,328	36	Overweight	16.00	58.3%	Singapore	Hybrid Power	Mayank Maheshwari
Gulf Development	GULF.BK	27,489	70	Overweight	85.00	37.7%	Thailand	Hybrid Power	Mayank Maheshwari
Adani Power	ADAN.NS	37,824	41	Overweight	270.00	39.1%	India	Power Generator	Vivek Rajamani
JSW Energy	JSWE.NS	8,968	10	Overweight	654.00	35.6%	India	Hybrid Power	Vivek Rajamani
Manila Electric	MER.PS	7,833	3	Overweight	683.00	49.8%	Philippines	Integrated utility	Mayank Maheshwari
RWE	RWEG.DE	49,717	89	Overweight	75.00	31.7%	Germany	Power Generator	Robert Pulleyn
NextEra Energy	NEE.N	170,842	245	Overweight	110.00	40.5%	United States	Renewable Developer	David Arcaro
Vistra Corp	VST.N	47,268	176	Overweight	226.00	50.3%	United States	Power Generator	David Arcaro
Gas Pipelines									
GAIL	GAIL.NS	11,728	16	Equal-Weight	190.00	13.6%	India	Gas Pipelines	Mayank Maheshwari
Tokyo Gas	9531.T	13,209	40	Equal-Weight	5,680.00	(7.8%)	Japan	Gas Pipelines	Reiji Ogino
Osaka Gas	9532.T	14,028	37	Equal-Weight	4,430.00	(22.5%)	Japan	Gas Pipelines	Reiji Ogino
Equipment Manufacturers									
CATL	3750.HK	9,414	195	Overweight	705.00 HKD	71.1%	China	Battery Energy Storage	Jack Lu
Komatsu	6301.T	39,901	144	Overweight	8,500.00	21.4%	Japan	Equipment Manufacturer	Takeshi Kitaura
Weichai Power	000338.SZ	21,322	351	Overweight	42.00	97.6%	China	Equipment Manufacturer	Sheng Zhong
Samsung SDI	006400.KS	31,099	172	Overweight	670,000.00	20.5%	S. Korea	Power Grid Equipment	Young Suk Shin
Bloom Energy	BE.N	64,139	754	Overweight	335.00	53.8%	United States	Equipment, Fuel Cells	David Arcaro
Innio N.V.	INIO.O	11,333	103	Overweight	40.00	146.5%	Austria	Equipment	David Arcaro
Solaris Energy Infrastructure	SEI.N	4,699	45	Overweight	102.00	47.0%	United States	Equipment	David Arcaro
Sieyuan electric	002028.SZ	12,651	250	Overweight	237.00	113.9%	China	Power Grid Systems	Eva Hou
Integrated Energy									
PTT Group	PTT.BK	35,321	130	Equal-Weight	44.90	10.2%	Thailand	Integrated Energy	Mayank Maheshwari
PetroChina	0857.HK	26,082	95	Overweight	13.25 HKD	32.6%	China	Integrated Energy	Jack Lu
EDP	EDP.LS	22,276	42	Overweight	5.30	12.8%	Portugal	Integrated Energy	Arthur Sitbon
Engie	ENGIE.PA	65,994	129	Overweight	29.00	27.0%	France	Integrated utility	Arthur Sitbon
Liquid Cooling									
AVC	3017.TW	38,126	365	Overweight	3,333.00	3.0%	Taiwan	Liquid Cooling	Derrick Yang
Inspur Electronic Information	000977.SZ	12,453	795	Equal-Weight	96.50	65.2%	China	Liquid Cooling	Howard Kao
What to Avoid									
Global Power Synergy	GPSC.BK	4,285	15	Underweight	35.00	(29.3%)	Thailand	Grid Operator	Mayank Maheshwari
Korea Electric Power	015760.KS	13,936	35	Underweight	29,000.00	2.8%	S. Korea	Grid Operator	Young Suk Shin
Huaneng Power	0902.HK	3,438	17	Equal-Weight	6.10 HKD	3.1%	China	Grid Operator	Eva Hou
Tata Power	TTPW.NS	11,958	16	Equal-Weight	363.00	3.1%	India	Grid Operator	Vivek Rajamani
Enagas SA	ENAG.MC	5,138	13	Underweight	16.00	(7.2%)	Spain	Grid Operator	Arthur Sitbon
SNAM	SRG.MI	22,242	37	Underweight	6.00	2.7%	Italy	Grid Operator	Arthur Sitbon
Electric Power Development	9513.T	4,462	15	Underweight	2,670.00	(32.9%)	Japan	Grid Operator	Reiji Ogino

Source: Refinitiv, Morgan Stanley Research, priced at 23 October 2026

Diffusion in Power, Energy and Agents: What to Own in Equities?

Exhibit 14: Intersection of Powering Everything, Energy Security and Changing Face of power markets; greater selectivity helps to identify 36 winners



Source: Morgan Stanley Research

Exhibit 15: Global Power: Stacking up power markets around the globe: US, ASEAN and India stack well; Improvements in Europe and Japan

Country	Demand Growth	Market Tightness		Capacity Growth		Energy Security	Regulatory Environment	Overall
		Base Load Tightness	Grid Tightness	Base Load Growth	Renewable Growth			
US	3.5	3.5	5.0	2.5	3.0	4.5	3.5	**3.4**
UK	2.0	4.0	4.0	3.0	3.0	3.5	4.0	**3.3**
Europe	2.0	4.5	4.0	1.0	3.0	3.5	4.0	**3.2**
Mexico	2.0	4.0	4.0	2.0	1.0	3.0	2.0	**2.7**
Brazil	3.0	2.0	2.5	3.5	4.0	4.8	4.0	**3.3**
Chile	4.0	2.5	3.0	4.0	4.5	4.5	3.0	**3.5**
UAE	3.0	1.0	3.0	4.0	3.0	5.0	5.0	**3.2**
China	4.0	3.5	4.0	5.0	4.5	5.0	4.0	**4.3**
India	4.5	5.0	4.0	4.0	3.5	4.0	3.5	**4.1**
Australia	2.5	2.5	5.0	1.5	5.0	4.5	4.5	**3.7**
Japan	1.0	2.0	3.0	2.0	1.5	4.0	4.0	**2.3**
Thailand	3.5	3.0	2.0	4.0	2.0	3.5	3.0	**2.9**
Malaysia	4.5	4.5	3.0	3.0	4.5	4.5	4.5	**4.0**
Singapore	3.0	4.0	3.0	5.0	1.5	3.5	4.5	**3.4**
Indonesia	3.5	2.5	2.0	4.0	1.5	4.0	3.0	**2.7**
Philippines	3.0	4.0	4.0	5.0	2.5	3.0	3.5	**3.6**

Source: Morgan Stanley Research Estimates Ranked 1-5. Demand Growth: High demand growth = higher score; Base Load Tightness: Excess baseload capacity = Lower Score; Grid Tightness: Excess grid capacity = Lower Score; Base Load Growth: More base load capacity growth= higher score; Renewable Growth: More renewable capacity growth = higher score; Energy Security: Higher delivered fuel costs or lower availability to energy = lower score; Regulatory Environment: More favourable to incremental investments = higher; Valuations: Attractive valuations relative to growth outlook = higher

Thirty-Six Trillion Units of Consumption: It's Electric

We estimate ~36trn units of power will be consumed by 2030, well in excess of IEA forecasts, with consumption of power outside China growing 3.3x faster than during the last decade (Exhibit 16). This is placing increased pressure on the power system – as power prices rise, the need for grid deployment accelerates and costs continue to inflate. In addition, shifting load patterns are making electron delivery to end consumers even more complex. Increasing amounts of nuclear power (inflexible supply) and renewables (variable supply) is adding to power prices and the need for behind-the-meter supply, especially as the cost to source stable power from the grid rises. AI will contribute ~26% of incremental power consumption over 2026-30e, we estimate (Exhibit 18).

The power-demand surprise is broadening across regions and end-uses: We increase our growth forecast for global electricity consumption by 10% to ~4.2% CAGR over 2025-30e (Exhibit 17), but see quite a few changes in both fuel and country level consumption and generation dynamics over that period – with the largest upward revisions in India, the US, Australia and Southeast Asia and we also include behind-the-meter power demand in our estimates. China and India continue to add demand from already high bases, while the US, Europe, Japan and Australia are seeing a more meaningful re-acceleration versus the previous decade as industrial investment, reshoring and electrification raise underlying power intensity. Asia remains the center of the cycle, accounting for ~64% of incremental global electricity demand through 2030 (Exhibit 21). The fuel mix is also increasingly shifting to fossil fuels (~50% share by 2030 slightly above our earlier estimates) in our forecasts as dependable power supply and behind-the-meter supply for natural gas-based power rises as corporates and economies focus on energy security. (Exhibit 19)

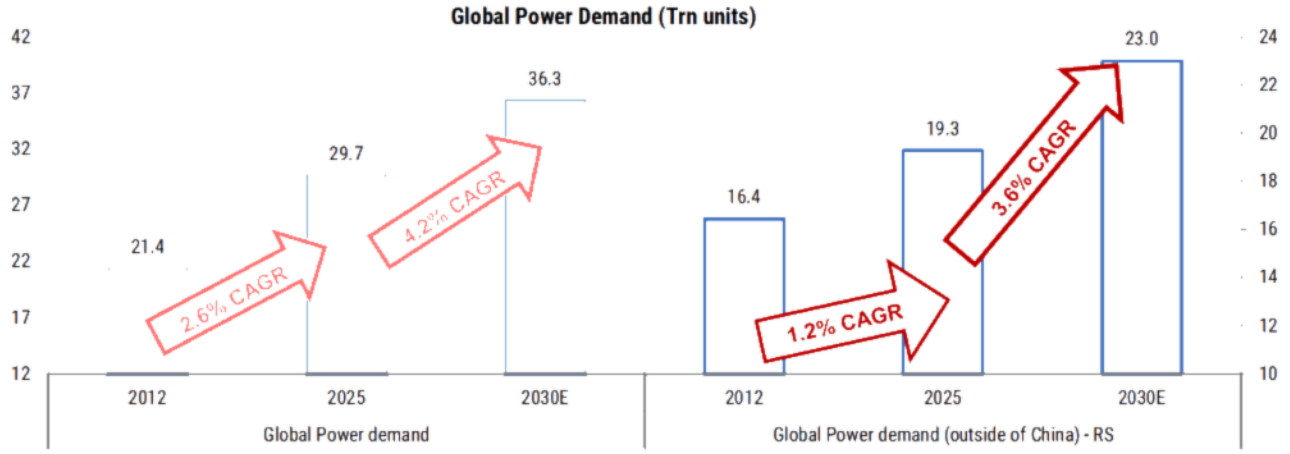
Agents are lifting the duck curves higher, cooling is reshaping power consumption curves, and industrial demand is increasingly going behind the meter: Although AI is emerging as an important source of high-load-factor demand, the broader power cycle is underpinned by manufacturing expansion, changing industrial composition and electrification. In Asia, we estimate industry will account for ~43% of incremental electricity consumption through 2030, or ~2.7x the contribution from data centers, with China and India driving the majority of the increase. (Exhibit 48)

Cooling is emerging as another significant demand driver, particularly across lower-penetration emerging markets. The IEA estimates that cooling can account for approximately one-third of India's electricity consumption on hot summer nights, compared with just over 10% on an annual basis, illustrating its disproportionate impact on load profiles. As AC penetration rises, this growing concentration of demand during evening and nighttime hours increases requirements for dependable generation, storage and grid flexibility.

We are more constructive than the IEA on the need for dependable power: Our global demand forecast is ~60bps above the IEA through 2030 (Exhibit 17), with the largest divergence in the US and Australia, while China and India are broadly aligned. In our view, the upside risk is greatest in markets where data centers are being layered on top of stronger industrial, commercial and cooling demand, increasing the risk that consumption grows faster than generation and grid capacity can respond.

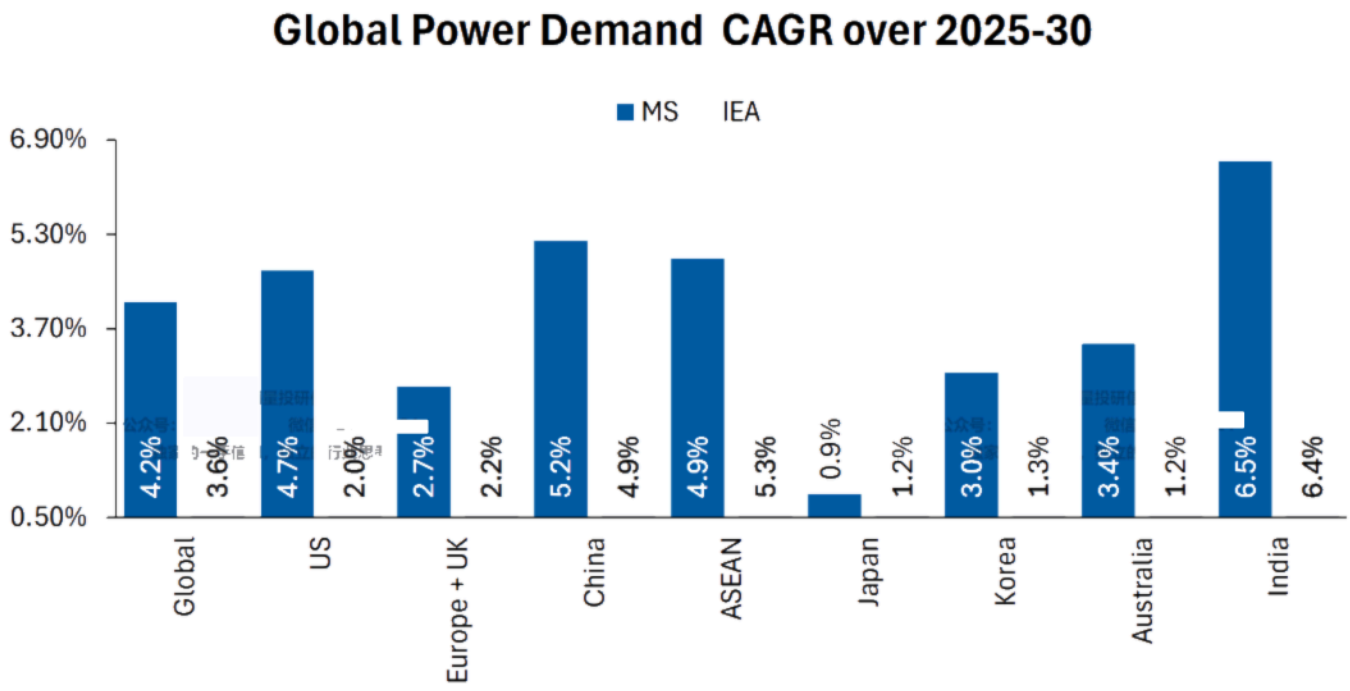
The supply response therefore needs to broaden as well: Renewables remain the largest source of incremental generation, but stronger baseload demand and higher renewable penetration increase the need for dependable and flexible power. We therefore expect gas and nuclear generation to continue rising globally, while coal remains more important in Asia alongside a significant build-out of renewables and storage. In Asia alone, we expect ~303GW of new coal, ~61GW of gas, ~51GW of nuclear and more than 2TW of renewable capacity through 2030. (Exhibit 39)

Exhibit 16: Global Power: Consumption to grow 3x faster outside of China 2025-2030



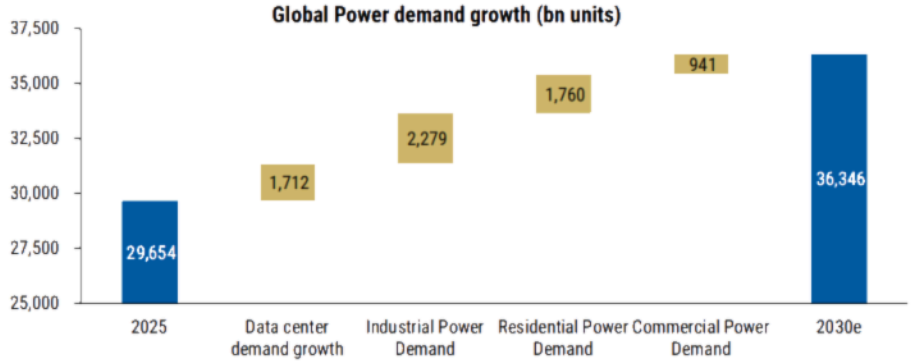
Source: Statistical Review of World Energy, Morgan Stanley Research (E) estimates

Exhibit 17: We are 60bps above the IEA in our forecast for global power demand over 2025-30



Source: IEA, Morgan Stanley Research estimates

Exhibit 18: Growth in global power demand is much broader than AI: Industry is the largest driver, while cooling alone adds more electricity demand than data center growth through 2030



Industrial Power Demand includes also Behind the meter power demand

Source: IEA, Morgan Stanley Research (e) estimates

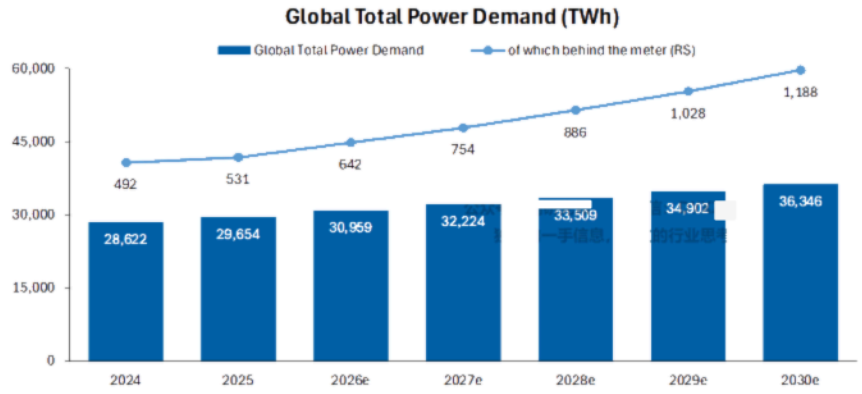
Exhibit 19: We expect global demand for power to rise at a 4.2% CAGR over 2025-30e

Power Demand	2023	2024	2025	2026e	2027e	2028e	2029e	2030e
Data Center power demand (bn units) FOM	487.9	603.4	793.5	1,053.9	1,213.0	1,449.5	1,755.6	2,096.3
Data Center power demand (bn units) BOM	-	-	-	52.6	124.0	211.8	305.8	409.2
Non Data Center power demand (bn units)	26,479.0	27,526.9	28,329.3	29,263.7	30,257.1	31,173.0	32,118.9	33,061.2
Industrial	9,596.8	10,744.5	11,060.6	11,476.7	11,923.7	12,395.6	12,737.1	13,091.3
Commercial	4,421.4	5,803.9	5,968.0	6,152.6	6,351.1	6,505.4	6,715.3	6,909.2
Residential	12,460.7	10,978.5	11,300.7	11,634.3	11,982.3	12,272.0	12,666.6	13,060.7
Total Power Demand (bn units)	26,966.9	28,130.3	29,122.8	30,370.1	31,594.1	32,834.3	34,180.3	35,566.7
Non Data Center Behind the meter (bn units)	394.1	492.0	531.2	589.2	630.2	674.4	721.9	779.2
Total Power Demand incl. BTM (bn units)	27,361.0	28,622.3	29,654.0	30,959.3	32,224.4	33,508.7	34,902.2	36,345.9

Power Generation	2023	2024	2025	2026e	2027e	2028e	2029e	2030e
Coal (bn units)	10,461.0	10,613.2	10,259.8	10,687.3	10,804.0	10,929.4	11,055.9	11,199.7
Installed Capacity (GW)	2,141.0	2,150.0	2,193.3	2,241.3	2,296.7	2,349.8	2,405.6	2,445.3
Load Factor	56%	56%	53%	54%	54%	53%	52%	52%
Nuclear (bn units)	2,737.6	2,817.5	2,866.4	2,929.1	3,076.6	3,188.7	3,267.5	3,364.5
Installed Capacity (GW)	395.0	402.0	408.8	417.1	428.7	440.2	454.0	465.0
Load Factor	79%	80%	80%	80%	82%	83%	82%	83%
Renewables & Others (bn units)	9,954.9	10,824.0	11,874.0	12,721.2	13,626.2	14,538.7	15,528.5	16,482.5
Installed Capacity (GW)	4,655.0	5,315.0	5,982.9	6,645.3	7,250.6	7,825.5	8,422.6	8,965.4
Load Factor	24%	23%	23%	22%	21%	21%	21%	21%
Natural Gas (bn units)	6,809.7	7,001.2	7,174.5	7,327.8	7,489.1	7,676.8	7,949.4	8,241.7
Installed Capacity (GW)	1,809.0	1,833.0	1,870.4	1,909.3	1,952.5	2,001.7	2,049.9	2,104.5
Load Factor	43%	44%	44%	44%	44%	44%	44%	45%
CCGT Heatrate (BTU/kwh)	7,615	7,634	7,640	7,598	7,628	7,629	7,658	7,724
Total Gas consumed for Power (mntpa)	1,001.1	1,031.9	1,058.2	1,074.8	1,102.9	1,130.7	1,175.2	1,229.0
o/w Behind-the-meter generation (bn units)	453.2	565.7	610.7	677.4	725.0	776.1	830.7	896.0
Total Power generation incl. BTM (bn units)	30,051.2	31,377.2	32,313.4	33,843.6	35,194.8	36,555.9	38,047.2	39,560.3

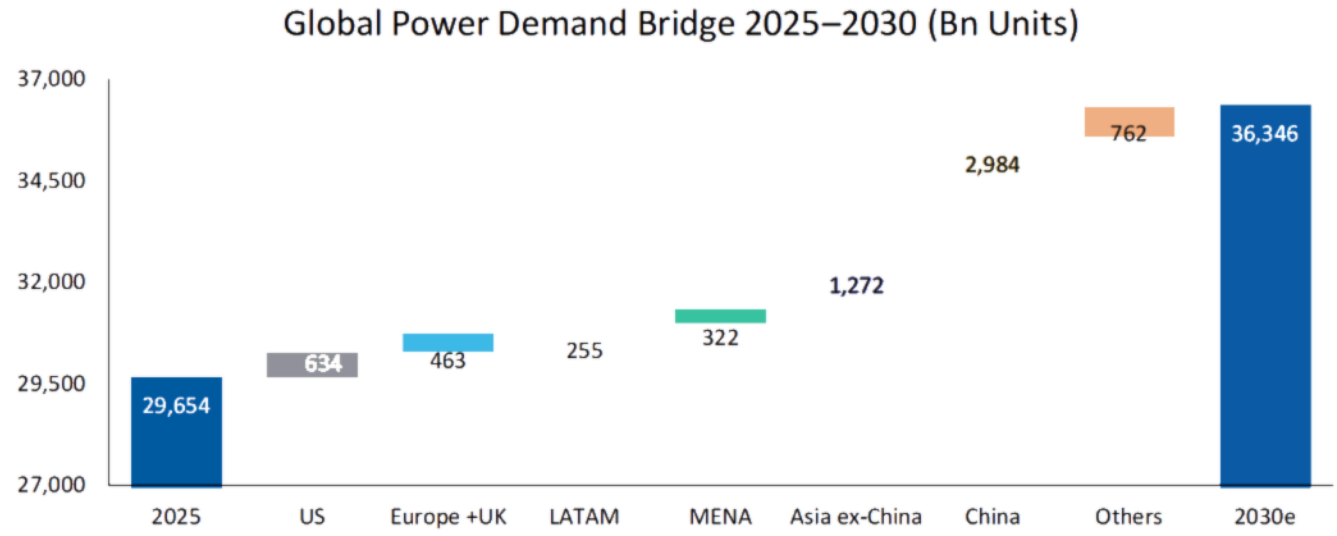
Source: Statistical Review of World Energy, Morgan Stanley Research (e) estimates

Exhibit 20: As grid power gets more constrained, we estimate behind-the-meter power demand will grow to 8GW in Asia and 4 /GW in the US by 2030 as grid



Source: GS A, Morgan Stanley Research (e) estimates

Exhibit 21: Asia (including China) makes up ~64% of global incremental power demand over 2025-30



Power demand for all regions include behind the meter

Source: Statistical Review of World Energy, Morgan Stanley Research (e) estimates

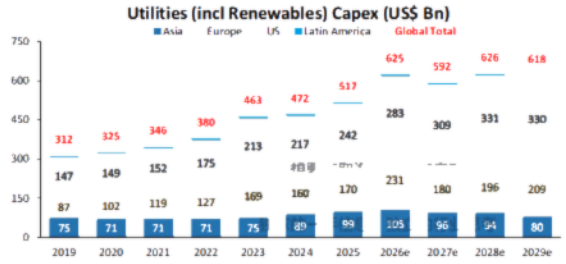
Investment in generation, grids and storage continues to rise as stronger electricity demand collides with aging infrastructure and longer interconnection timelines (Exhibit 23). AI adds another source of urgency, but the capex cycle is broader, supported by electrification, grid reinforcement and the need for more flexible capacity as renewable penetration increases. We expect spending to remain well above pre-2020 levels through the rest of the decade.

Exhibit 22: Global Power: The highest scarcity premiums

Country	Power Demand CAGR (2025-30)	Incremental Power demand (2025-30) (TWh)		Baseload Power Cost (US$/MWh)	Delivered Power Price (US$/MWh)
		Datacenters	Non-Datacenters		
US	4.69%	909	135	45	90
Europe	2.72%	89	254	65-98	209
LATAM	3.40%	22	233	65	170
Middle East	7.23%	77	300	45	80
China	5.19%	449	2,535	60	93
India	6.54%	68	601	51	90
Japan	0.90%	21	16	110	250
Australia	3.45%	12	30	52	220
ASEAN (ex Singapore)	4.93%	95	98	81	106
Singapore	4.30%	6	7	157	775

EIA, IEA, CEIC, JEPX, EPSIS, EMO, AER, Bloomberg, Morgan Stanley Research estimates

Exhibit 23: Power capex stays higher for longer – annual investment remains ~2x 2019 levels through 2029e



Source: Refinitiv, Morgan Stanley Research estimates

Data Centers: A Quantum Expansion

The need for power and the strain on power systems have been well highlighted by chipmakers:

"We're tracking every single gigawatt of land power shell around the world, literally everything on the planet." – Nvidia CEO Jensen Huang September 10, 2026

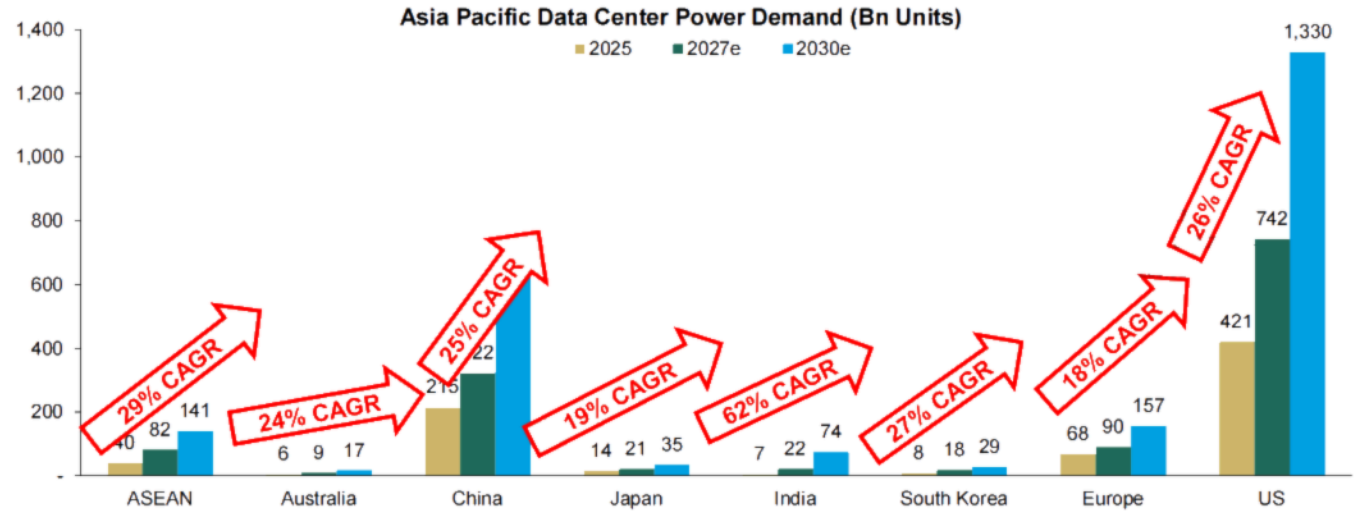
"We want to be sure... It's a judged number based on not just supply of memory wafers, but supply and availability and readiness of power sites" – Broadcom CEO Hock Tan: September 8, 2026

Power requirements for data centers are accelerating globally as AI adoption broadens and newer rack architectures increase compute density. We estimate Asia's data center power requirements to more than triple by 2030 to ~120GW, with the region adding ~80GW of capacity (Exhibit 24). However, the US is seeing an even sharper inflection as next-generation AI racks require significantly more absolute power despite substantial improvements in compute efficiency. Our estimates now imply US data center electricity consumption (excl shortfall) will more than triple to ~1.3trn units by 2030. (Exhibit 24)

Asia's power markets are tightening at the same time. Data centers could account for ~15% of ASEAN electricity consumption by 2030, ~6% in Australia, ~5% in China and ~4% in Japan (Exhibit 25). Power-demand growth is accelerating in Malaysia, Japan is reversing its multi-decade decline in electricity consumption, and Australia, Taiwan and Singapore are seeing tighter power markets. (Exhibit 17)

We believe natural-gas-fired generation – one of the fastest sources of dependable incremental power (Exhibit 51) – will increasingly complement renewables and batteries as data center demand scales. Falling global gas prices should improve the economics of gas-fired generation, in our view, while rising renewable penetration increases the requirement for dispatchable power and storage to balance the grid. In China, data centers should source a greater share of electricity from renewables, but this can indirectly increase requirements for flexible generation elsewhere in the system.

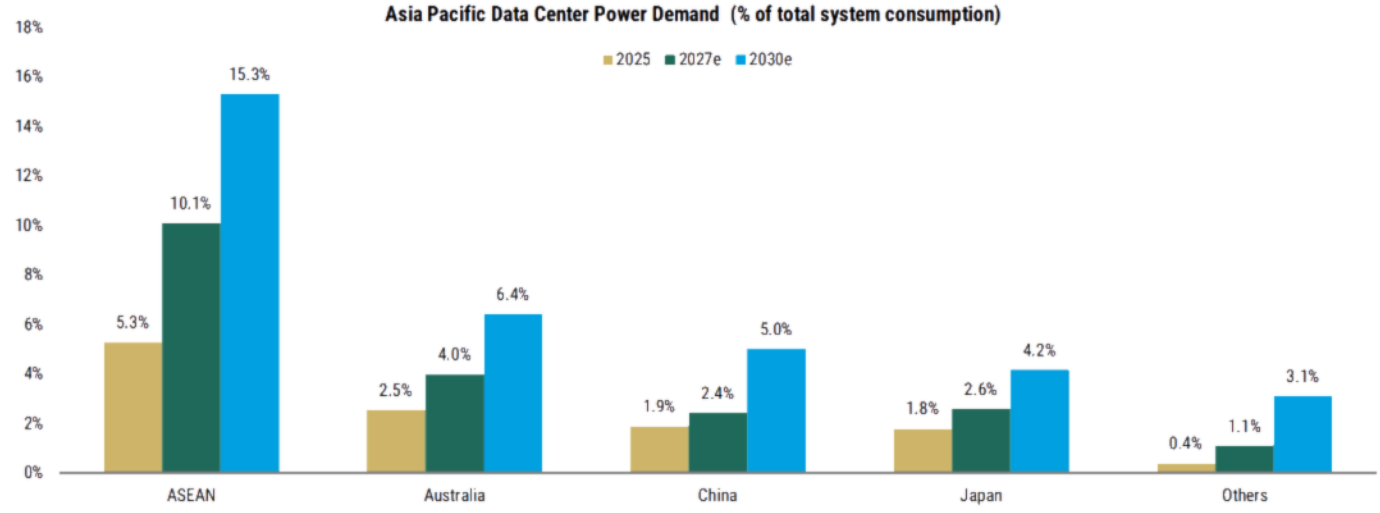
Exhibit 24: Asia data center power demand grows at 27% CAGR over 2025-2030 vs. 26% CAGR in US



Note: Power demand includes behind the meter and US power demand excludes estimates shortfall

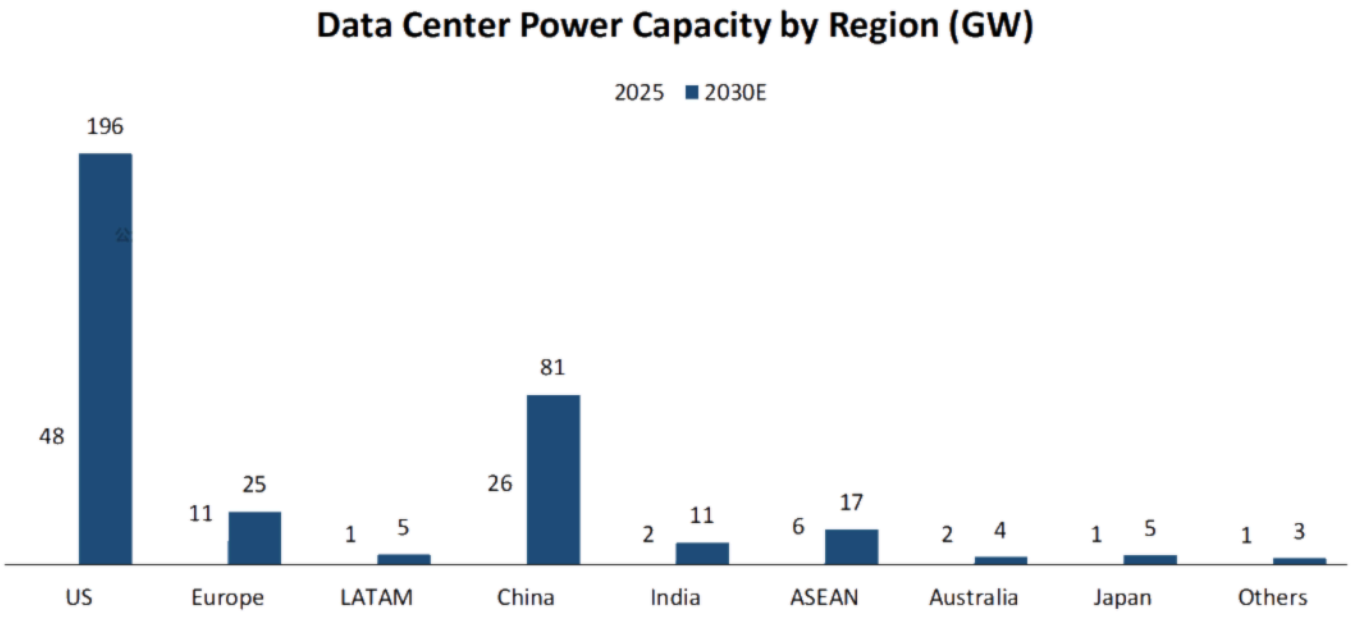
Source: Statistical Review of World Energy, EIA, NPP, EPSIS, Eurostat, Morgan Stanley Research estimates

Exhibit 25: Outside China, DCs could account for ~17% of incremental electricity demand through 2030



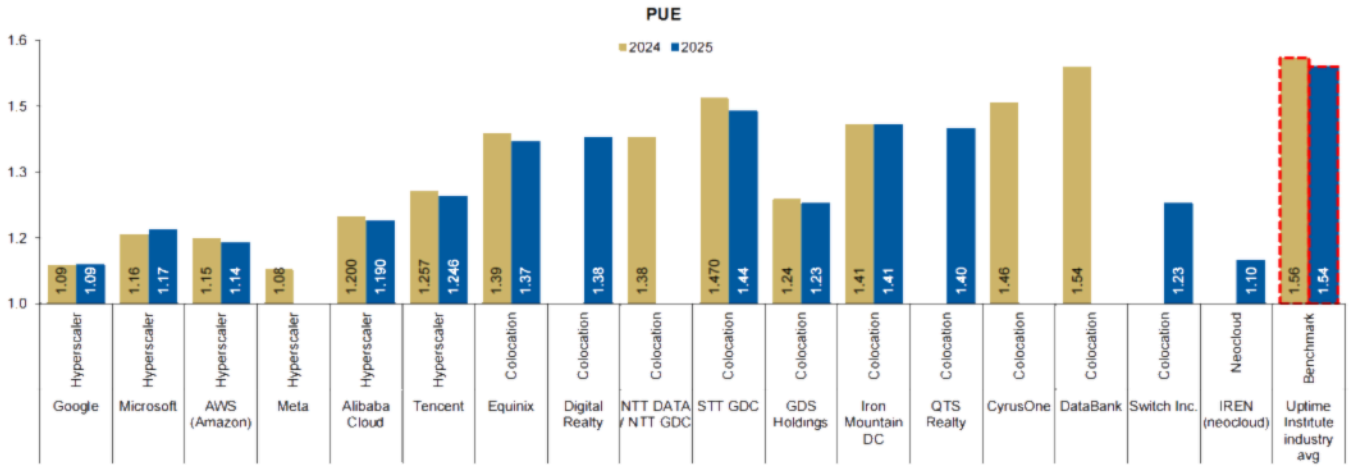
Source: Company data, IEA, Morgan Stanley Research estimates

Exhibit 26: We expect global data center power capacity to triple over 2025-30



Source: Company data, IEA, Morgan Stanley Research (E) estimates

Exhibit 27: Hyperscalers lead on power efficiency (~1.1–1.2x PUE); colocation operators are improving but remain structurally higher at ~1.2–1.5x vs. ~1.54x industry benchmark

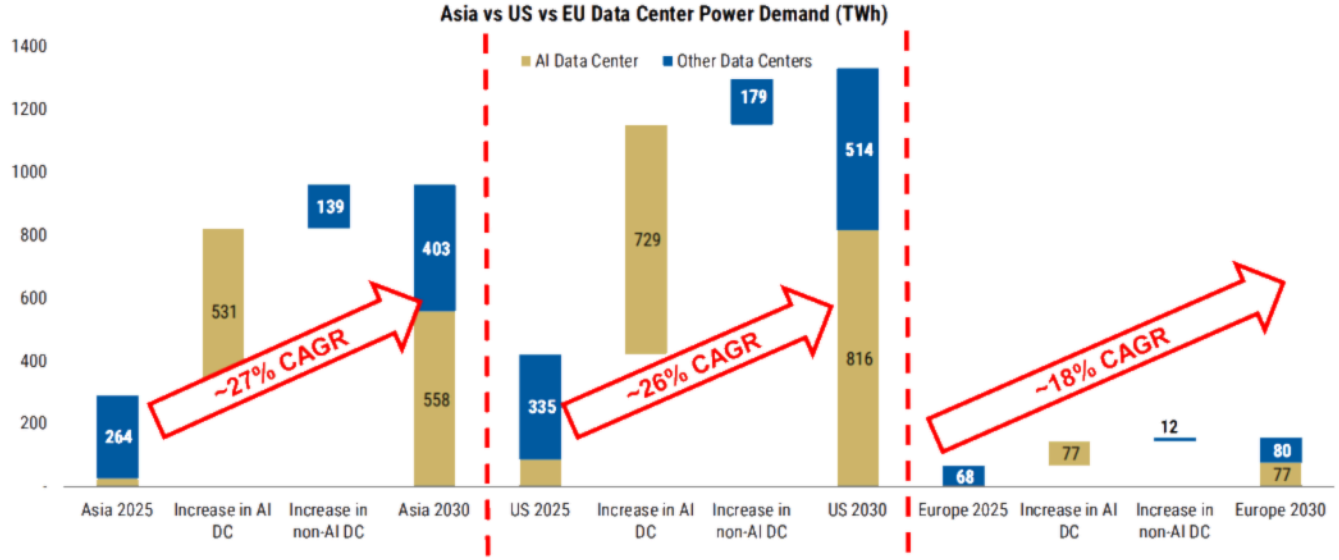


Source: Company data, Uptime Institute, Morgan Stanley Research

Asia: Supporting US & China Hyperscaler Power Needs

Our bottom-up estimate for data center power demand in Asia says that it will grow at 27% CAGR from both AI and non-AI workloads. Renewed investor optimism on adoption also increased our AI inference demand forecasts in the region following the development of DeepSeek and the recent advancements of AI applications by Chinese companies.

Exhibit 28: How data center power demand compares globally



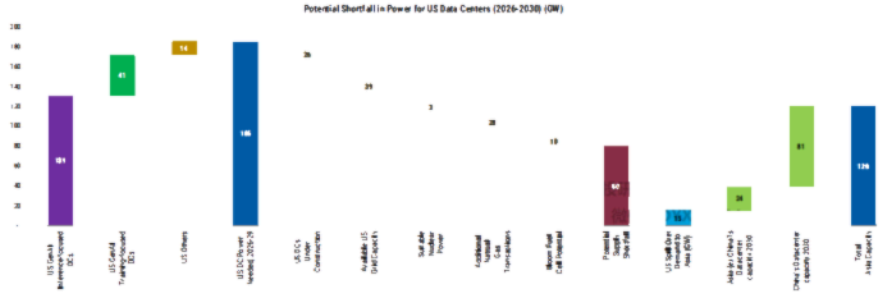
Note: Power demand numbers include behind-the-meter power demand.

Source: EIA, IEA, Eurostat, AEMO, NEP, CEA, Morgan Stanley Research, Morgan Stanley Research (e) estimates

US power constraints create a ~15GW spillover opportunity for Asia (Exhibit 29). Our US Power team estimates ~116GW of incremental data center power being required through 2028. Even after factoring in data centers already under construction, available grid capacity and additional "time-to-power" solutions including behind-the-meter generation, fuel cells and nuclear, we estimate the US could still face power shortfalls of ~43GW by 2028 and 80GW by 2029 (Exhibit 46). Our bottom-up Asia work suggests the region could absorb ~15GW of this shortfall, supported by available data center capacity and power supply, with Thailand, Malaysia, India and Japan among the markets seeing rising hyperscaler commitments (Exhibit 30). This represents power demand that can move faster than new US grid infrastructure can be built, increasing the value of available capacity and time-to-power in Asia. We expect dependable generation – particularly natural gas alongside renewables and storage – to play an important role in supporting this incremental load.

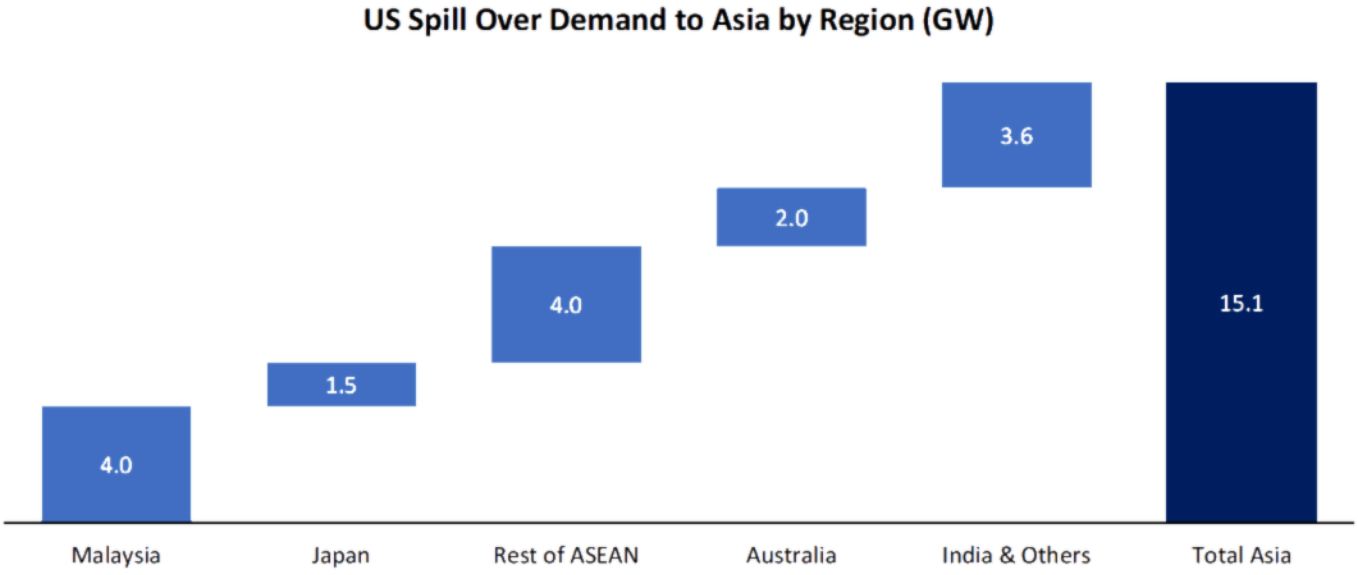
More efficient compute is not reducing absolute power requirements. New rack-scale architectures produce substantially more tokens and compute per watt, but system designers are using these efficiency gains to deploy more computing capacity. Larger models and more complex workloads also require greater memory, networking, cooling and sustained utilization – particularly for reasoning and agentic workloads. As a result, absolute rack power continues to rise even as the cost of intelligence falls. (Exhibit 31)

Exhibit 29: We estimate ~15GW of potential shortfall to be covered by Asian data center capacity adds and underwritten by US hyperscalers



Source: Company Data, Morgan Stanley Research estimates

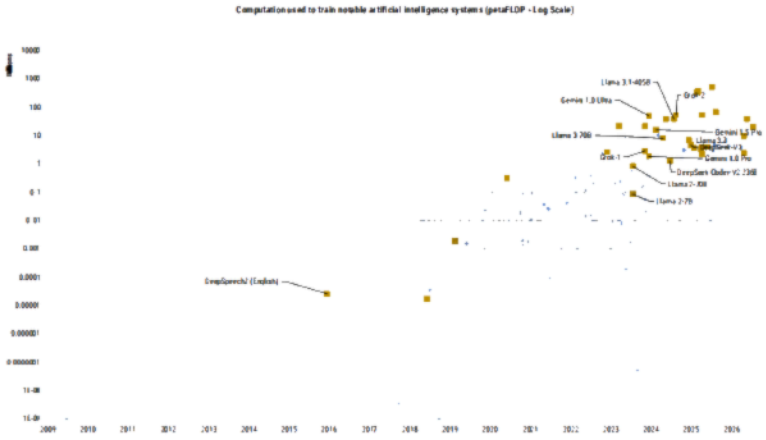
Exhibit 30: Where will the US hyperscalers' spillover demand go?



Source: Morgan Stanley Research estimates

More efficient models to drive increased AI adoption across more use cases: Recent advances in open source models have demonstrated that cutting-edge AI capabilities can be achieved with significantly less hardware than other iterations and have defied conventional expectations of computing power requirements. We believe if the adoption curve inflects (as tech companies accelerate investments), especially as MS Tech teams see the commoditization and commercialization of foundation models (see here), we think the long-term growth estimate of 4%+ power demand could see upside risks.

Exhibit 31: Evolution of AI training compute requirements shows a ~10x increase in compute for every generation of LLM



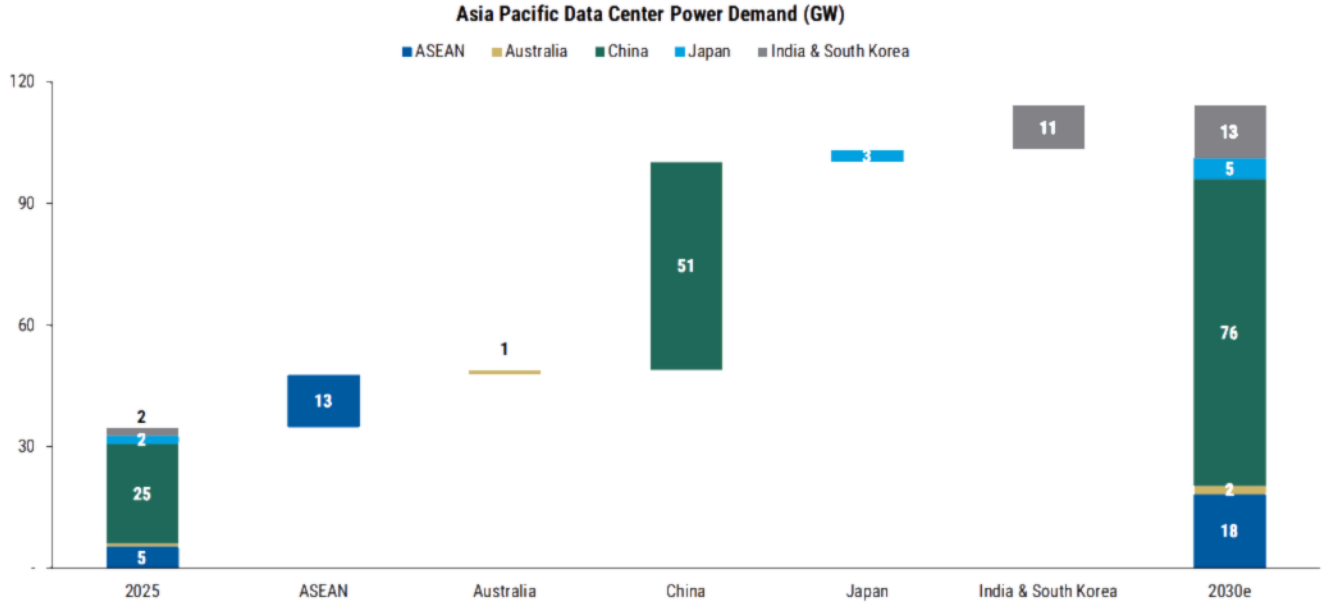
Source: Epoch, OurWorldInData, Morgan Stanley Research

Who Is Adding DC Capacity in Asia?

The Malaysia Story on Data center Expansion

Malaysia was among the first markets to see new data center capacity from global hyperscalers. Since 2025, the country has approved US$55 billion of new data center projects. As of July, Malaysia had approved a total of 84 data center projects, including 57 data centers requiring about 6.2GW of power, all supplied by integrated power utility Tenaga. According to the Ministry of Trade, data centers contributed US$3.5bn to GDP in 2025, up ~14x vs. 2021.

Exhibit 32: Asia data center expansion by China hyperscalers domestically and regionally will be key to power consumption growth



Source: AEMO, CEA, Company data, Morgan Stanley Research estimates

Scale Markets

China: AI demand in China is becoming more inference-heavy, recurring and utilization-driven as lower-cost models accelerate commercialization. Domestic accelerators can offer 30-60% lower TCO than NVIDIA processors available in China, while leading products are reaching comparable cost-per-token economics. This lowers the cost of AI deployment and supports adoption across a broader set of applications, including AI agents. China's policy framework is also increasingly supporting agent deployment, domestic compute and the build-out of AI infrastructure. We expect China to remain the largest contributor to Asia's data center growth (Exhibit 32), with renewables and energy storage playing a larger role in meeting incremental power demand. (Exhibit 39)

Time-to-Power Markets

Southeast Asia: Malaysia, Singapore and Thailand remain the region's key hyperscaler hubs, but the opportunity is increasingly shifting from simply securing land and

connectivity to securing dependable power. Thailand is moving particularly quickly: the country could serve around 5GW of incremental data center demand by 2030 (Exhibit 32), supported by the emerging "bring your own power" model. Recent project approvals and the draft PDP 2026 reinforce the direction of travel, with direct PPAs, data center growth and new power infrastructure becoming increasingly aligned. Malaysia and Singapore remain large markets, but as spare capacity tightens, we expect gas-fired generation, grids and renewable PPAs to become increasingly important enablers of further AI investment.

India: India's installed data center power capacity has risen to around 1.57GW as of August 2026, from ~375MW in 2020, with government estimates pointing to nearly 8GW by 2030. More importantly for power markets, the government's estimate for incremental AI data center load by F32 has risen sharply to 26.3GW, almost double the 13.6GW estimate published earlier this year. Large hyperscaler commitments, new AI-ready campuses and state-level policies are broadening development beyond the traditional Mumbai hub, making generation and transmission availability increasingly important constraints. (Exhibit 78)

Scarcity premium markets:

Japan: Japan's electricity demand is inflecting as AI data centers and semiconductor fabs add new loads. We estimate power consumption will grow through 2030 at 0.90% CAGR (Exhibit 17), reversing two decades of decline. However, additional nuclear restarts are making Japan's grid less flexible in accommodating variable generation from renewables. Because these baseload plants cannot ramp down quickly when solar output peaks at midday, the grid struggles to absorb additional renewable generation. This dynamic makes gas-fired power particularly important for maintaining grid stability. The structural bottleneck was evident in March–April 2026, when the Tokyo metropolitan area curtailed up to 4.41GW of local solar generation while simultaneously importing power from the Tohoku region to maintain inflexible thermal and nuclear minimums. Grid operators will continue to keep baseload assets online at minimum capacity. We therefore believe Japan will require greater investment in batteries and new grid connections, while continuing to rely on the LNG supply chain.

Australia: AEMO now forecasts NEM data center electricity consumption rising from around 5TWh in 2025–26 to 34TWh by 2035–36, increasing from ~3% to around 13% of grid-supplied electricity. (Exhibit 83) The project pipeline is already visible: in 1Q26, 11 data centers representing 5.4GW of ultimate load were progressing through transmission connection processes. This comes as the system simultaneously manages coal retirements and a rapid renewable build-out. We believe Australia increasingly illustrates the broader AI power challenge: the question is not simply energy availability, but connection timing, firm capacity and system flexibility.

Korea: Korea's first large AI data center projects are moving into construction while the policy framework becomes more supportive (Exhibit 90). The AWS/SK Telecom Ulsan AI data center is planned at roughly 100MW, with partial operations expected from 2027 and full capacity thereafter, while SK Telecom is also planning additional capacity in Seoul. At the same time, the government is implementing a dedicated AI Data Center framework, including secondary legislation under the AI Data Center Special Act. We see Korea's opportunity extending beyond data center operators to the domestic electrical

equipment, cooling, memory and grid supply chains required to support high-density AI infrastructure.

The AI Math: Compute at any Cost

The AI Math: Understanding the Impact of Power Cost

Our analysis of a 100MW fully integrated AI hyperscaler (ownership of the powered shell, GPUs and LLM) reveals an interesting dynamic: AI hyperscalers are essentially price-insensitive to power (Exhibit 33). We estimate only a ~60bp impact when power prices are raised by ~17% (from US$120/MWh to US$140/MWh), with hyperscalers' ROEs remaining well above 30% even if power prices rise 1.5x to ~US$160/MWh. We see opportunities for power utilities to further differentiate pricing for data centers, which will help to fund additional grid and generation capacity expansion as well as lift returns in the long run.

Exhibit 33: AI hyperscaler returns are relatively insensitive to electricity prices, creating scope for utilities to capture higher tariffs

		Cost of Power (US$/MWh)						
		100	120	130	140	150	160	170
Price per 1M Output tokens (US$)	34.0	32.5%	31.8%	31.5%	31.2%	30.8%	30.5%	30.2%
	34.5	33.6%	32.9%	32.5%	32.2%	31.9%	31.5%	31.2%
	35.0	34.6%	33.9%	33.6%	33.2%	32.9%	32.6%	32.2%
	35.5	35.6%	35.0%	34.6%	34.3%	33.9%	33.6%	33.3%
	36.0	36.7%	36.0%	35.7%	35.3%	35.0%	34.7%	34.3%

Source: Morgan Stanley Research estimates

Power costs have one of the lowest impacts on AI hyperscaler earnings. For a 20% change in power prices, we estimate earnings are only impacted ~1% . This is significantly less than other factors such as revenue per token, model/GPU energy efficiency (which improves with each model generation) and GPU asset life, which have a 10-30% impact on earnings. Our analysis also suggests that the returns and profitability of AI hyperscalers are driven more by pricing, model efficiency and capital costs (data center capex, GPU capex) than by variable operating costs (power, water consumed).

Our analysis takes into account current NVIDIA GB300 GPU pricing, a four-year asset life, and 75th percentile data center construction costs. Our estimates also factor in the current pricing of AI inference charged by various hyperscalers. Below are our key findings:

Exhibit 34: Illustrative returns of a 100MW AI hyperscaler

100MW Economics (US$ mn)	
Revenue	1,930
Cost of Power	(116)
Cost of Water	(3)
Operating Costs	(10)
EBITDA	**1,802**
Margin	*93%*
Powered shell Depreciation	(60)
GPU Depreciation	(764)
Operating Income	**978**
Margin	*51%*
Interest Cost	(85)
PBT	**893**
Tax	(179)
Net Profit	**714**
Net Profit Margin	***37%***
ROCE	**23.0%**
ROE	**33.6%**

Source: Morgan Stanley Research estimates

Exhibit 35: Illustrative per token economics for an AI hyperscaler

Per Token Economics (US$/ mn output Token)	
Revenue	7.0
Cost of Power	(0.4)
Cost of Water	(0.0)
Operating Costs	(0.0)
EBITDA	**6.5**
Margin	*93%*
Powered shell Depreciation	(0.2)
GPU Depreciation	(2.8)
Operating Income	**3.5**
Margin	*51%*
Interest Cost	(0.3)
PBT	**3.2**
Tax	(0.6)
Net Profit	**2.6**
Net Profit Margin	***37%***

Source: Morgan Stanley Research estimates

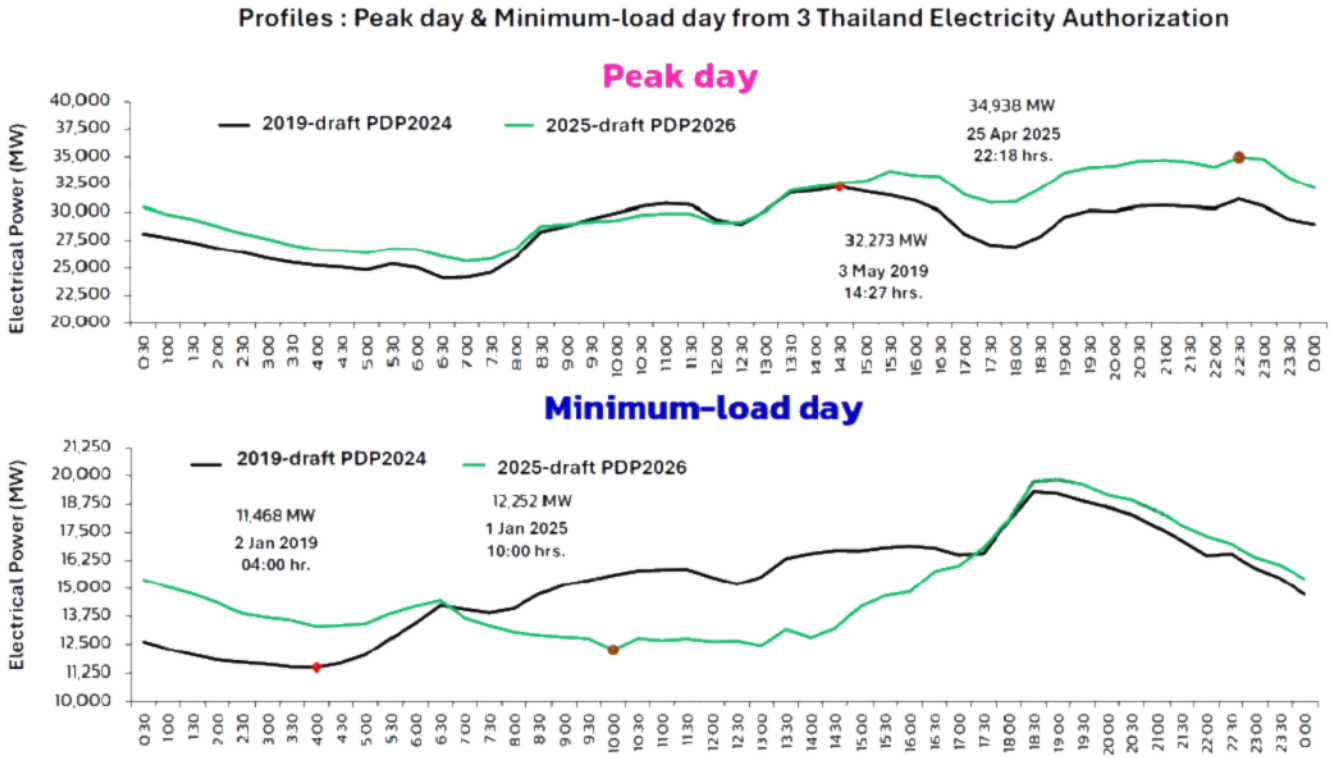
AI Needs Power; Grid Needs Time and Batteries

The power curve is changing shape across most markets, creating higher margins for generators that can supply flexible capacity and for batteries that can discharge quickly (Exhibit 37). However, it also reduces returns for renewables. Data centers, together with batteries, energy storage systems and EVs, should make daily power demand more stable, albeit at higher levels. This will come at a cost to consumers, as power grids will need to become significantly more flexible.

One common trend is the growing spread between daily peak and trough demand. The steepness of the demand curve continues to increase across markets, driven not only by renewable penetration but also by rising industrial power consumption. The changing shape of the power curve is adding to inflationary pressure in electricity prices as grid investment requirements increase.

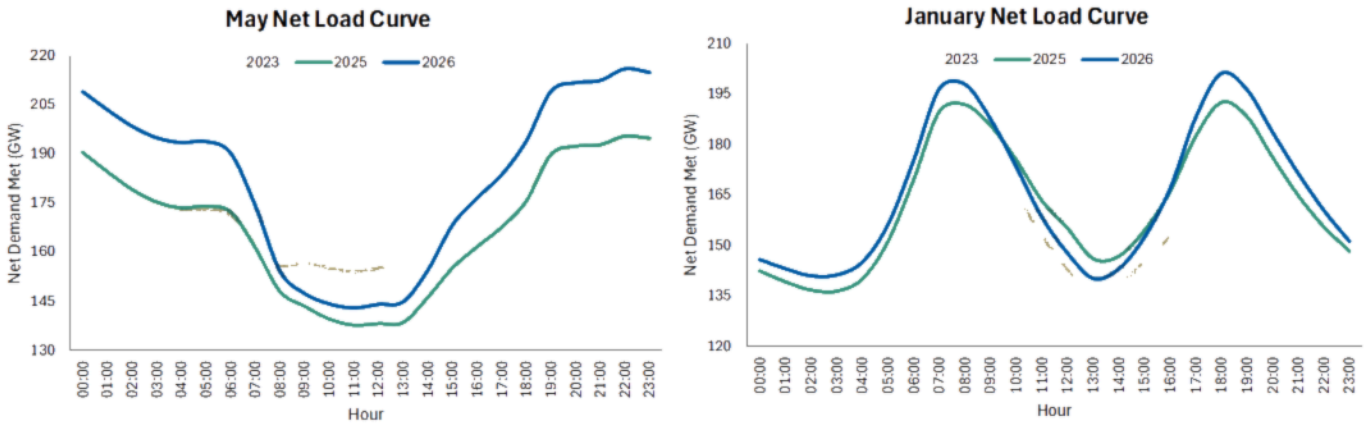
We estimate Asia will require around US$1trn of power-grid investment through 2030 (Exhibit 39) to accommodate rising electricity demand and greater system flexibility. We believe data centers will partially fund these investments by absorbing higher power tariffs, while also increasing the attractiveness of behind-the-meter power supply arrangements for generation companies.

Exhibit 36: Thailand's rising daytime load is absorbing more solar generation, but evening peak demand remains elevated as EV charging picks up



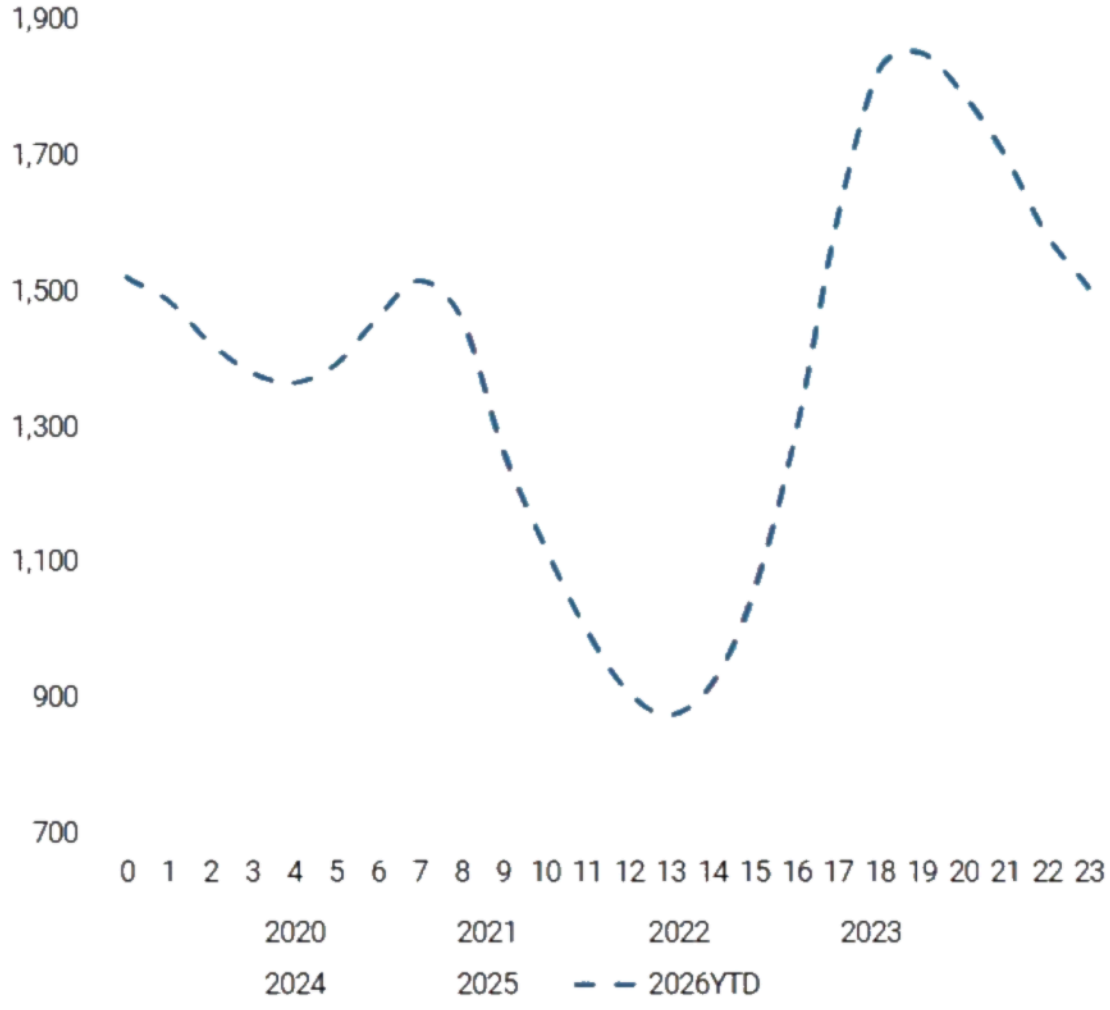
Source: EGAT, Morgan Stanley Research

Exhibit 37: Duck curves reshaping into double-humped camels in India



Source: Grid India, IEX, Morgan Stanley Research

Exhibit 38: Australia's deep midday trough highlights the growing value of storage and flexible generation



Source: AEMO, Morgan Stanley Research

Exhibit 39: Securing Asia's power requires investment across the continent; we expect grid investments to total ~US$1trn over 2026-2030e

Additional Capacity over 2026-2030e													
Category	Sub-Category	China	India	Japan	South Korea	Taiwan	Australia	Singapore	Malaysia	Thailand	Indonesia	Philippines	Vietnam	Total
POWER	Coal (GW)	250	78	-	-	2	-	-	3	4	13	4	3	356
	Gas (GW)	50	-	5	12	4	2	4	2	2	1	2	3	86
	Batteries (GWh)	2,378	125	20	13	11	71	2	10	15	15	7	23	2,690
	Renewables (GW)	1,675	183	25	39	14	45	1	5	10	17	7	6	2,026
	Nuclear (GW)	46	7	-	3	1	0.1	0.2	-	-	-	-	-	57

Associated Investments (US$ bn)													
Category	Sub-Category	China	India	Japan	South Korea	Taiwan	Australia	Singapore	Malaysia	Thailand	Indonesia	Philippines	Vietnam	Total
Power	Coal	208	80	-	-	2	-	-	3	3	16	3	3	318
	Gas	27	-	8	11	7	4	6	3	3	2	3	5	79
	Batteries (Deployment + Production)	297	17	3	9	2	21	0	2	2	5	1	5	364
	Renewables Generation	1,395	127	27	28	17	65	1	4	8	20	6	7	1,705
	Nuclear	105	6	30	7	10	1.1	2.1	-	-	-	-	-	162
	Power Grids	635	75	11	32	17	78.6	3.2	22	26	32	13	26	969

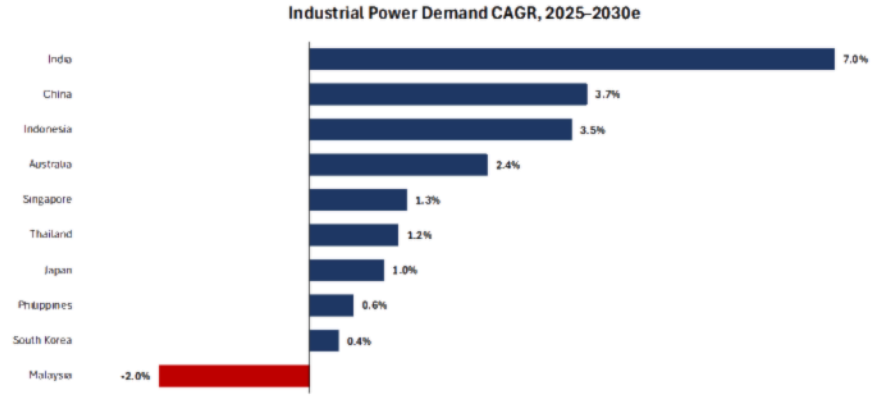
Source: Morgan Stanley Research estimates

Allshoring: Inflecting Power Consumption

Industrial consumption (including China) accounted for almost half of global power consumption in 2025 (Exhibit 19), but outside China power demand from heavy industry has struggled to grow meaningfully over the past decade. We believe this trend is now reversing and could drive upside surprises in power demand across Europe, India, ASEAN and increasingly Japan. Early signs are already emerging, with industrial power demand beginning to trend higher (Exhibit 41). We estimate steel, autos, semiconductors, defence, refining, chemicals and related industries could add around 2trn units of incremental power consumption by 2030, implying CAGR of 3.43% over 2025–30, roughly 1.5x faster than the previous decade.

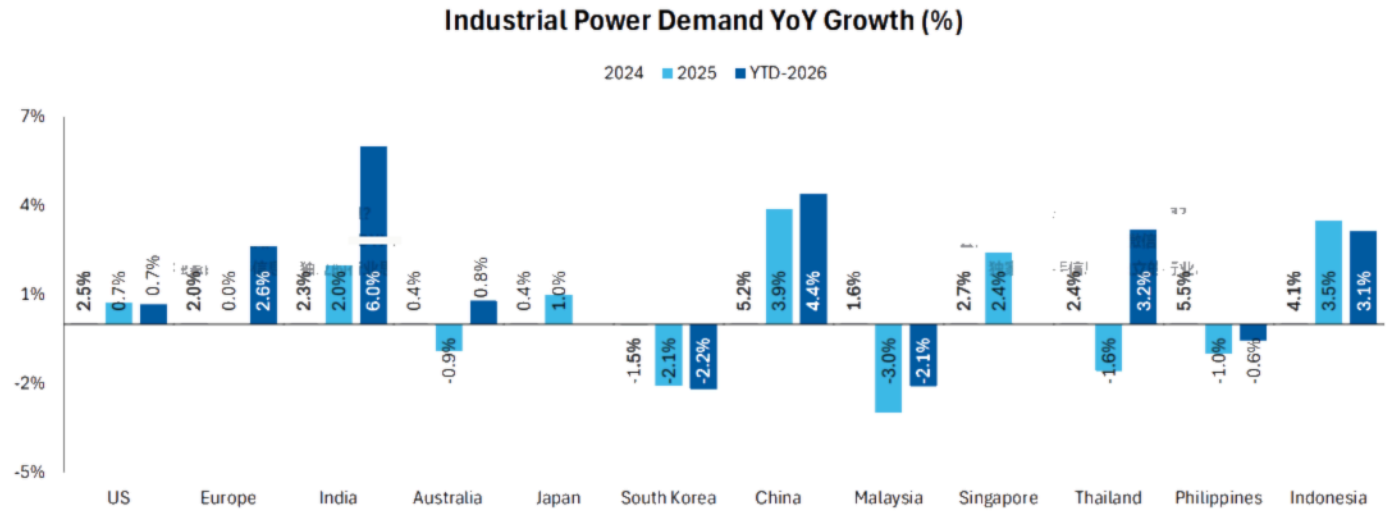
Industrialisation remains the largest contributor to power-consumption growth in Asia: We forecast industrial electricity consumption in Asia will grow at a ~4% CAGR, accounting for 43% of the region's incremental electricity demand and growing at roughly 2.7x the rate of data center consumption (Exhibit 48). We have already seen improving industrial electricity-demand trends across Malaysia, Singapore, Thailand and Japan during 2025 and 1H26 (Exhibit 41). Semiconductors, automobiles, chemicals, metals and mining, as well as food processing, are among the sectors that have recorded higher electricity consumption over the past 18 months.

Exhibit 40: China and India together underpin 97% of incremental industrial demand over 2025-2030



Source: Morgan Stanley Research estimates

Exhibit 41: Industrial power demand is reaccelerating across most of Asia



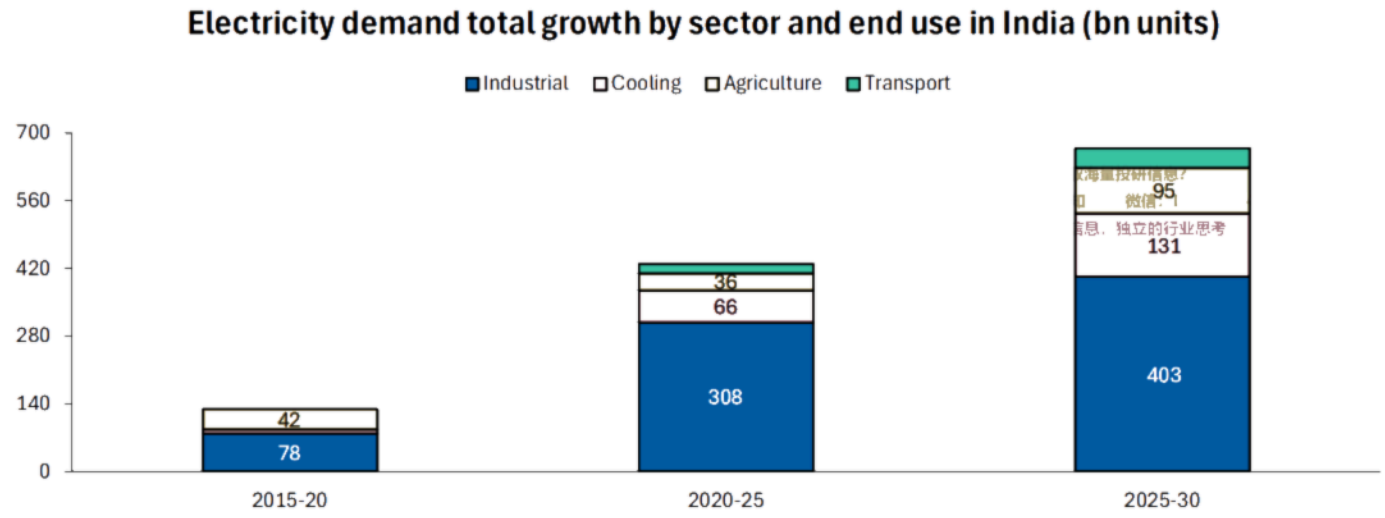
Source: EIA, Eurostat, IIF India, EPSIS, NEA, Company data, EPPO, Morgan Stanley Research estimates

Process electrification adds a second source of industrial electricity-demand growth beyond manufacturing output. The gradual replacement of direct fossil-fuel use with electricity in industrial processes is increasing electricity's share of energy consumption. In China, electricity's share of total final energy consumption has more than doubled since 2005 to exceed 27% in 2025.

India provides the second-largest source of industrial electricity-demand growth, while Southeast Asia presents a more selective opportunity: We forecast India's industrial electricity consumption will increase by ~416TWh through 2030, implying ~7% annual growth and contributing ~23% of Asia's incremental industrial demand. Across ASEAN, we forecast a more modest ~20TWh increase in industrial electricity demand, with Indonesia contributing ~18TWh as metals processing and downstream manufacturing support consumption growth. PLN reported industrial electricity-sales growth of 2.5% in 2025, led by metals, non-metallic minerals and food processing.

Outside China and India, industrial demand additions remain relatively modest, with Japan, South Korea and Australia contributing ~12TWh, ~5TWh and ~11TWh, respectively, through 2030. Nevertheless, semiconductor fabrication, advanced manufacturing and other electricity-intensive industries can create substantial localised demand even in mature power markets.

Exhibit 42: Industrial demand remains the largest driver of India's power growth, adding ~400TWh over 2025-30, with cooling becoming an increasingly significant second source of load.



Source: NEP, CEA, Morgan Stanley Research estimates

Our forecast ~1.9trn units increase in Asia's annual industrial electricity consumption is equivalent to ~204GW of continuous load, reinforcing the need for additional generation and grid capacity. We expect utilities with access to dependable generation and the ability to accommodate new industrial connections to be better positioned as these requirements increase.

Space Cooling: Growth Is Hot

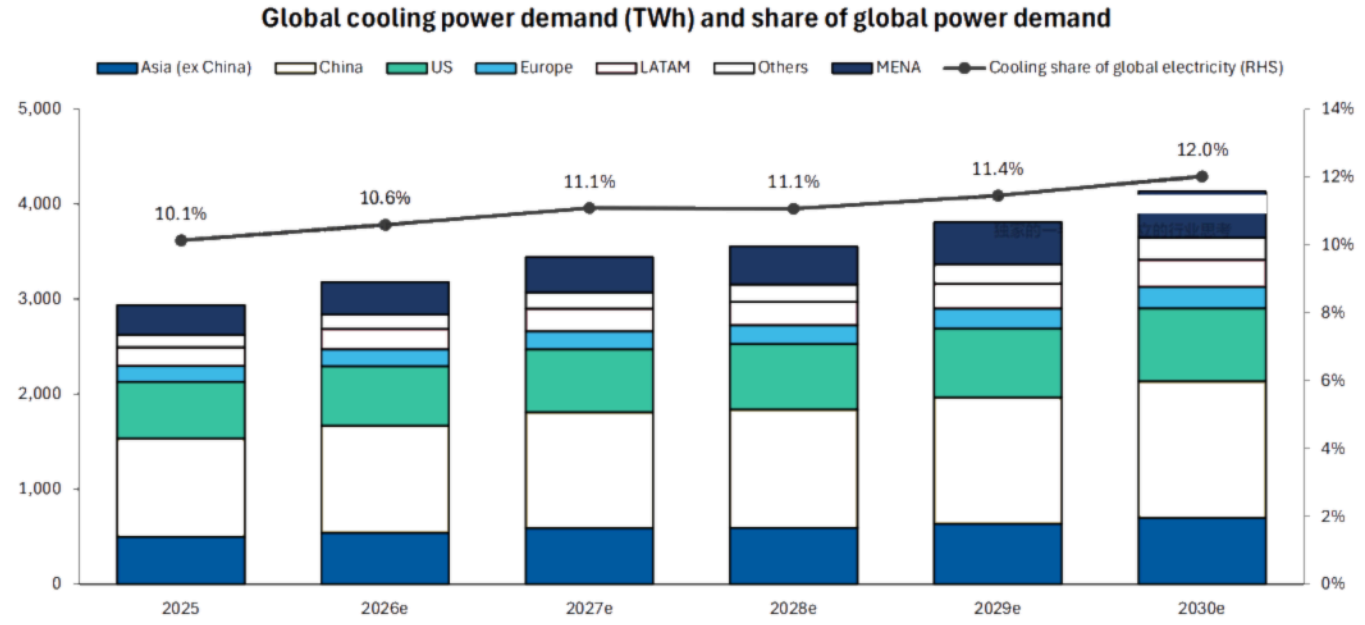
Cooling demand is rising faster than the broader power system: Our bottom-up estimates suggest global space-cooling electricity consumption will rise from ~2.9trn units in 2025 to ~4.1trn units by 2030 (Exhibit 43), a ~7% CAGR, which implies , ahead of global power demand which grows 4.2% a year over the same period. Cooling therefore rises from ~10% to ~11% of Asia's electricity consumption, adding almost ~0.6tn units of annual demand by the end of the decade, while Europe will also need similar amount of power for heat pumps making up 5%+ of total power consumption share. China remains the largest cooling market in absolute terms, but growth is increasingly coming from lower-penetration economies. We estimate India's cooling demand will nearly double to ~280bn units by 2030, while Vietnam, Malaysia and the Philippines should also grow at high-single to low-double-digit rates.

The pressure on the power system is greater than the annual TWh figures suggest: The IEA estimates cooling accounts for only around 10% of global electricity consumption but ~30% of peak power demand, with ~1,400GW of cooling-related peak load in 2025. In India, cooling demand accounted for 40% of peak power demand in 2026 due to El Niño conditions. Globally, cooling electricity consumption has already increased by ~50% since 2015 to ~2.9trn units, and we estimate incremental cooling demand (excluding data centers) could be as large as incremental electricity demand from data centers. Asia is particularly exposed as rising AC ownership compounds higher utilisation rates. The implication is that cooling adds not only energy demand, but also disproportionately increases the need for peak generation, storage and grid capacity.

Asia: We forecast Asia's installed AC stock will increase from ~1.1bn units today to ~1.4bn by 2030. We also assume running hours rise ~3.4% a year as temperatures increase. On that basis, we estimate cooling electricity demand rises from ~1.5trn units in 2025 to ~2.1trn units by 2030 (~7% CAGR). This would increase cooling's share of total Asian electricity demand from ~10% to ~11%, and account for ~15% of the total growth in electricity consumption that we forecast through 2030.

Europe: MS forecasts heat-pump penetration will increase from 15% of households today to 19% by 2030 (Exhibit 72). Assuming average annual electricity consumption of 4,000kWh per unit (within a range of 3,000–5,000kWh), we estimate heat-pump electricity demand rises from 113TWh in 2025 to 179TWh by 2030. This would increase heat pumps' share of total European electricity demand from 3.8% to 5.4% (Exhibit 21), and account for 21% of the total growth in electricity consumption that we forecast through 2030.

Exhibit 43: The need for air-conditioning adds ~40bps to Asia power-demand growth through 2030 and could be almost as large as incremental data center power demand



Source IEA, JRAIA, Morgan Stanley Research estimates

United States ata cen

ata center capacity is shifting abroad, we do not believe there is sufficient capacity in the rest of the world to absorb the entire US net power shortfall (43GW from 2026–28). (Exhibit 44) Companies are increasingly looking overseas for capacity, with Nvidia recently noting that Australia is a region "with excess energy" where it has lined up 2GW for 2027. Reflecting these developments, we include expectations of US Data Center spillover into APAC. Though we expect international expansion to continue, we do not view it as a panacea for the US power challenge.

Conversations with our European data center analyst, Emmet Kelly, suggest there is limited scope for additional spillover into Europe given power constraints and slow planning approvals (see more here). While expansion into the Middle East remains a possibility, we believe geopolitical instability presents a meaningful challenge (see example of AWS data center affected by Iran strikes). Our Asia data center team already assumes 15GW of US hyperscaler demand shifts to Asia through 2030 (Exhibit 30), yet we still forecast a US power shortfall despite that demand migration. Any additional spillover would likely require greater reliance on energy sources such as coal. While companies are willing to build data centers abroad, we do not believe sufficient capacity exists to absorb the US power shortfall.

We do see potential upside to our forecast from behind-the-meter generation... Net of our "time to power" solutions (BTM turbines, Bloom Energy fuel cells, nuclear capacity, and PSP site conversions – details here), we project US data center developers will face a 43GW power shortfall through 2028 (Exhibit 44), equivalent to 38% of power demand. Under these scenarios, we forecast 6–38GW of additional BTM turbines and engines (this number excludes the estimated ~6GW of BTM turbine and engine projects under construction) coming online, with 19GW in our base case through 2028. (Exhibit 45)

How do we get there? The low end of 6GW reflects firm contracted BTM projects currently visible but not yet under construction, while the high end of 38GW represents potential additional output based on available manufacturing capacity. Labour availability, complex engineering requirements and permitting constraints limit the ability to realize this full potential. It bears repeating that our base case excludes announced projects under construction and instead captures *additional behind-the-meter agreements* signed through 2028. Our Utilities team, led by Dave Arcaro, tracks 25–30GW of manufacturer orders for 2026–28 and believes developers can move towards adding 15GW or more of BTM capacity annually from 2028, narrowing the gap between OEM supply and operational capacity. Between our bull and base-case scenarios, bringing 30GW of total BTM generation online through 2026–28 would reduce the shortfall to 35GW.

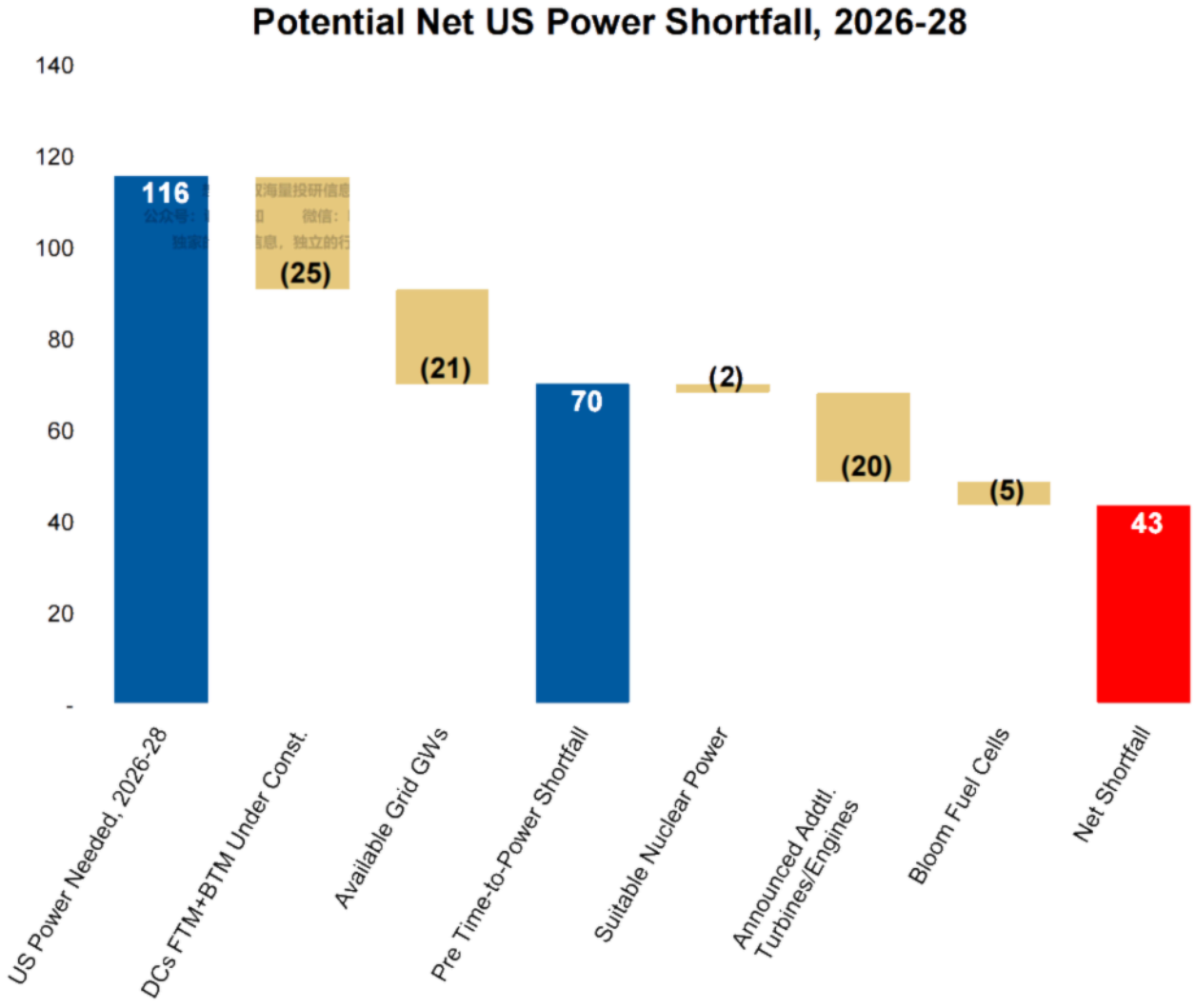
In addition, there could be potential upside to Bloom Energy fuel cells. We currently forecast 6GW of fuel-cell deployment from 2026-28, but recent reports of site expansion suggest potential upside (see the team's thoughts here). In our view, Bloom Energy is a key beneficiary of the "time-to-power" shortfall. More broadly, we believe the urgency around securing power that AI developers are expressing remains underappreciated. Any provider with a viable path to supplying power to data center developers in 2027 and 2028 should be well positioned to secure attractive commercial agreements.

...however, people (labor availability) and politics (growing pushback against data centers and AI more broadly) are key driving forces in the opposite direction. Even if behind-the-meter generation capacity expands, labour availability remains a bottleneck. CSIS estimates that the US will require more than 140,000 additional skilled tradespeople by 2030 under a Second Industrial Revolution-style scenario. The existing labour pool would likely support 10–20GW of annual gas-capacity additions, including both utility-scale plants and onsite projects. However, companies are investing heavily in workforce expansion, potentially enabling annual gas-capacity additions to exceed 50GW by the end of the decade. We have also written extensively about the impact of politics, moratoriums and public perception on data center development (see more here, here).

Our US power shortfall remains 70GW, and falls to 43GW after accounting for time-to-power solutions. In our updated Intelligence Factory, we make three changes: **(1)** raising historical estimates of non-AI data center (as a result of improved data on US-specific historicals, **(2)** raise expectations of storage, networking, and other rack-level power requirements (which increase US chip power demands), and **(3)** proper squaring of an assumed 75% load factor within our power methodology, increasing overall power demand necessary to power chips at-capacity. As a result of higher projected global data center electricity demand, we estimate a 70GW power shortfall before time-to-power solutions and a net shortfall of 43GW through 2028, equivalent to 38% of total power demand. The shortfall reflects increasingly power-intensive rack-level GPU architectures (NVL72 and NVL144 versus current 8U systems).

We also now include an estimated 6GW (2026-2028) of APAC Spillover as a potential "relief valve" for US DC Demand. This reflects a potential global solution to sizable US shortfall (43GW from 2026-2028) requiring some amount of international power supply. We outline the pre-international solution and post-APAC spillover in our new US Shortfall Analysis; after an estimated 6GW of APAC Spillover, the total net shortfall is 56-38GW, 48%-33% of demand for US companies. Even with the presence of international solutions, we still project a considerable shortfall in power necessary to power chips.

Exhibit 44: Net of "time to power" solutions, (and pre-APAC spillover) we project that US data center developers will experience a 43 gigawatt shortfall through 2028—this is a result of intensifying challenges with respect to People, Power and Politics



Source: Morgan Stanley Research estimates

Exhibit 45: Net of innovative "time to power" solutions, we project that US data center developers will face a 60-43GW shortfall through 2028, equivalent to 52-38% of power demand. Even after spillover into APAC, we project a 56-38GW shortfall, 48-33% of demanded power. Note that the PSP sites line is not included in reducing the power shortfall but included in either "Data Centers Under Construction", "Utility Grid Access", or "Addt'l BTM Turbines/Engines"

Total US Data Center Power Demand (GW), 2026-28	**116**
Less FTM & BTM Data Centers Under Construction	(25)
Less FTM Utility Grid Access	(21)
Power Shortfall Before New "Time to Power" Solutions	**70**

	Low End	Midpoint	High End	Probability of Success
Solution #1: Addt'l BTM Turbines/Engines	6	22	38	90%
Solution #2: Bloom Energy Fuel Cells	5	6	8	90%
Solution #3: Site DC at Op'l Nuclear Plant	1	3	8	70%
Solution #4: Convert PSP Sites (included in turbines or DCs under construction)	11	19	27	85%
Solution #5: US DC Spillover into APAC	5	6	7.5	90%
Probability-Weighted US-Based "Time to Power" Solutions through 2028	10	27	47	
Net Shortfall for US Companies Through 2028	**(60)**	**(43)**	**(23)**	
Shortfall as a % of 2026-28 US DC Deployments	*52%*	*38%*	*20%*	
Net Shortfall Through 2028 (incl. Global Solutions)	**(56)**	**(38)**	**(17)**	
Shortfall as a % of 2026-28 US DC Deployments	*48%*	*33%*	*14%*	

We believe this outcome is most likely

Source: Morgan Stanley Research estimates

Exhibit 46: We project a 14GW net shortfall in 2026, scaling to a cumulative 80GW in 2029.

Part IID.1. Annualized Cumulative Shortfall

Year	2026	2027	2028	2029
Gross Power Needed	33	66	116	185
US DCs Under Construction (Gross Power, FTM + BTM)	(9)	(21)	(25)	(26)
Available/Contractable US Grid Capacity (Gross GW, FTM)	(4)	(8)	(21)	(39)
Shortfall Before Time to Power Solutions	**19**	**36**	**70**	**120**
Suitable Nuclear Power	(0)	(1)	(2)	(3)
Bloom Fuel Cell Pontential	(1)	(2)	(5)	(9)
Announced Addtl. BTM Turbines/Engines	(4)	(11)	(20)	(28)
Crypto Sites Available (counted in DCs Under Construction or Turbines)	(2)	(8)	(16)	(19)
Est. Midpoint Net Shortfall (Midpoint)	**14**	**22**	**43**	**80**
Additional US DCs Constructed YoY (Gross GW)	**18**	**25**	**29**	**32**
Total US DCs Constructed Incl. Shortfall EoY 2029 (Gross GW)	**82**	**107**	**136**	**169**

Part IID.2. Annualized Year-By-Year Shortfall

Year	2026	2027	2028	2029
Power Needed	33	33	50	69
US DCs Under Construction (Gross Power, FTM + BTM)	(9)	(12)	(4)	(1)
Available/Contractable US Grid Capacity (Gross GW, FTM)	(4)	(4)	(13)	(18)
Shortfall Before Time to Power Solutions	**19**	**17**	**34**	**50**
Suitable Nuclear Power	(0)	(1)	(1)	(1)
Bloom Fuel Cell Pontential	(1)	(2)	(3)	(4)
Announced Addtl. BTM Turbines/Engines	(4)	(6)	(9)	(9)
Crypto Sites Available (counted in DCs Under Construction or Turbines)	(2)	(6)	(8)	(3)
Est. Midpoint Net Shortfall (Midpoint)	**14**	**8**	**21**	**37**
Additional US DCs Constructed YoY (Gross GW)	**18**	**25**	**29**	**32**

Source: Morgan Stanley Research estimates

With grid capacity increasingly constrained and political scrutiny of data center development intensifying, we continue to favor onsite power providers as the most direct beneficiaries of near-term infrastructure bottlenecks. We highlight **BE, INIO, and SEI (all OW)** as key beneficiaries, given their ability to accelerate time to power while potentially mitigating concerns around grid availability and consumer electricity costs. We remain constructive on the broader grid buildout, particularly **SRE and AEP (both OW)**, where substantial transmission investment and potential upside to existing capex plans provide attractive long-term growth opportunities. We also highlight **NEE and VST (both OW)**, whose integrated data center infrastructure platforms offer a differentiated approach to capturing incremental load growth.

Onsite power offers a path around near-term bottlenecks. As grid interconnection delays persist and data center backlash increases, we believe behind-the-meter (BTM) solutions are increasingly well positioned to support the next wave of data center development. By reducing reliance on traditional grid infrastructure, onsite generation can offer a faster path to power while helping developers navigate mounting political and regulatory scrutiny. We therefore reiterate our preference for BE, INIO, and SEI (all OW) as key beneficiaries of this trend. In our recent collaboration, Living on the Edge: The Rise of Distributed Power, we highlight the range of technologies positioned to capture this

opportunity, including solid oxide fuel cells, microturbines, aeroderivative gas turbines, reciprocating gas engines, and industrial gas turbines.

Reshoring adds a second leg to the BTM power opportunity. While data centers remain the most immediate catalyst, we see industrial reshoring as an increasingly important and potentially underappreciated driver of electricity demand, with growth expected to accelerate more meaningfully post-2030. Supported by bipartisan policy backing and attractive incentives, efforts to rebuild domestic manufacturing capacity could create an additional market for onsite power solutions. In collaboration with our Multi-Industrials team, we have sized the potential electricity demand associated with a resurgence in US manufacturing. Under a scenario in which the US increases its share of global manufacturing output to 20% by 2050 (vs. 16% in 2025), we estimate as much as 113GW of incremental electricity capacity could be required through 2035, including commercial demand, to support this trajectory. Given existing grid constraints, we believe onsite generation could play an increasingly important role in enabling this industrial expansion, extending the growth runway for BTM providers well beyond the initial data center buildout. Our TAM analysis builds on prior collaborations with our Multi-Industrials team, including US Reshoring Flame Has Been Lit For US$10tn Opportunity and CoTD: What does US Reshoring Mean for Electricity Demand?

Grid access remains a key bottleneck for AI infrastructure development, but transmission investment creates meaningful upside. While onsite generation offers a near-term solution, we continue to see substantial long-term opportunities for utilities investing to accommodate the step-change in electricity demand. We estimate ~60GW of data center capacity will connect to the grid through 2029 (~75GW through 2030), with interconnections accelerating toward the end of the decade as major transmission projects come online. Against this backdrop, we favor SRE and AEP (both OW), which have the largest advanced-stage load pipelines across our utilities coverage, at ~127GW and ~69GW, respectively, alongside significant transmission investment already embedded in their capital plans. At SRE, Oncor's US$47.5B 2026-2030 base capital plan includes US $32.5B of transmission investment, of which ~US$8B is allocated to 765kV development in the Permian Basin. Beyond the base plan, management has identified an additional US $12B of potential 765kV investment, with further upside tied specifically to data center demand. Similarly, AEP's five-year capital plan includes US$33B of transmission investment, with line of sight to more than US$10B of incremental generation and transmission opportunities.

Data center platforms offer a competitive edge. Beyond BTM generation and traditional grid investment, we see data center specific platforms as another path for value creation - we highlight NEE and VST (both OW) as key players. At NEER, NEE is advancing its data center hub strategy, targeting 15GW of originated capacity by 2035 in its base case, with upside potential to 30GW. Meanwhile, VST launched Helix Digital Infrastructure earlier this year alongside KKR, Kuwait Investment Authority, and NVIDIA, with VST serving as the preferred power provider. Helix aims to offer a one-stop solution spanning hyperscale data center development and operations, baseload and flexible generation, transmission and distribution infrastructure, and fiber connectivity, among other assets. We believe these offerings can reduce development complexity, accelerate time to power, and provide NEE and VST with a competitive advantage in attracting incremental data center load.

In this report, we are presenting US power demand on an aggregate basis to include data

center demand we believe could be served by BTM technologies. With this inclusion, we estimate a ~4.7% CAGR over 2025-2030. Excluding BTM, we continue to expect grid-connected power consumption to grow at a ~3% CAGR over the same period.

Asia: Energy Security & Powering AI

> *"Digital infrastructure and energy infrastructure can no longer be planned separately.", COO PETRONAS, Malaysia*
>
> "SoftBank... launched a Japan-based battery business aimed at building next-generation power infrastructure to support the rapidly increasing demand for electricity being driven by AI adoption."

Securing energy supply for AI has emerged as a durable, system-level investment theme across the power and fuel value chains, distinct from decarbonization targets or short-term price signals. Recent LNG disruptions and extreme price volatility have shifted policy-maker and corporate behavior toward reliability, dispatchability, and domestic or regional resilience over pure economic optimization. We think this will drive a new sustained capex cycle across grid infrastructure, battery storage, strategic reserves, utilities, and selective generation technologies. Overall, we expect electricity to account for ~30% of Asia's energy needs, up from ~25% currently, as the region electrifies (please contact us for our model).

We believe coal and natural gas will remain mainstays in Asia, meeting slightly over half of demand. They are even more dominant outside China, at about 66%. We have already seen evidence of more coal and natural gas capacity growth in Asia in 2026, and we estimate that by 2030 there will be ~300+GW of new coal and ~61GW of new gas-based generation to complement roughly 2,000GW of new renewable generation. Overall Asia's power mix will see renewables' share rise to 39%, complemented by the addition of 3TWh of energy storage by 2030 (6x today's capacity). (Exhibit 50)

We forecast ~5% annual growth in Asian power consumption through 2030, adding more than 4trn kWh of electricity demand. Importantly, AI is only one part of the increase: industrialisation, cooling and electrification continue to drive the majority of incremental consumption. (Exhibit 48)

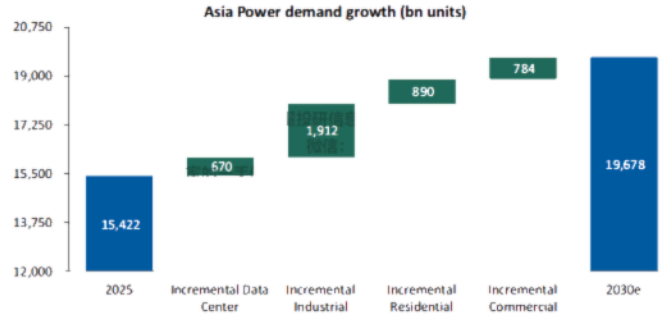
Exhibit 47: Tracking contracted capacity for data centers in Asia by US/China hyperscalers and neoclouds

Region	MW
India	4,471
ASEAN	3,109
Malaysia	*2,152*
Indonesia	*600*
Thailand	*332*
Singapore	*25*
Southeast Asia (multi-country)	-
Australia (incl. NZ)	1,719
Japan	1,120
South Korea	151
Total	**10,570**

Source: Company data, Newsflow, Morgan Stanley Research

Modelling Asia's Power Needs

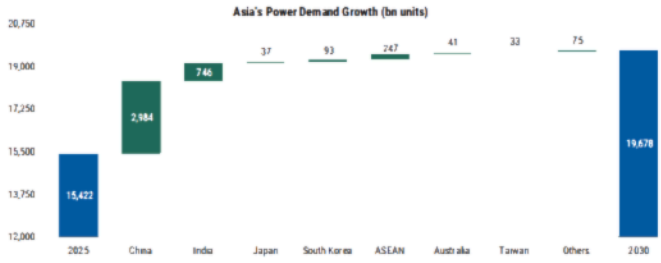
Exhibit 48: AI is only ~16% of Asia's power-demand growth – industrialization and cooling compound the scarcity



*Total demand includes behind the meter power demand

Source Company data, Morgan Stanley Research (e) estimates

Exhibit 49: All economies are expected to see increased power demand for the rest of the decade, and most are faced with an aging generation fleet



*Total demand includes behind the meter power demand

Source Morgan Stanley Research estimates

Exhibit 50:

Our Asia Power Generation Model suggests ~19./trn kWh of annual power demand by 2030

Power Demand	2025	2026e	2027e	2028e	2029e	2030e
Data Center power demand (bn units)	*289.9*	*404.8*	*475.9*	*616.6*	*772.2*	*960.1*
Non Data Center power demand (bn units)	**14,725.9**	**15,388.6**	**16,126.1**	**16,790.2**	**17,480.3**	**18,183.5**
Industrial	*8,478.2*	*8,849.1*	*9,249.8*	*9,671.1*	*9,960.8*	*10,261.7*
Commercial	*2,974.7*	*3,133.2*	*3,303.2*	*3,424.0*	*3,599.1*	*3,758.9*
Residential	3,273.0	3,406.3	3,573.2	3,695.0	3,920.4	4,162.9
Total Power Demand (bn units)	*15,015.8*	*15,793.4*	*16,602.0*	*17,406.8*	*18,252.6*	*19,143.6*
Behind the meter power demand (bn units)	*406.3*	*428.8*	*451.3*	*474.2*	*500.5*	*534.5*
Total Power Demand incl. BTM (bn units)	*15,422.1*	*16,222.3*	*17,053.3*	*17,881.0*	*18,753.1*	*19,678.1*
Sytem Loss	**596.7**	**700.8**	**690.0**	**676.2**	**698.6**	**668.6**

Power Generation	2025e	2026e	2027e	2028e	2029e	2030e
Coal (bn units)	**8,602.2**	**8,964.8**	**9,102.0**	**9,267.3**	**9,437.5**	**9,630.0**
Installed Capacity (GW)	**1,865.2**	**1,927.1**	**1,985.8**	**2,051.8**	**2,117.8**	**2,169.7**
Load Factor	*53%*	*53%*	*52%*	*52%*	*51%*	*51%*
Nuclear (bn units)	**822.3**	**878.7**	**1,016.1**	**1,108.3**	**1,164.6**	**1,260.2**
Installed Capacity (GW)	**134.2**	**140.4**	**150.4**	**160.4**	**173.3**	**185.2**
Load Factor	*70%*	*71%*	*77%*	*79%*	*77%*	*78%*
Renewables & Others (bn units)	**5,245.6**	**5,718.7**	**6,223.5**	**6,744.3**	**7,346.8**	**7,902.9**
Installed Capacity (GW)	**2,970.0**	**3,457.8**	**3,868.4**	**4,265.6**	**4,674.8**	**5,036.8**
Load Factor	*20%*	*19%*	*18%*	*18%*	*18%*	*18%*
Natural Gas (bn units)	**1,414.3**	**1,431.3**	**1,476.5**	**1,516.8**	**1,587.0**	**1,643.2**
Installed Capacity (GW)	**442.6**	**455.5**	**468.8**	**484.4**	**500.3**	**516.9**
Load Factor	*36%*	*36%*	*36%*	*36%*	*36%*	*36%*
CCGT Heatrate (BTU/kwh)	*8,535*	*8,326*	*8,467*	*8,469*	*8,609*	*8,953*
Total Gas consumed for Power (mntpa)	**233.0**	**230.1**	**241.3**	**248.0**	**263.8**	**284.0**
Total Thermal Coal consumed for Power (mntpa)	**3,620.2**	**3,776.2**	**3,834.6**	**3,905.3**	**3,978.5**	**4,059.1**
Thermal Coal (kcal)	**5,500.0**	**5,500.0**	**5,500.0**	**5,500.0**	**5,500.0**	**5,500.0**
o/w Behind-the-meter generation (bn units)	***471.9***	***499.2***	***526.2***	***553.7***	***584.7***	***624.1***
Total Power generation incl. BTM (bn units)	***16,084.4***	***16,993.4***	***17,818.2***	***18,636.7***	***19,535.9***	***20,436.3***

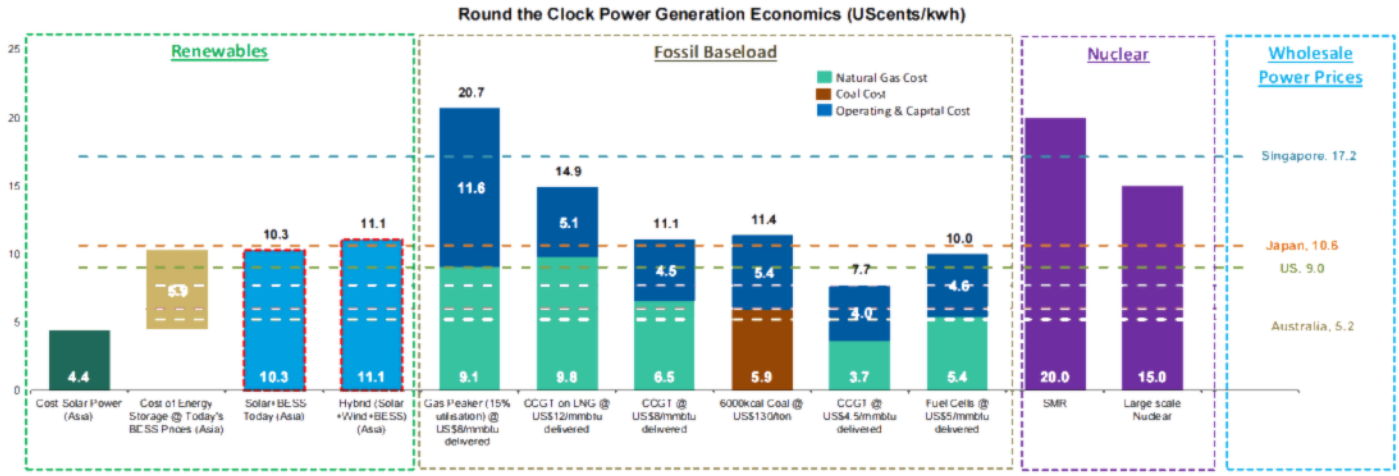
Note behind the meter power demand and generation excludes China

Source: Statistical Review of World Energy, Morgan Stanley Research e) estimates

Power generation: How the economics stack up

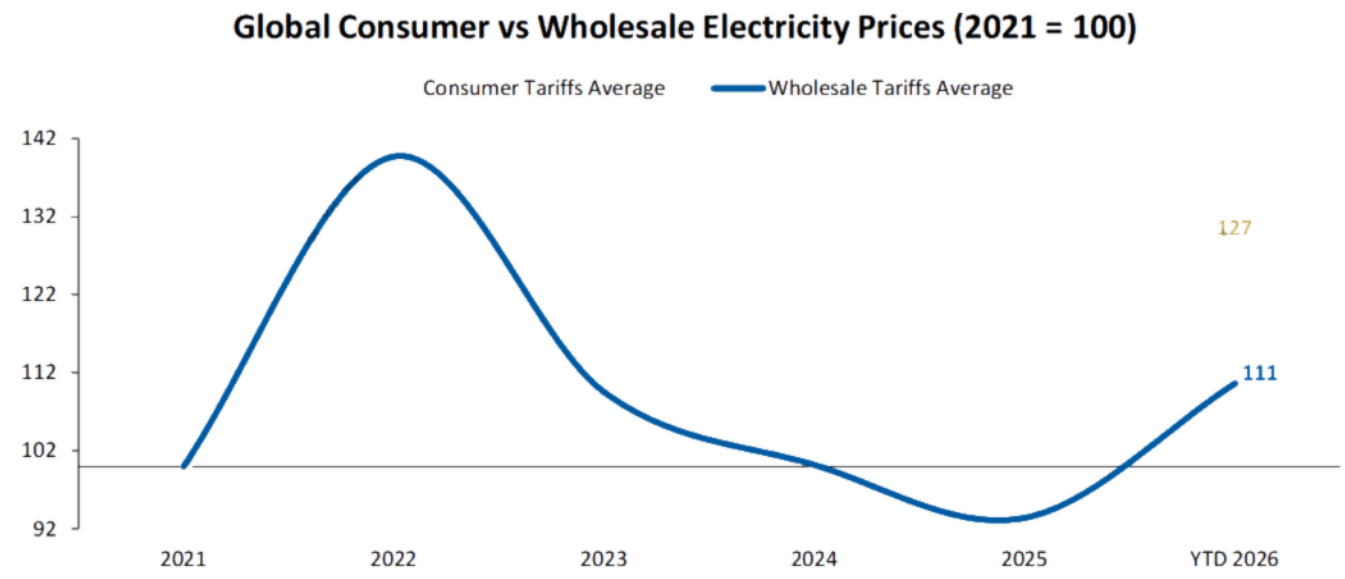
Asia's electricity prices have risen 20% YoY in 2026 so far and the market has been steadily moving to more merchant market pricing over a pure PPA market. With price-sensitive consumers in Asia and the changes in market structure when combined with grid bottlenecks, we believe it is essential for power generation to remain economical. We see natural gas and batteries+renewables along with baseload coal providing a good combination to solve for power grid stability while keeping prices affordable (Exhibit 51). Our round-the-clock economics suggest nearly US$50-60/MWh as the generation cost for Asia power systems on 2025 pricing for fuels, and with increased coal and nuclear usage we believe the need for higher grid tariffs will be cushioned by lower fuel costs in India, China and Southeast Asia.

Exhibit 51: Asia power: The economics – coal and energy storage are competing with more expensive imported natural gas



Source: Morgan Stanley Research estimates

Exhibit 52: Surging demand, disrupted fuel supplied and power grid upgrades have driven electricity prices up for residential and wholesale consumers



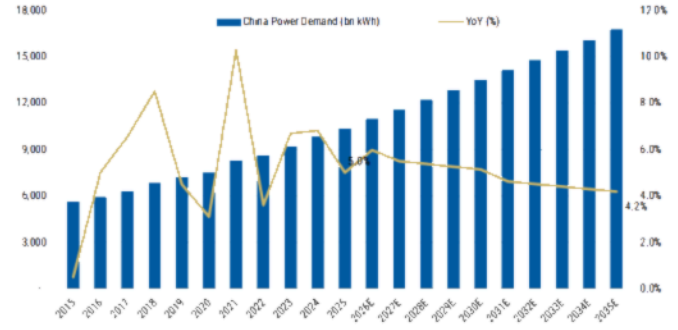
Source: IEX, CEIC, EMCF, EPPC, JEPX, SVP, AEVO, EMC, Bloomberg EIA, Morgan Stanley Research estimates

China center

center power demand at ~664TWh by 2030, or about 5% of national consumption, compared to 2% in 2025. EV charging is another structural driver as EV penetrates – electricity use by charging services grew 55.4% YoY to 131.5bn kWh in 9M26. This represents 1.6% of the overall power demand, compared to 0.1% five years ago.

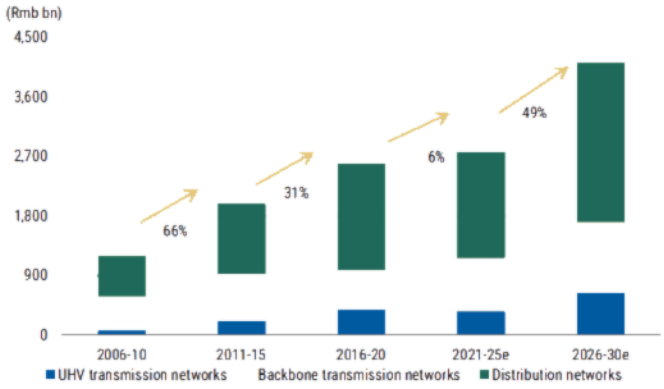
Supply - structural transition continues; flexibility and interconnection to be key. Wind and solar, alongside hydropower and nuclear, should continue taking share from fossil generation, in our view. Renewable generation represented approximately 17% of China's total power generation last year, and the government's target is 20% by 2030. New coal capacity need not translate into higher coal-fired output: it can provide backup and balancing while utilisation falls. In addition, national adequacy of power capacity does not eliminate local grid bottlenecks or weather-related tightness. Therefore, we see priority around cross-provincial transmission, distribution upgrades and flexibility, which may require accelerated grid investment spending in the coming years.

Exhibit 53: China's power demand to grow at ~5% CAGR over next decade



Source: National Energy Administration (NEA), Morgan Stanley Research estimates

Exhibit 54: China power grid investment to accelerate during 2026-30



Source: NEA, China Electricity Council, Morgan Stanley Research estimates

Power tariff trend. The Chinese government regulates power prices and is reluctant to increase the end-user tariff for residential users. However, commercial and industrial prices are expected to increase modestly over the medium term as these customers absorb more of the system and balancing costs associated with the renewable transition. On the generation side, we expect a more favorable set-up for coal-fired tariffs in 2027, mainly to pass through the inflated coal price this year. With higher thermal tariffs, we believe tariffs for other power sources will face less pressure across the electricity market, which is positive for sector fundamentals and sentiment.

The use of batteries. As renewable energy penetration increases, the deployment of energy storage is crucial to support power system stability. Batteries can flatten the curve, reduce curtailment, support midday prices and temper peak prices by charging during low-price hours and discharging at peaks. As deployment scales, this should reduce volatility and merchant arbitrage returns, and could lower average wholesale prices by displacing costlier peak generation. Capacity payments and ancillary-service revenues can nevertheless underpin storage investment as arbitrage spreads narrow.

Yangtze Power (600900.SS; Overweight; PT Rmb34.98): Yangtze Power remains positioned as a high-quality defensive utility with strong cash-flow generation, declining financing costs, and increasing strategic value within a more renewable-intensive electricity system. We believe the long-term hydro tariff = energy value + capacity value + green value. About 36% of 2025 electricity sales were market-based, and 98% of that volume was sold under medium- and long-term contracts, limiting volatility from direct spot exposure. Its 30GW daily peak-shaving capability gives hydropower an important balancing role, while further monetization of capacity and green value

provides upside optionality. Our base case assumes stable average tariffs and utilization from 2026, with ~5% earnings CAGR in 2025–28 supported by lower financing costs, and a payout above 70% in 2026–30. Shares are trading at 18.9x P/E and offer a 3.8% dividend yield in 2027.

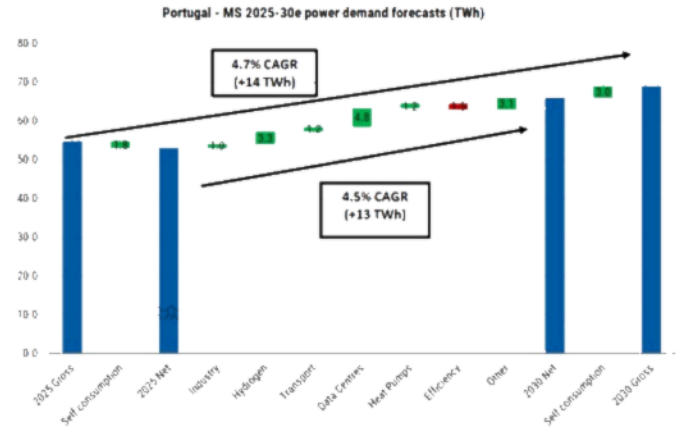
Europe ata cen

- **ata centers' angle.** See below for more detail.

More specifically, our preferred stocks to play European data centers in utilities are RWE and EDP. Amongst our Overweight-rated names, we think that Engie, SSE and A2A also offer exposure to the theme. And we rate Solaria, Fortum, EDPR and Drax Equal-weight, but acknowledge that they also provide exposure to the data center theme.

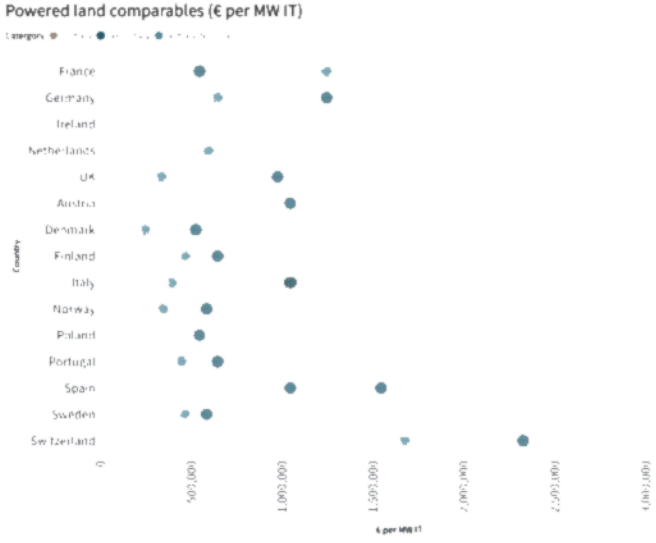
- **EDP (Overweight, covered by Arthur Sitbon) –** Approximately 35–40% of EDP's 2027e EBITDA is exposed to Portugal, one of the fastest-growing power-demand markets in Europe, with forecast demand growth of 4.5% CAGR over 2025–30e, partly driven by the rise of data centers. Given its meaningful market share in Portugal, we believe EDP is well positioned to play a key role in powering this new data center capacity. EDP has also signed an MoU with the country's two largest data center developers, Start Campus and Merlin, which we believe could ultimately lead to tangible data center opportunities.
- **RWE (Overweight, covered by Rob Pulleyn) –** We see RWE as particularly well positioned to power data centers in Europe through its complementary exposure to renewable generation and flexible capacity. Following its first UK data center-related deal in 2025, we also view RWE as a key beneficiary of powered-land monetisation opportunities. The company has indicated that it has 3GW of available capacity (10 × 300MW sites) for potential future data center agreements.

Exhibit 55: ~35-40% of EDP's EBITDA (2027e) is exposed to Portugal, one of the fastest-growing power-demand markets in Europe



Source: Morgan Stanley Research estimates

Exhibit 56: RWE presents a high level of powered land monetisation optionality - powered land can crystallise significant value in Europe



Source: J... Research

Power demand inflecting in Europe

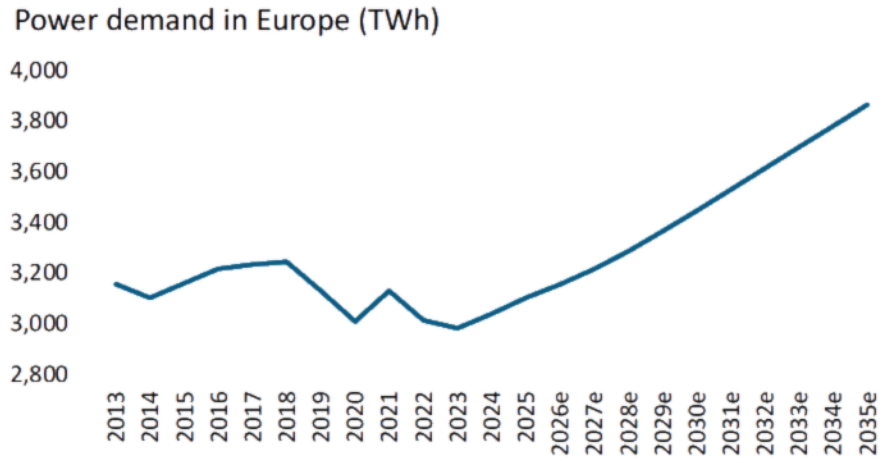
After several years of lacklustre evolution (as a result of energy efficiencies, weak GDP

growth, Covid and the 2022-23 energy crisis), we expect European power demand to see sustained multi-year growth due to the electrification of European economies, as highlighted in Utilities: Electrifying Energy Security (13 May 2026) and in Iberian Utilities: Electrifying at Iber-speed (10 Sep 2026).

In 2026, we see power demand growth of 1.7% in Europe, broadly in line with the trajectory observed for 2024-25 (+1.9-2.1%). We then forecast a 2.2% CAGR from 2026-2030 and 2.3% 2026-35 with the key drivers being data centers coming online, GDP growth and the advancing impact of electrification (see Utilities: Electrifying (13 May 2026)), all of which are net of continued efficiency gains.

Our forecasts imply the demand destruction from the 2022-23 energy crisis is regained by 2026-27 and Europe subsequently hits new all-time highs in electricity demand.

Exhibit 57: We expect European power demand to see sustained multi-year growth from 2026 for the first time since 2014



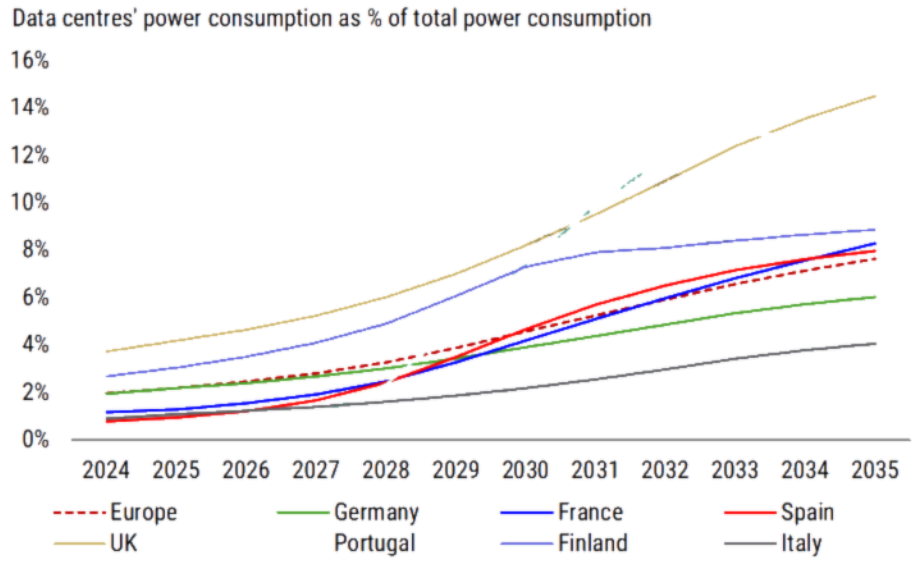
Source: Morgan Stanley Research

Data centers to be a key contributor to rising power demand

Overall, we expect data centers to contribute ~90TWh of incremental power demand in Europe over 2025–30e, accounting for 25–30% of total power-demand growth in the region during the period.

While data centers will represent close to 3% of European electricity consumption in 2026e, we expect this share to rise to ~5% by 2030e and ~8% by 2035e. By 2035, data centers would reach a share of electricity consumption broadly comparable to that already seen in the US today (~9%).

Exhibit 58: In particular, on a 2035 horizon, we think the data center-driven growth story will be particularly pronounced in the UK, Portugal, Spain, Finland and France



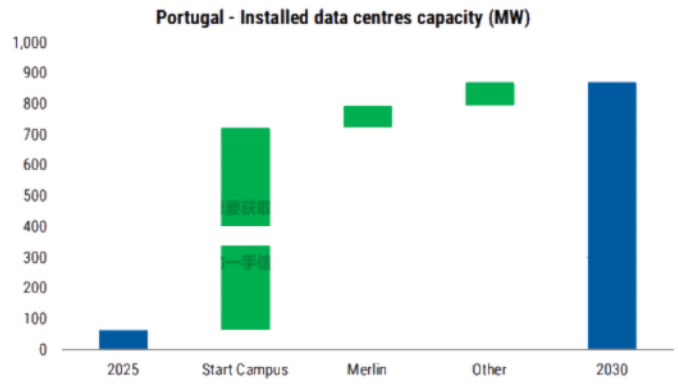
Source: Morgan Stanley Research estimates

While power demand from data centers has so far been concentrated in the FLAP-D markets, we expect growth to shift increasingly towards emerging hubs such as the Nordics, Spain and northern France as established hubs become progressively saturated and face greater development bottlenecks.

Looking out to 2035, the markets that appear particularly attractive from a data center-driven power-demand perspective are the UK, Portugal, Spain, Finland and France.

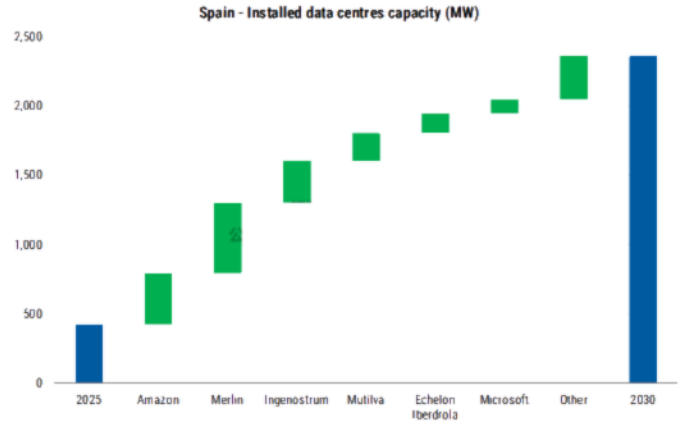
Over the shorter 2030 horizon, however, we expect data centers to account for a larger share of total national power demand in the UK, Portugal and Finland. We believe the investment case will take longer to unfold in France and Spain, where large-scale projects appear further out. In Spain's case, and potentially in other markets depending on how national policies and regulation evolve, we believe greater visibility around sustainability requirements for new data centers will be necessary for our base-case assumptions on installed data center capacity and power demand to materialise.

Exhibit 59: Our forecasts for the Portuguese data center market



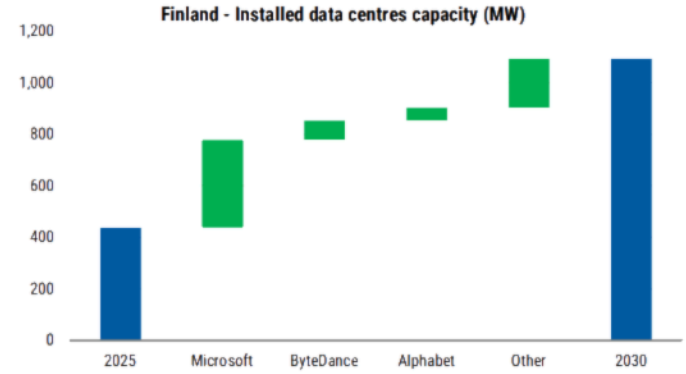
Source Morgan Stanley Research estimates

Exhibit 60: Our forecasts for the Spanish data center market



Source Morgan Stanley Research estimates

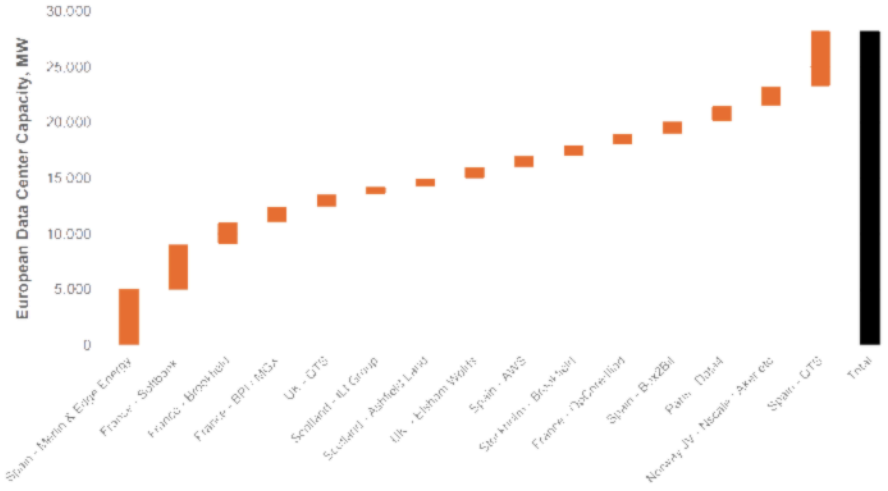
Exhibit 61: Our forecasts for the Finnish data center market



Source Morgan Stanley Research estimates

We see the rise of data centers benefitting European utilities through three main levers: 1) increased power demand leading to higher power prices and more complex power needs rewarding flexible power generation means; 2) powered land monetisation; 3) the need for additional power generation and additional flexibility leading to new value-accretive investment opportunities. More detail in Infrastructure, Tech, Real Estate, Cap Goods, Utilities, Construction & Telco: European Data Centers: Growth lags the US, but long-term outlook still strong (15 Jun 2026).

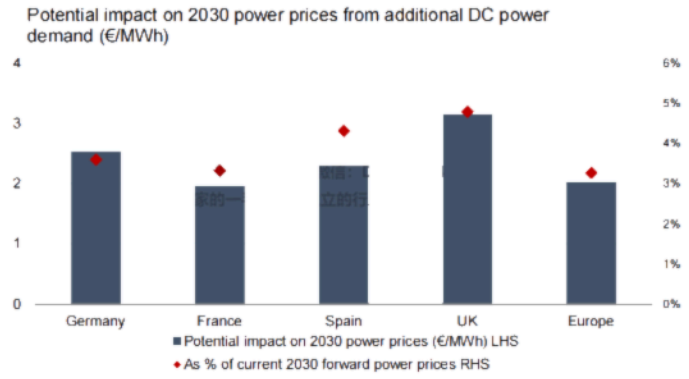
Exhibit 62: The Top 15 DC projects in Europe alone total a theoretical 28GW (3x current capacity across the Continent)



Source: Company data, Morgan Stanley Research estimates

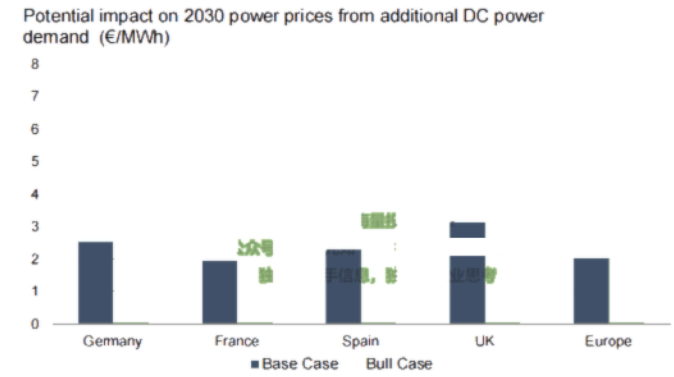
Impact on power prices. We think increased power demand from data centers has the potential, all else being equal, to drive an increase in power prices of €2/MWh across Europe by 2030, with the most significant impact in the UK (>€3/MWh) given significant DC growth expected in the country and the relative size of its power market. In a bull case, we see a potential impact of >€4/MWh at the European level by 2030.

Exhibit 63: We think increased power demand from data centers has the potential, all else being equal, to drive an increase in power prices of €2/MWh across Europe by 2030



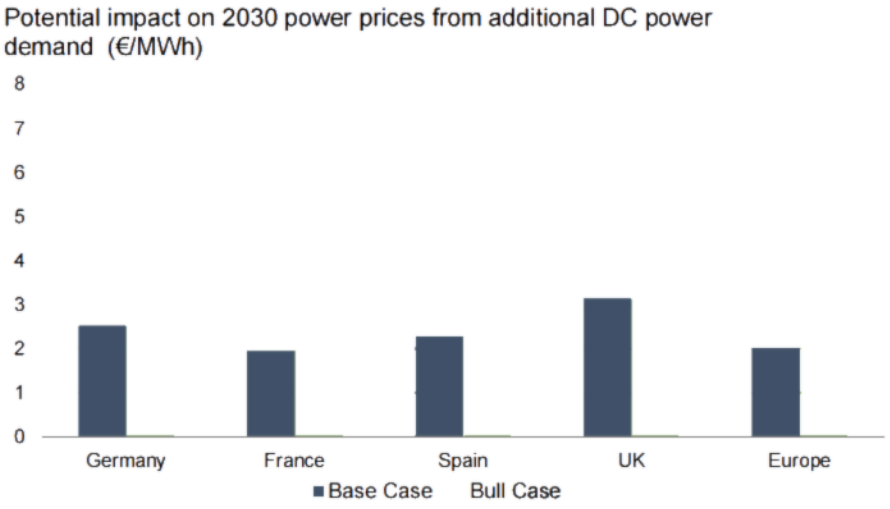
Source: Morgan Stanley Research estimates

Exhibit 64: This could go up to >€4/MWh in our bull case



Source: Morgan Stanley Research estimates

Ability to monetise powered land: We see several potential avenues for monetisation, including repurposing legacy sites such as coal-fired power plants, hydrogen projects, battery projects and crypto-mining facilities, monetising grid-connection rights, leasing powered land, or contributing powered land into a JV. We have seen multiple powered-land transactions announced across our European utilities coverage over the past 12 months (see



), including: (1) the Iberdrola/Echelon JV, (2) RWE's site sale in the UK, (3) the first Solaria/Merlin deal and (4) the second Solaria/Merlin deal.

Exhibit 65: List of recent data center powered land/rights deals in Europe

	Buyer	Seller	Country	Size (MW)	Site	Deal nature	Valuation
Jun-26	SoftBank	EDF	France	400	Bouchain - former coal plant	Land lease	NA
Feb-26	Merlin Properties	Solaria	Spain	213	Madrid	Power rights	NA
Nov-25	Merlin Properties	Solaria	Spain	225	Arasur	Power rights	NA
Nov-25	Amazon	RWE	UK	300	Didcot A - former coal plant	Powered land sale	EUR0.75mn/MW
Jul-25	Echelon	Iberdrola	Spain	144	Madrid	JV creation	NA

Source: Morgan Stanley Research

We expect more powered-land transactions to be announced over the coming months. In particular, we see a combination of a large portfolio of secured powered land and ongoing

negotiations at RWE supporting further deal activity. In Spain, we believe Solaria is well positioned to secure additional agreements, although greater visibility around the draft Royal Decree setting sustainability requirements for data centers will likely be needed first.

We also see Portugal as a market that could benefit from spillover from future Spanish data center developments while regulatory uncertainty remains elevated in Spain. As a result, powered-land monetisation opportunities could also emerge in Portugal, which we would play through EDP. By now, many power-generation companies across the sector have highlighted the monetisation potential of their powered-land portfolios, and additional transactions could come from other players including Iberdrola, A2A, EDPR, Naturgy, Engie, Drax and Fortum.

New investment opportunities in power generation and flexibility. We assume that the majority of capacity additions over 2025–30 stem from energy-policy decisions made during 2019–22 and therefore do not yet reflect a response to rising data center power demand. In addition, most forms of new generation require lengthy development timelines: 2–3+ years for onshore wind and solar, 4–7 years for offshore wind, while OEM backlogs for gas turbines extend to 2029 (see note). New nuclear capacity typically requires around 15 years to develop, and we do not expect meaningful SMR deployment before the mid-2030s.

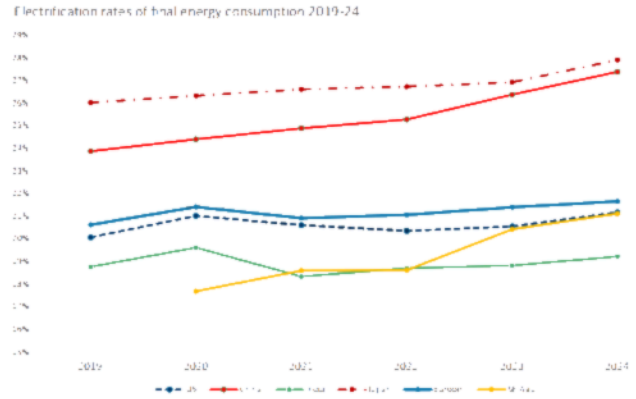
As the power system responds to structurally higher demand, we believe additional generation and storage capacity will be required. Utilities can benefit from developing this capacity across renewables, batteries, thermal generation and nuclear, most likely through PPA, RAB or capacity-market frameworks rather than through merchant exposure.

We believe data centers' willingness to pay for power that closely matches their consumption profile and can be delivered rapidly may exceed that of other offtakers. As a result, we view these developments as a potential source of value-accretive opportunities for the European utilities sector, with attractive IRR–WACC spreads on new capex.

Electrification of European economies another key contributor to power demand growth

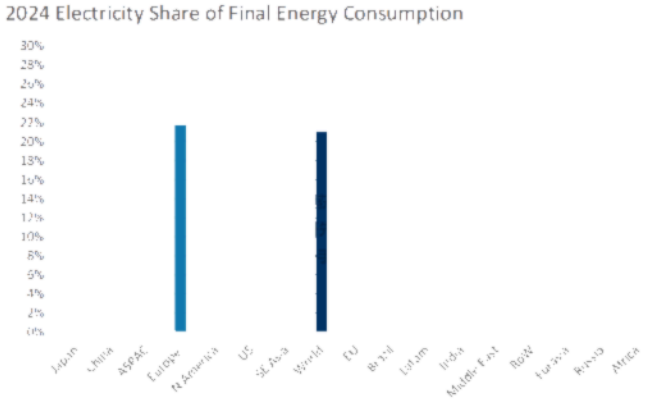
Europe lags behind on electrification. The world is slowly electrifying final energy consumption – from 16.7% in 2010 to 19.7% in 2020 and reaching 21% in 2024. This trend implies a 0.3% increase in electrification p.a.. Europe is lagging in electrification, especially vs. Asia, even over the last 5 years and in spite of the 2022 energy crisis. Yet China and SE Asia are the areas that have been electrifying quickest in recent years. See Exhibit 14 & Exhibit 15 . In contrast, Europe stands at 21% electrification in 2024, increasing only 0.1% p.a. since 2010.

Exhibit 66: Europe lags Asia in electrification over the last 5 years...



Source: Morgan Stanley Research, IEA World Energy Outlook

Exhibit 67: ...sitting near the global average as of 2024

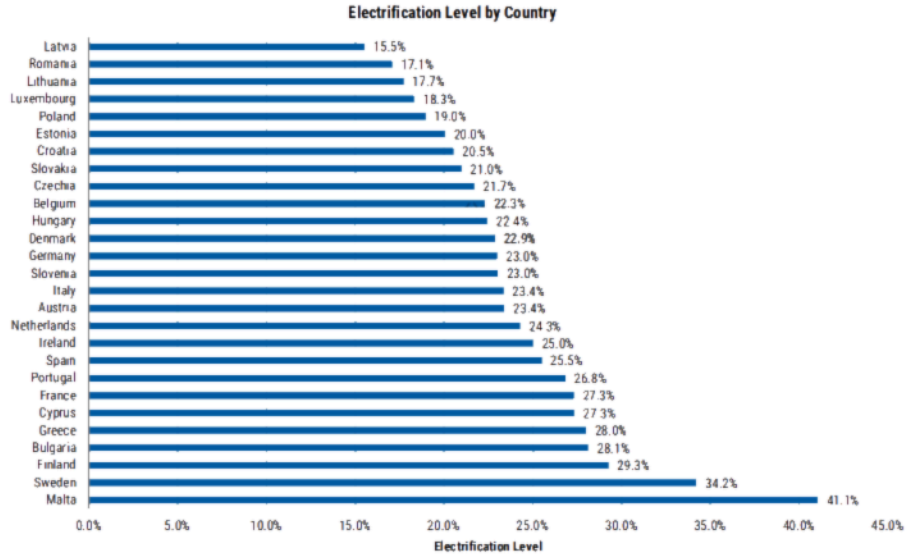


Source: Morgan Stanley Research, IEA World Energy Outlook

But we think electrification is about to accelerate as it allows the region to address several key priorities:

- **Electrification as a way to improve . We believe the renewed focus on and sovereignty is the most recent and perhaps the most important catalyst for electrification in Europe.** Electrifying final energy consumption is consistent with strengthening energy security and has emerged as a key element of the *AccelerateEU* action plan following the energy shock linked to the Iran conflict. We expect the EU and/or national governments to publish electrification targets in due course. Supplying a greater share of energy demand from domestic sources reduces the proportion of primary energy that must be imported. This lowers exposure to global supply disruptions and reduces vulnerability to the type of energy shocks Europe has experienced twice in the gas market over the past five years. Furthermore, electrification relies on clean electricity generation with limited exposure to imported fuel costs. This should support the continued expansion of wind, solar, batteries, fuel cells and nuclear generation, relative to fossil-fuel-based power generation.
- **Electrification in order to decarbonise.** Europe has ambitious decarbonisation objectives. Electrification seems to be a way to facilitate Europe's decarbonisation trajectory given the presence of low carbon footprint generation technologies in the electricity sector (wind & solar mainly when it comes to new generation sources). Electrification is a key way to reduce fossil fuel reliance.
- **Electrification may also help ensure the affordability of energy.** While the adaptation of power grids to a rising penetration of renewables may be costly initially and the intermittency of renewables may lead to some higher flexibility costs for power systems, we believe that, in the long-run, high renewables penetration could lead to a deflationary impact on electricity bills, via lower wholesale prices and as lower reliance on fossil fuels will ensure more cost stability over time.

Exhibit 68: Iberia, France and the Nordic countries have been leading electrification in Europe, thanks to their cheap electricity



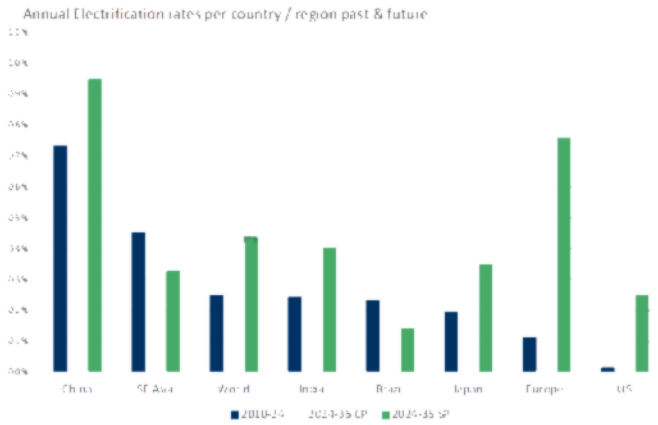
Source: Eurostat (2024 data), Morgan Stanley Research

The IEA's scenarios point to a meaningful acceleration in Europe's rate of electrification. Annual electrification rates increase from around 0.1% historically to 0.6% through 2035 even under the Current Policies scenario, and to 0.76% per annum under Stated Policies (Exhibit 69 Exhibit 69 . This likely reflects the lag between the introduction of climate policies in 2021 and the REPowerEU energy-security measures in 2022, and their translation into measurable economic outcomes. Likewise, Europe's greater reliance on global gas markets following the loss of Russian pipeline supplies in 2022 may further reinforce the push towards electrification and energy efficiency. Under these pathways, Europe's electrification rate is set to reach 28–30% of final energy consumption by 2035 and 37–42% by 2050 (Exhibit 70).

The IEA pathway would imply adding approximately 1,400TWh, or 34%, to Europe's electricity market over the next decade (vs. our estimate of 644TWh, or a 21% increase). We estimate that this scenario would require around 900GW of additional generation capacity by 2035, predominantly from clean-power technologies and heavily skewed towards solar. This would represent roughly a 50% increase in Europe's total installed generation capacity in less than a decade.

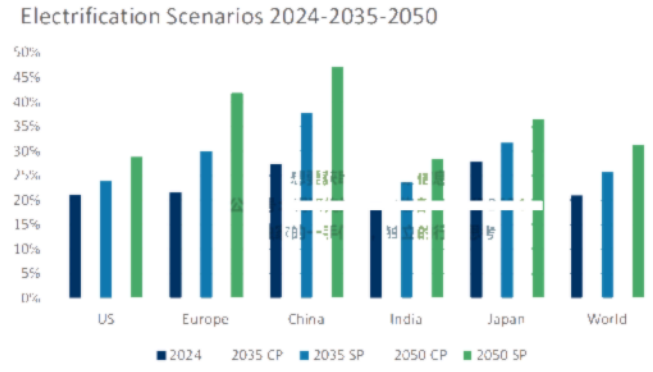
Achieving anything close to this outcome would likely require a material acceleration in annual renewable-capacity additions, with a significant proportion delivered by the European utility stocks under our coverage.

Exhibit 69: Electrification has been slow in Europe so far, but we expect an acceleration...



Source: Morgan Stanley Research, IEA World Energy Outlook

Exhibit 70: ...to deliver levels approaching those seen in Japan and China by 2035 and 2050



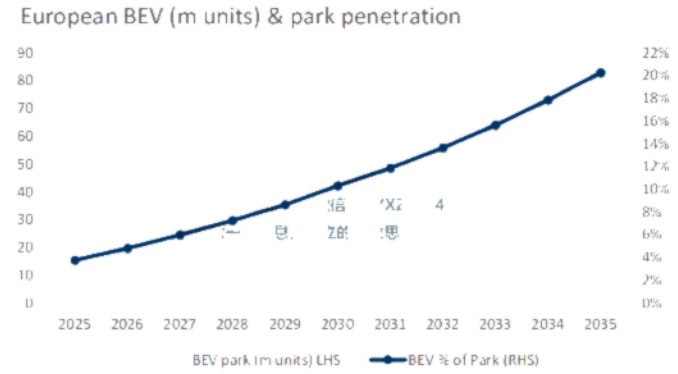
Source: Morgan Stanley Research, IEA World Energy Outlook

The two clearest drivers of electrification are transportation and heating. Using forecasts from our industry analysts, we estimate that EVs and heat pumps will add around 120TWh of electricity demand between 2025 and 2030, representing 38% of our forecast increase in European power demand over the period.

MS forecasts the European BEV parc will increase from 14.4mn vehicles in 2025 to 41.4mn by 2030 and 84.5mn by 2035, with BEVs' share of the vehicle fleet rising from 3.8% to 20.3% (Exhibit 71). Assuming average annual electricity consumption of 2,000kWh per vehicle, this implies EV electricity demand rises from 29TWh in 2025 (1% of European power demand) to 83TWh by 2030 (2.5% of demand) and 169TWh by 2035 (4.6% of demand) – see Exhibit 20 . The increase through 2030 represents 17% of our forecast growth in electricity demand.

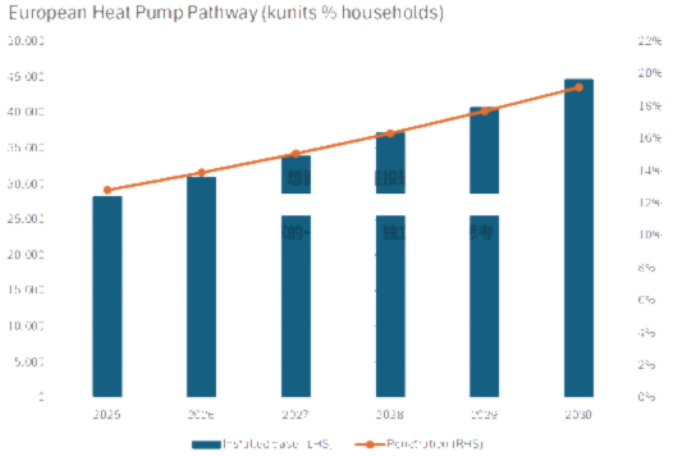
MS forecasts heat-pump penetration will increase from 15% of households today to 19% by 2030 (Exhibit 72). Assuming average annual electricity consumption of 4,000kWh per unit (within a range of 3,000–5,000kWh), we estimate heat-pump electricity demand rises from 113TWh in 2025 to 179TWh by 2030. This would increase heat pumps' share of total European electricity demand from 3.8% to 5.4% (Exhibit 21), and account for 21% of the total growth in electricity consumption that we forecast through 2030.

Exhibit 71: MS sees EV penetration of parc rising to 10% by 2030 and 20% by 2035...



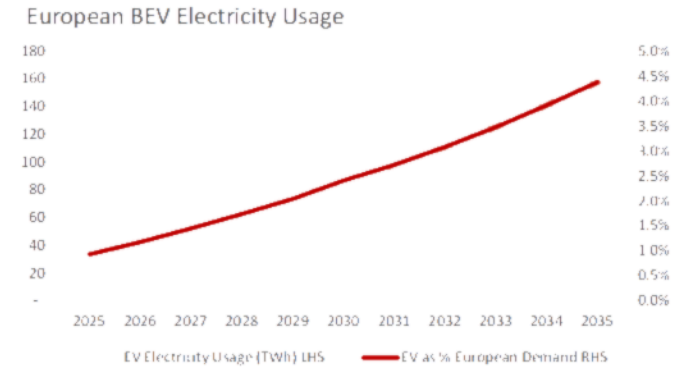
Source: Morgan Stanley Research Estimates

Exhibit 72: ...with significant growth in heat pump installed base as well...



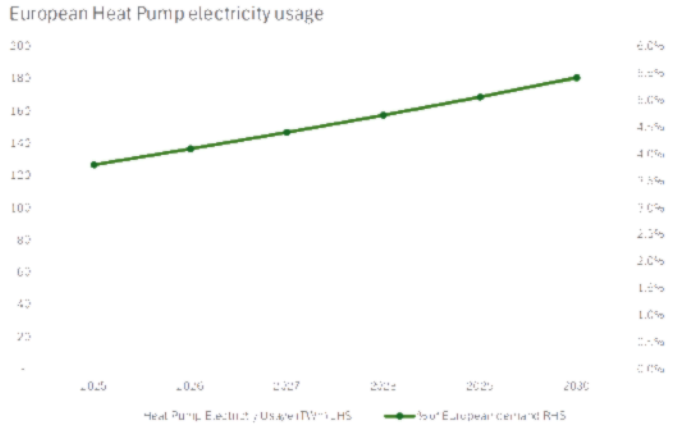
Source: Morgan Stanley Research Estimates

Exhibit 73: ...adding 54 TWh of electricity demand from EVs by 2030...



Source: Morgan Stanley Research estimate

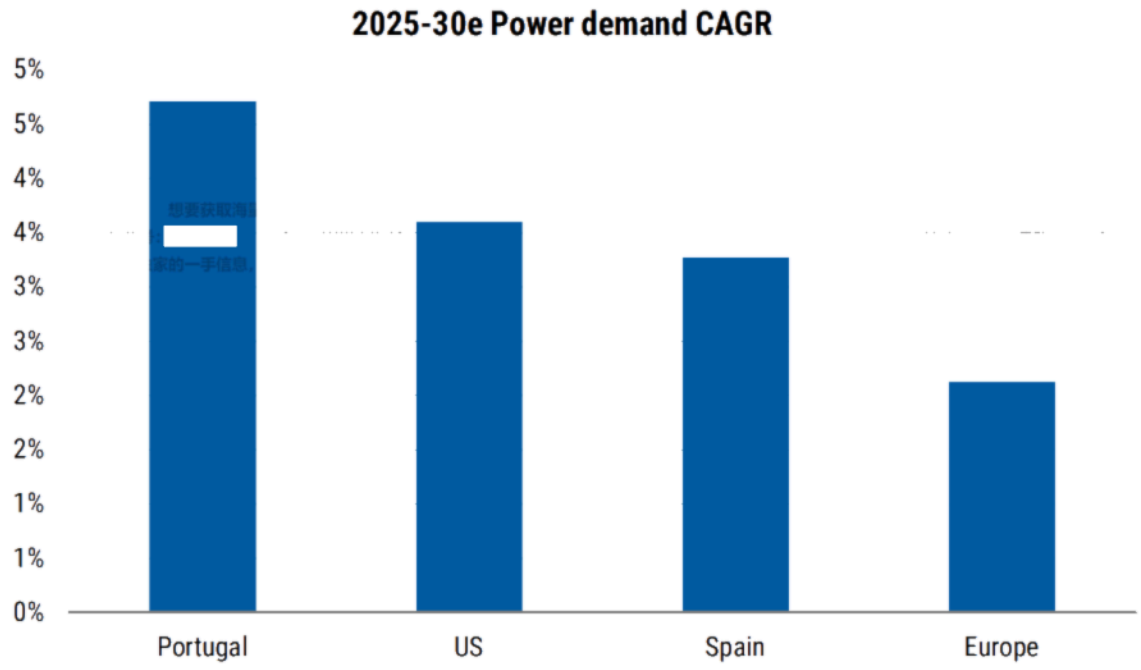
Exhibit 74: ...and a further 66 TWh from heat pumps over the same period



Source: Morgan Stanley Research estimate

We see different rates of power-demand acceleration across Europe. In particular, we expect especially strong demand growth in Iberia, and potentially the Nordics, supported by relatively low power prices and attractive conditions for data center development.

Exhibit 75: We expect strong power demand growth in some specific European markets such as Iberia



Source: Morgan Stanley Research estimates

For more detail, please see:

Iberian Utilities: Electrifying at Iber-speed (10 Sep 2026)

Utilities: Electrifying Energy Security (13 May 2026)

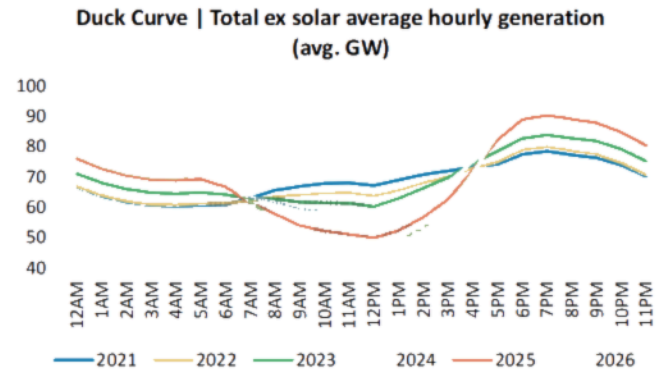
LatAm

Power demand growth remains supported by traditional drivers across LatAm, driving ~3-4% CAGR 2025-30. Unlike some developed markets, where electricity demand has historically been relatively flat and data centers are emerging as a major source of incremental consumption, LatAm's power demand outlook remains largely driven by economic growth, industrial activity, population growth, electrification and the rising penetration of electrical appliances. These structural factors should continue to support electricity consumption across the region, although growth rates will vary by country depending on economic conditions, industrial development and energy policies. As a result, we expect power demand to continue expanding even without a meaningful contribution from data centers.

Data centers could accelerate demand growth, despite not being the main driver. The rapid expansion of AI, cloud computing and digital infrastructure is creating a new source of electricity demand globally, with LatAm increasingly attracting interest from developers given its renewable resources, relatively competitive energy costs and proximity to major markets. However, unlike in the US, where large-scale data center investments are becoming a key driver of incremental load, we expect the contribution in LatAm to remain relatively modest compared with traditional demand drivers, at least through the end of the decade. Under the MS Bull Case scenario, we estimate that DC capacity would add ~11GW of new electricity demand by 2030 (~7.9 GW in Brazil), equivalent to ~4% of total power demand, from virtually zero today. This would add ~80bp to the overall power demand CAGR in 2025-30. More details in Latam Data Centers - Aiming for a Bull Case (22 Apr 2026).

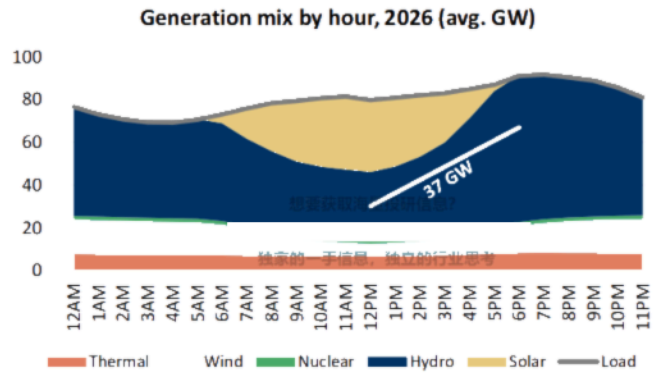
A steepening duck curve and rising curtailment are increasing the need for flexibility. The rapid expansion of intermittent renewable generation across LatAm, particularly in Brazil and Chile, has led to increasingly pronounced duck curves, with growing midday oversupply followed by steeper evening ramps as solar generation declines. At the same time, renewable curtailment has increased significantly, exceeding 20% of potential generation in some recent months in Brazil. These trends highlight the growing mismatch between when electricity is generated and when it is needed, reinforcing the need for flexible resources to shift energy across hours, reduce curtailment and support system reliability.

Exhibit 76: Brazil's Duck Curve Continues to Steepen



Source: CNS, Morgan Stanley Research

Exhibit 77: Highlighting the Growing Need for System Flexibility



Source: CNS, Morgan Stanley Research

India

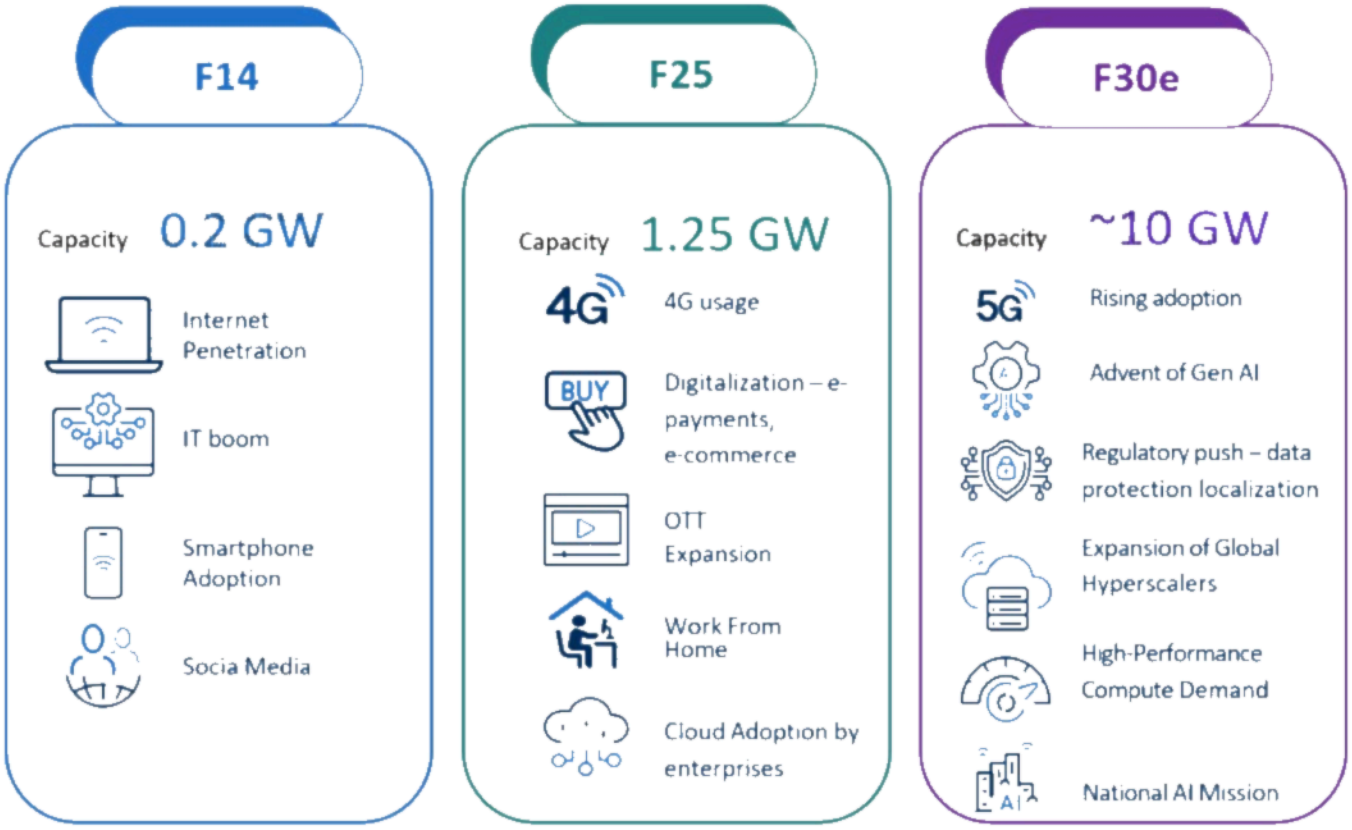
India still needs more GW, but value is shifting from headline capacity to dependable, dispatchable and deliverable GW. Firm thermal retains scarcity value, while storage, customer access and grid readiness will increasingly determine renewable monetization. We expect peak power demand to expand at a CAGR of ~6% in F26–30, and the gap between peak supply and demand to widen. We expect renewable + energy storage capacity to cover this gap.

As per the CEA's National Electricity Plan, India targets 396GWh of storage capacity by 2032. Storage contracts have started to be offered for bidding through PSP and BESS. We continue to see more than US$450bn of investment across generation, storage, transmission and distribution through F32, supported by structural demand growth.

Data centers – A ~US$20bn opportunity for power generation & storage: India's DC market is transitioning to hyperscale-led growth, with strong demand from cloud, AI, and data localization. India offers a structural cost advantage, with ~30% lower capex versus APAC, and higher EBITDA margins of ~60-70%, supported by lower land, power and execution costs.

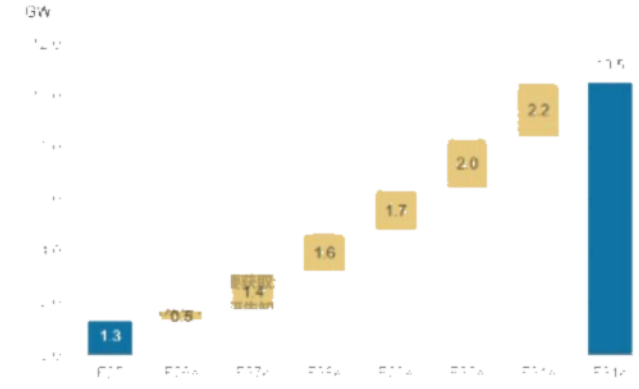
Hyperscalers driving growth: India's positioning has evolved into that of a strategic hyperscale and AI compute hub. Over the past 12-15 months, hyperscalers have announced multiple large investments. Real estate developers and private equity firms are bringing construction and operational expertise, while large business groups are leveraging local know-how and resources. India's DC market is therefore likely to see strong growth over the coming decade as the ecosystem matures, from approvals to commissioning. The near-term focus is on execution, skilled manpower availability, and maintaining uptime in line with global standards.

Exhibit 78: We expect data center capacity to rise 8x by F30e, to ~10GW



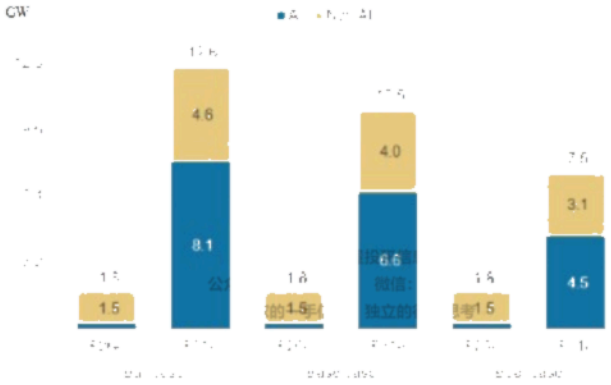
Source: Morgan Stanley Research estimates

Exhibit 79: India DCs: We expect capacity to step up to 10.5GW by F31e



Source: Company data, Morgan Stanley Research estimates

Exhibit 80: India DCs: About 75% of capacity additions to be AI DCs in our base case

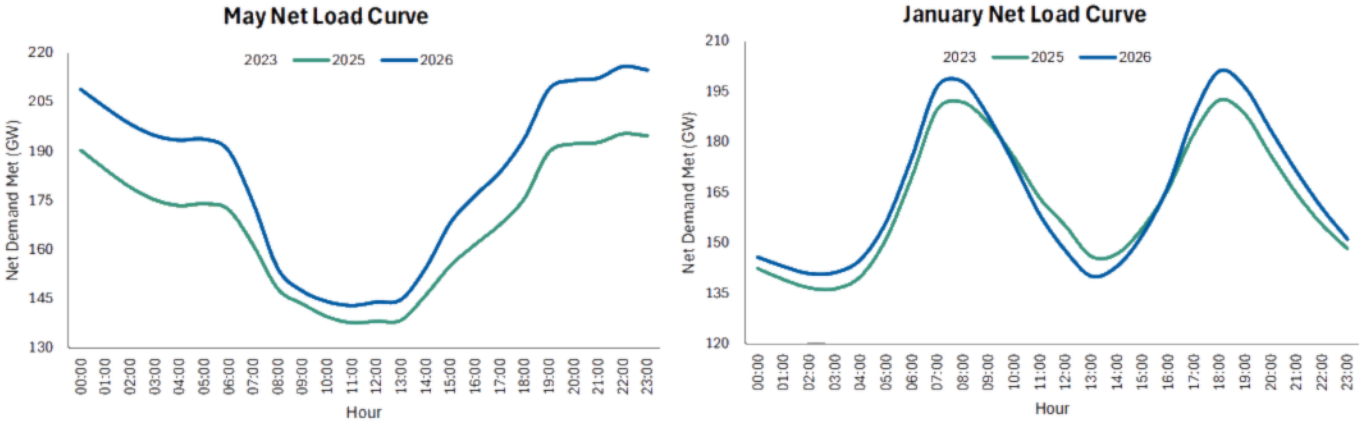


Source: Company data, Morgan Stanley Research estimates

The Duck & The Camel: Solving India's distinctive power grid challenge: India's power bottleneck is shifting from generation capacity to grid flexibility. Rapid solar growth is widening mid-day surpluses and evening shortages, creating a strong structural case for batteries, pumped storage, demand response, and time-of-day pricing. A July 2026 paper by the Economic Advisory Council to the Prime Minister (EAC-PM) argues that India's power constraint has shifted from generation capacity to grid flexibility as solar

penetration accelerates even as storage rollout continues to lag. A renewed push for battery storage and policies to deepen the power trading market would likely be positive for BESS developers and manufacturers, pumped storage, power electronics, EPCs, flexible hydro/gas utilities, power exchanges, smart meters, and demand-response platforms. Standalone solar, inflexible generators, and discoms would likely come under pressure.

Exhibit 81: Duck curves reshaping into double-humped camels in India



Source: Grid India, IEX, Morgan Stanley Research

Australia

- **We estimate Australian grid electricity demand growth at ~1% per annum to 2030, compared with a decline of 0.6% per annum in the decade prior to GenAI.**
- **We estimate data centers could account for 6–14% (17-38TWh) of underlying electricity demand by 2030, up from ~3% (~7TWh) today.**
- **Australia's duck curve is flattening as battery deployment accelerates, making the National Electricity Market a global case study.**
- **With equipment cost inflation, we remain constructive on medium-term power-price growth, which should support the integrated utilities in our coverage: AGL Energy and Origin Energy.**

Australia's air conditioning market is already mature, with penetration at ~63% following rapid adoption in the early 2000s.

Load growth from the electrification of heating has so far been limited. Victoria's household gas connections continue to increase despite policies restricting new installations, suggesting only modest demand growth from gas-to-electricity switching to date.

Demand growing at ~1% per annum – National Electricity Market (NEM) demand is flat so far in 2026 year-on-year, which we attribute to a mild El Niño winter (Exhibit 82). However, we forecast underlying grid-demand growth of ~1% per annum to 2030 with AI and transport electrification. BEVs were 24% of Australian new car sales in September 2026 (+118% yoy, source: VFacts), which we estimate adds ~0.2% to electricity demand.

Powering AI is the key growth driver – Australian governments are introducing 'Bring Your Own Power' requirements, e.g., New South Wales data center guidelines require additional power secured through power purchase agreements of at least 10 years' duration, with 40% wind generation and 25% 4-hour storage. We anticipate some transitional "build now, power later" allowance, while some states and territories may adopt different approaches. For example, the Northern Territory is seeking to support the development of a new gas industry.

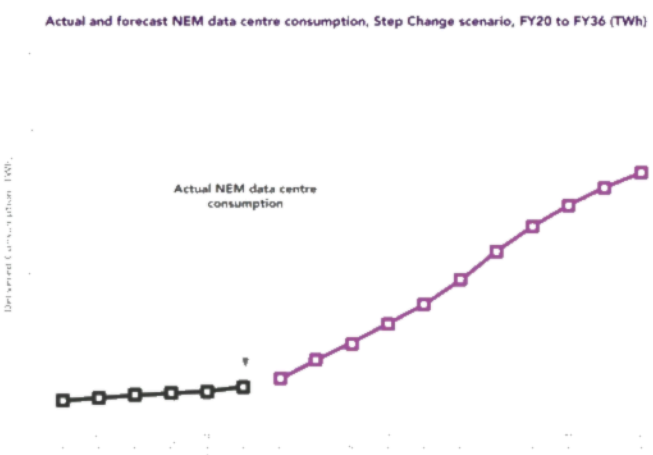
With more than 67GW of data center grid connection applications in the NEM vs. ~6GW (~53TWh) of power capacity by 2030, based on our estimates, we anticipate further extensions of coal-fired generation, as well as increased regional and behind-the-meter data center development across Australia.

Exhibit 82: National Electricity Market operational demand

TWh	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	%Δ
1999	13.0	12.2	13.2	12.5	13.8	14.2	14.7	14.4	13.3	13.5	13.2	13.5	161.6	
2000	13.6	13.8	14.3	13.1	14.6	15.1	15.4	15.1	13.7	14.0	13.7	14.1	170.4	5.5%
2001	14.8	13.8	14.6	13.5	14.9	14.9	15.6	15.4	14.0	14.3	13.9	14.2	174.0	2.1%
2002	14.7	13.7	14.7	14.0	15.1	15.3	16.3	15.7	14.3	14.7	14.5	14.8	177.8	2.2%
2003	15.3	14.1	14.9	14.1	15.3	15.3	16.3	15.9	14.8	15.0	14.5	15.3	180.9	1.7%
2004	15.5	15.3	15.5	14.5	15.7	15.9	16.7	16.2	15.0	15.1	15.1	15.4	186.0	2.8%
2005	15.8	14.7	15.7	15.0	16.3	17.0	17.6	17.5	16.0	16.1	15.9	17.0	194.6	4.6%
2006	17.5	15.9	17.1	15.8	17.4	18.0	18.2	17.8	16.4	16.6	16.5	16.7	203.9	4.8%
2007	17.6	16.4	17.3	15.8	16.9	18.0	18.9	17.9	16.3	16.8	16.6	16.9	205.7	0.9%
2008	17.6	16.3	17.3	16.4	17.6	17.4	18.9	18.8	16.8	16.9	16.5	16.9	207.4	0.8%
2009	17.9	16.4	17.1	16.0	17.2	17.6	18.2	17.3	16.1	16.7	17.2	17.4	205.1	-1.1%
2010	17.8	16.5	17.3	16.0	17.2	17.7	18.5	18.0	16.5	16.4	16.1	16.4	204.4	-0.3%
2011	17.3	16.2	17.0	15.7	17.4	17.4	18.1	17.3	16.0	16.2	16.2	16.0	200.8	-1.7%
2012	17.0	16.2	16.3	15.4	17.0	17.0	17.5	17.0	15.3	15.7	15.6	16.0	196.0	-2.4%
2013	17.0	15.2	16.4	15.1	16.4	16.5	16.9	16.2	14.8	15.4	15.1	15.7	190.6	-2.8%
2014	16.7	15.1	15.9	14.9	15.9	15.9	17.0	16.5	14.8	15.1	15.1	15.5	188.3	-1.2%
2015	16.2	14.9	15.9	14.9	16.0	16.5	17.4	16.6	15.2	15.3	15.3	16.3	190.5	1.1%
2016	16.3	15.9	16.5	15.0	15.7	16.5	17.1	16.7	15.2	14.9	15.2	15.9	191.0	0.2%
2017	16.9	15.5	16.3	14.3	16.0	16.6	16.9	16.5	15.0	15.0	15.1	16.0	190.0	-0.5%
2018	17.0	15.1	15.8	14.9	16.0	16.7	17.0	16.5	14.9	14.9	14.8	15.8	189.5	-0.3%
2019	17.4	14.9	16.2	14.5	15.8	16.4	16.7	16.4	14.6	14.7	14.6	15.8	188.3	-0.6%
2020	16.6	15.2	15.1	14.1	15.5	16.2	17.0	16.1	14.1	14.3	14.5	15.1	183.9	-2.3%
2021	15.5	14.1	15.3	14.5	15.8	16.5	17.2	15.8	14.1	14.2	14.0	14.7	181.6	-1.3%
2022	16.0	14.1	15.6	14.3	16.0	16.8	17.5	16.4	14.8	14.5	13.6	14.1	183.6	1.1%
2023	15.2	14.2	15.6	14.1	16.2	16.3	16.6	15.7	13.7	13.8	13.9	15.0	180.2	-1.9%
2024	15.7	15.2	15.4	14.3	15.9	16.9	17.6	15.7	13.9	13.6	14.2	14.9	183.3	1.7%
2025	15.3	14.4	15.8	14.1	15.7	17.1	17.7	16.6	14.1	14.3	14.1	14.7	183.8	0.3%
2026	15.7	14.5	15.4	14.3	15.9	16.5	17.6	16.6	14.1					
	2.3%	1.0%	-3.0%	1.2%	1.0%	-3.5%	-0.2%	-0.2%	0.4%	4.9%	0.7%	1.7%	vs. pcp	
	2.3%	1.7%	0.1%	0.3%	0.5%	-0.3%	-0.3%	-0.2%	-0.2%	0.6%	0.5%	0.3%	YTD vs. pcp	
	1.8%	1.7%	1.2%	1.2%	1.1%	0.7%	0.6%	0.6%	0.6%	3.1%	2.4%	1.7%	FYTD vs. pcp	

Sources: Australian Energy Market Operator, Morgan Stanley Research

Exhibit 83: AEMO data center power demand forecasts



Sources:

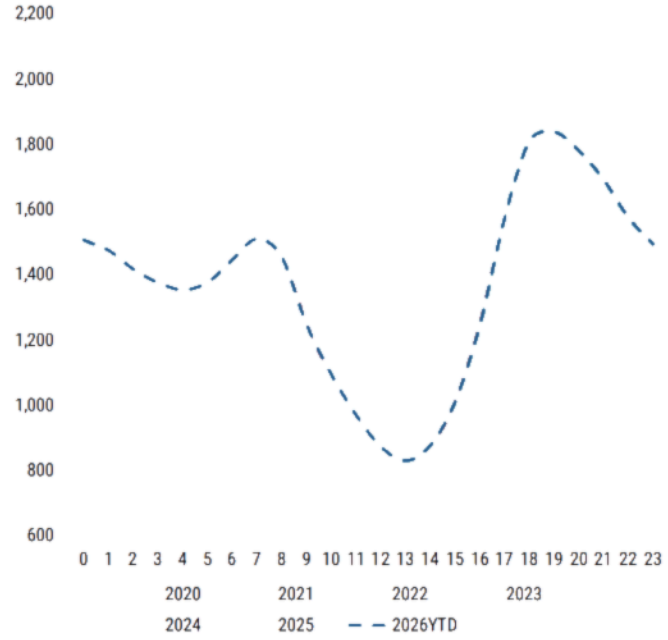
Oxford Economics, AEMO, August 20..

The Australia Duck Curve is flattening (Exhibit 84): Solar contributed ~22% of NEM generation in FY26 (~13.5% from rooftop solar and ~8.7% from utility-scale solar; source: Openelectricity.org.au). However, the spread between midday and evening power prices and demand has narrowed as battery energy storage system (BESS) deployment has accelerated.

We estimate 2026YTD BESS commissioning of 3.7GW/9.8GWh and household battery installation of 6GW/11GWh. Based on these figures, we estimate installed battery power capacity now represents ~14% of total system capacity of ~117GW.

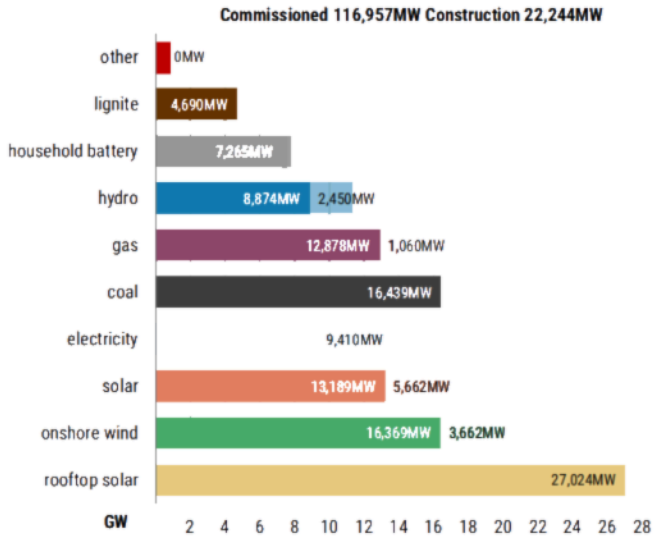
In our view, Australia has become the first merchant power market where battery deployment is approaching saturation: Future of Energy: Global Merchant Batteries (4 Jun 2026).

Exhibit 84: South Australia average grid demand (MW) by hour of day 2020-2026TD



Sources: AEVO, Morgan Stanley Research.

Exhibit 85: Battery capacity growth has surprised to the upside



Sources: Company and media reports (e.g., RenewEconomy, Information), AEVO, Morgan Stanley Research.

Pricing power shifting to generators?

As a net importer of equipment and with labour markets remaining tight, Australia has seen power construction costs rise by ~8% YoY (sources: CSIRO GenCost 2025–26 and the Australian Bureau of Statistics), or ~12% excluding batteries, whose costs fell by ~13% (see Exhibit 86).

With "build now, power later" policies now in place, we see scope for wholesale power prices to move higher over the medium term. This is already reflected in the forward curve, with FY29 base-load futures trading in contango. We view this as a medium-term tailwind for the integrated utilities in our coverage, namely AGL and Origin Energy (ORG).

Battery saturation is a market risk to this constructive power price view, e.g., with overbuild for flat load shapes and sizing for warranted BESS capacity (Exhibit 87). Near-term supply growth of ~4% is weighing on FY28 prices year-on-year, a view that remains contrary to global market trends. For more detail, see Audio – Australia Utilities: Wattmaxxing or Battflexing? (5 Oct 2026).

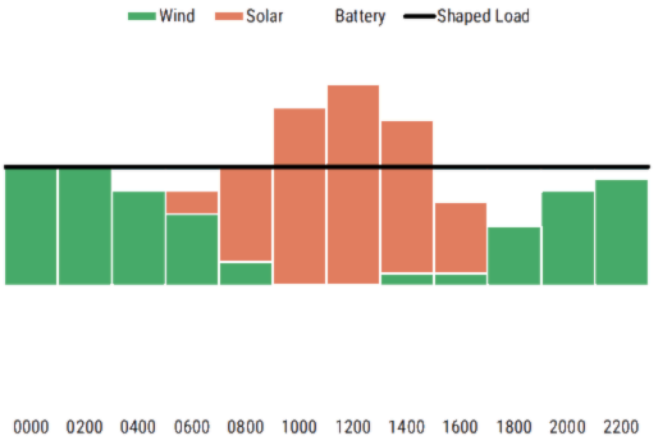
Exhibit 86: Australia power construction costs

Fuel/technology	A$/kW	%Δ YoY
Black coal	6,946	*15%*
Gas combined cycle	2,497	*2%*
Gas open cycle	1,764	*34%*
Large scale solar	1,621	*11%*
Onshore wind	3,248	*-3%*
Large scale battery (2-hour)	1,050	*-13%*
Simple average		*8%*
Simple average excluding batteries		*12%*

Source:

CSIRO Gencost 2025-2026 (2025 real costs), July 2026, Australian Bureau of Statistics. Costs do not include grid connection, coal or gas infrastructure, carbon capture and storage, interest during construction.

Exhibit 87: Powering AI with wind, solar and batteries

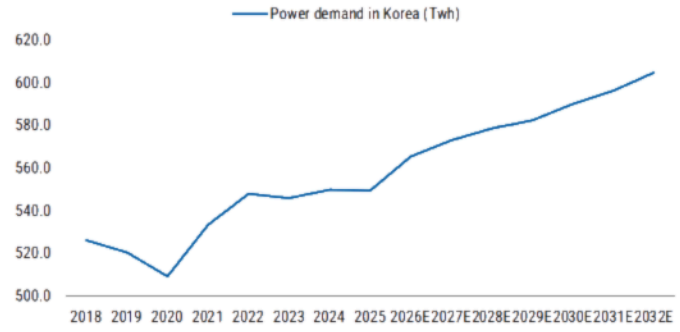


Source: Morgan Stanley Research. Based on South Australia average annual capacity factors and daily production shapes, assuming 97% availability, and longer duration firming for dunkelflaute.

South Korea

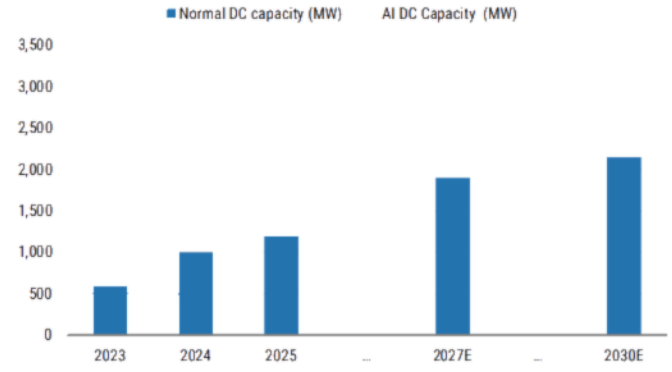
AI and memory demand to drive structural growth in electricity consumption. Korea is seeing accelerating electricity demand from AI data centers and semiconductor manufacturing, in line with the broader global electrification theme. According to MOTIE's 11th Basic Plan for Electricity Supply and Demand, data center electricity consumption is projected to increase from ~8TWh in 2025 to ~30TWh by 2038, implying a ~10% CAGR, well above the ~2% growth expected for overall electricity demand. More recently, announced AI data center projects represent up to ~5GW of aggregate capacity over the next five years, which we believe is not fully reflected in the current electricity supply plan. With the Lee administration actively supporting AI infrastructure investment, we see potential upside to Korea's medium- to long-term power demand forecasts.

Exhibit 88: Korea power demand



Source: MOTIE, Morgan Stanley Research

Exhibit 89: Korea data center capacity forecasts



Source: Morgan Stanley Research estimates

Exhibit 90:
Korea data center expansion plans by major players

Company	Announced capacity	Timing	Key projects/partners	Notes
SK Telecom	Up to 2GW	First new capacity from 2027 longer-term buildout	Nvidia AWS Ulsan AIDC	Longer term ambition is to get to 5GW of capacity
KT Corp	1GW over the next 5 years inclusive of DBO projects (current 152MW)	Five-year buildout capex to scale with confirmed customer demand	AIDCs centered around Seoul Metropolitan area	Targeting W3 4trn in DC revenue by 2031
LG Uplus	400MW (current 165MW)	Target 2030 consisting of 270MW of in-house and 130MW of leased capacity	Paju data center cluster (4 DC buildings)	In-house capacity expected to be colocation leased capacity is DBO
NAVER	55MW by 1H27 to 200MW by 2028 longer-term 1GW	55MW initial deployment 200MW by 2028	Nvidia Brookfield	Brookfield expected to provide US$9bn in financing for compute (GPUs)
Samsung SDS	800MW by 2031 including 500MW of DBO projects	AICC (40MW) by 2028 Gumi (60MW) by 2029	Korean government 30% investor in AICC	Targeting over W3 5trn in DC related revenue by 2031

Source: Company data, Morgan Stanley Research

Ample near-term power reserves, but generation and grid constraints could emerge over time. Korea currently maintains a capacity reserve of over 20%, providing some buffer to accommodate planned AI data center build-outs in the near term. However, as announced projects come online, additional generation capacity may be required beyond the five-year horizon, necessitating upward revisions to the government's electricity

supply plan, which could take years to plan, approve and fund. Meanwhile, transmission and distribution bottlenecks remain a more immediate challenge, given the geographical mismatch between generation capacity and demand centers. To address this, the government is pursuing its Energy Highway initiative, centered on HVDC transmission upgrades, while encouraging data center development closer to power generation sources. We also see potential for additional LNG generation and ESS deployment to support stable power supply for new AI computing clusters.

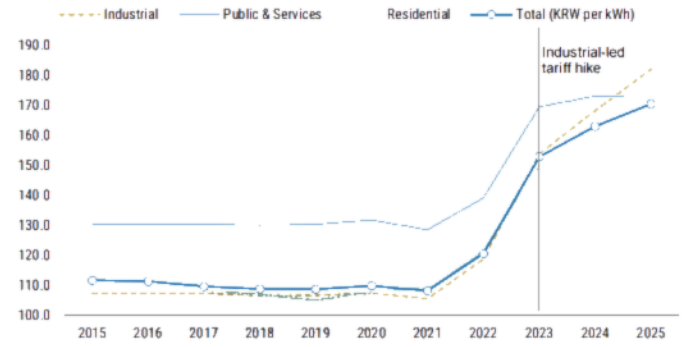
Exhibit 91: Korea capacity reserve plans according to the 11th Basic Electricity Plan

(GW)	2024	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
Peak Demand	101	103	104	106	108	109	111	113	116	118
Finalized Capacity	122	126	129	132	134	135	136	137	138	140
Capacity Reserve%	20.5%	22.4%	23.5%	24.4%	23.9%	23.0%	21.7%	21.0%	21.0%	22.0%

Source: MOTIE, Morgan Stanley Research

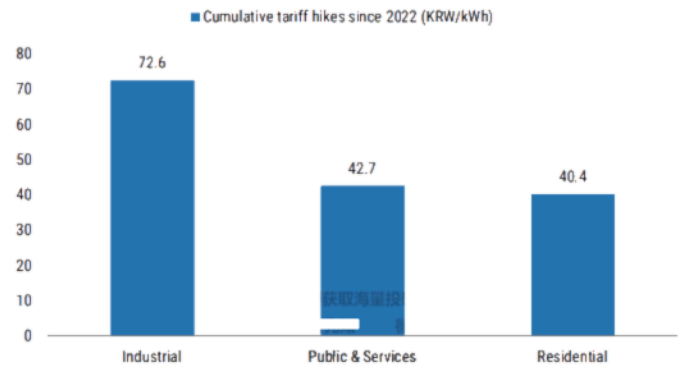
Grid investment requirements are rising, but funding and tariff constraints could limit the pace of expansion. Korea has already implemented significant industrial electricity tariff increases in recent years, but further hikes remain politically sensitive. Meanwhile, the substantial capital required for transmission network expansion presents a challenge for KEPCO, given its highly leveraged balance sheet and limited flexibility to pass additional costs through to electricity tariffs. In September 2026, KEPCO's proposal for Samsung Electronics and SK hynix to prepay a combined W25tn in electricity bills over five years to help finance grid investments was reportedly rejected by both companies (link). With KEPCO's debt level reaching W211tn as of 2Q26, funding the required grid upgrades remains a key challenge, potentially slowing Korea's ability to accommodate accelerating electricity demand.

Exhibit 92: Korea has implemented a series of tariff hikes since 2022, with more pronounced increases for industrial users



Source: EPSIS, Morgan Stanley Research

Exhibit 93: Industrial tariffs have seen the largest cumulative increase in Korea since 2022



Source: KEPCO, Morgan Stanley Research

Stock implications

- **Samsung SDI (006400.KS; Overweight; PT W670,000; covered by Young Suk Shin)**: We see Samsung SDI as a key beneficiary of AI-driven power demand, with growing adoption of energy storage, including battery backup units (BBU), and uninterruptible power supply (UPS) solutions providing a structural growth opportunity beyond EV batteries. To capture rising demand for data center backup power and grid-scale energy storage, SDI plans to expand its US LFP battery production capacity to the mid-30GWh range by end-2027. We see the expanding ESS business supporting SDI's mid- to long-term earnings growth.
- **KEPCO (015760.KS; Underweight; PT W29,000; covered by Young Suk Shin)**: While AI data centers and semiconductor fabs should support structurally higher electricity demand in Korea, we see limited earnings upside for KEPCO given its weakening

profitability and constrained tariff flexibility. Following three years of earnings recovery, margins are coming under renewed pressure from higher fuel costs and a lower nuclear generation mix as evidenced by weaker-than-expected 2Q26 results. Meanwhile, further tariff hikes appear unlikely in the near term, following substantial increases since 2022, limiting KEPCO's ability to pass through rising costs. Combined with its highly leveraged balance sheet and growing capex requirements with regards to grid expansion, we believe these constraints could limit deleveraging and cap re-rating opportunities.

~US$350bn of Committed Investment

Exhibit 94: US$350bn in notable investments in Asia Cloud and AI Infrastructure, with upside, in our view

Company	Value (US$ bn)	Investment Scope
Malaysia		
Amazon Web Services (AWS)	6.0	Expand AI & cloud infrastructure by 2037
AirTrunk	NA	JHB1 DC, 50MW iniitally by 2024
Microsoft	2.2	Expand AI & cloud infrastructure 2024-28
Google	2.4	Expand AI & cloud infrastructure by 2035
Nvidia - YTL Power	4.3	AI Cloud and Supercomputer Infrastructure
GDS Holdings	2.0	Johor Data Center Expansion
ST Telemedia Global DC	1.0	Johor Data Center Expansion
NTT Communications	NA	290MW campus (68.5acres), 48MW by Apr-27
Yondr Group	NA	200MW campus (72.8acres at Johor STP)
Bridge DC	NA	110MW campus at Johor STP
PDG	NA	150MW campus (31acres at Johor STP), 60MW by 2Q24
AirTrunk	3.0	JHB3 & JHB4, >280MW IT load (MYR12bn)
Oracle	6.5	Cloud region & AI infrastructure pledge
Google - Gamuda	0.2	Port Dickson hyperscale DC with Gamuda (May-25)
AIMS Data Centre	0.9	200MW hyperscale campus, Cyberjaya (RM4bn)
Top Hyperscalre - Data Center Operator	NA	Two AI DCs in Malaysia anchored by Hyperscaler
Thailand		
Microsoft, Google	3.5	Expand AI & cloud infrastructure
Amazon Web Services (AWS)	5.0	Expand AI & cloud infrastructure by 2037
Gulf Energy	0.1	Data Center Expansion with AIS and Singtel
GDS Holdings	0.8	Hyperscale DC Project operational by 2027
Darmac	1.0	3-4 each 20MW DC Projects
TikTok	8.8	Datacenter and Cloud infrastructure
Google	NA	Bangkok cloud region launched Jan-26
True IDC, GSA DC, Stellar DC	3.1	7 DC/hosting projects approved by BOI (Jan-26)
Bridge Data Centres	0.1	134MW IT load DC in Chonburi (THB4.6bn)
Microsoft	1.0	Cloud & AI DC infrastructure 2026-28 (>US$1bn)
Indonesia		
Microsoft	1.7	Expand AI & cloud infrastructure 2024-28
GDS Holdings	NA	Batam Data Center Expansion
Firmus (Nvidia-backed)	NA	360MW AI campus in Batam, ~170k GPUs
BDx Data Centers	NA	500MW campus in West Java; 6 DCs in Indonesia
Singapore		
Amazon Web Services (AWS)	8.6	Expand AI & cloud infrastructure by 2028
Singtel	1.0	~90MW Advanced Data Center pipeline in SG,TH&MY
Google	4.2	Increase Investments to US$5bn with 4th DC
Singapore Government	0.7	Govt. comits ~US$700 in AI Development
Singapore Government	NA	Commits to 700MW DC Park
Singtel / KKR	NA	82% stake in ST Telemedia Global DC (US$6.6bn, 2026)
Microsoft	5.5	Cloud & AI infrastructure and operations 2025-29
Philippines		
Philippine Government	14.6	AI compute & DC pillar of US$34.4bn masterplan to 2033
ASEAN Total	**88.2**	

Source: Company Data, Newsflow, Morgan Stanley Research

Exhibit 95: ...continued

Company	Value (US$ bn)	Investment Scope
Japan		
Amazon Web Services (AWS)	15.0	Expand cloud infrastructure from 2023-27
Microsoft	2.9	AI & cloud infrastructure 2024-26
Oracle	8.0	Expand cloud infrastructure by 2034
Google	1.0	Boost connectivity to Japan via two subsea cables
Microsoft	10.0	AI & cloud infrastructure 2026-29 (with SoftBank, Sakura)
SoftBank / Sakura Internet	NA	Domestic GPU compute delivered via Azure (data in Japan)
Korea		
SK Telecom / AWS	4.9	100MW DC in Ulsan
Samsung SDS	6.7	~160MW of capacity annonunced
SK Telecom	NA	Stargate Korea' AI DC in southwest Korea (MoU)
Samsung SDS	NA	AI DC in Pohang, ~20MW initial phase (MoU)
Nvidia / Korean Government	NA	>260k Nvidia GPUs for sovereign AI deployment
Korean Government	NA	18.4GW of national AI DC capacity targeted by 2035
NAVER / NVIDIA / Brookfield	NA	Sovereign AI factory expansion to 200MW (proposed)
Australia		
Amazon Web Services (AWS)	5.0	Expand cloud infrastructure in Sydney through 2027
Microsoft	1.0	96MW Sydney Data Center
Microsoft	2.2	Expand AI & cloud infrastructure by 2026
NEXTDC	NA	550MW Sydney DC
Microsoft	18.0	A$25bn Azure AI capacity expansion by 2029
Amazon Web Services (AWS)	14.4	A$20bn DC infrastructure expansion by 2029
NEXTDC	5.0	A$7bn Sydney AI campus (Eastern Creek S7), up to 50MW
AirTrunk	3.6	MEL2 354MW Melbourne campus
Greater China		
Hongkong	0.4	Data Center Expansion in Hong Kong
Alibaba	52.0	AI infrastructure
Tencent	13.0	Increased annual cloud capex
ByteDance	22.0	Increased annual cloud capex
Baidu	1.4	Increased annual cloud capex
Kuaishou	2.0	Increased annual cloud capex
Meituan	1.5	Increased annual cloud capex
Greater China	**92.3**	
India		
Reliance	NA	1GW AI ready DC partnering with Nvidia
TATA Communications	NA	AI ready DC partnering with Nvidia
Amazon Web Services (AWS)	4.0	Expand cloud infrastructure
Princeton Digital Group	1.0	AI ready DC with total capacity of 230 MW
ST Telemedia Global DC	1.0	Data Center Expansion in India
Google	NA	Soverign AI cloud and Gemini 1.5 Flash AI model DC
Microsoft	3.5	Cloud and Gen AI
TCS	7.0	1GW of DC
Google	15.0	GW-scale AI hub, Visakhapatnam (2026-30)
Microsoft	17.5	Cloud & AI infrastructure, skilling through 2029
Amazon Web Services (AWS)	12.7	DC expansion in Telangana & Maharashtra (of US$35bn total)
AirTrunk	5.0	India market entry, >US$5bn near-term investment
India Total	**66.7**	
Asia Others		
Keppel DC REIT	2.0	Data Center Expansion in China and Keppel Pipeline
Asia Total	**346.9**	

Source: Company Data, Newsflow, Morgan Stanley Research

Exhibit 96: Tracking contracted capacity announcements

S.No.	Date	Customer / operator / developer	MW
India			**4,471**
1	Jan 2025	CapitaLand India Trust	34
2	Aug 2025	Reliance Intelligence (own use) / Reliance Industries	832
3	Oct 2025	Google / AdaniConneX / Nxtra by Airtel	1,000
4	Nov 2025	Reliance Intelligence (own use) / Reliance Industries	1,000
5	Nov 2025	Digital Connexion (Reliance / Brookfield / Digital Realty)	1,000
6	Dec 2025	Microsoft (self-build)	n.d.
7	Jan 2026	CapitaLand India Trust	37
8	Feb 2026	Hyperscaler / TCS HyperVault / Tata Group	100
9	Feb 2026	ESR	60
10	Jun 2026	Meta / Reliance Industries	168
11	Jul 2026	AWS (self-build)	n.d.
12	Oct 2026	CoreWeave / AdaniConneX	240
ASEAN			**3,109**
Malaysia			***2,152***
13	Jan 2025	STACK Infrastructure	220
14	Jun 2025	NEXTDC	10
15	Oct 2025	Microsoft (self-build)	n.d.
16	Dec 2025	Vantage Data Centers	16
17	Apr 2026	AirTrunk	280
18	Apr 2026	TM Nxera (Telekom Malaysia / Singtel Nxera)	64
19	May 2026	DDSP	45
20	May 2026	Digital Halo	20
21	Jun 2026	Racks Central	70
22	Aug 2026	Bitdeer AI	3
23	Aug 2026	Bitdeer AI	10
24	Sep 2026	Hyperscaler	n.d.
25	Sep 2026	Bitdeer AI	15
26	Oct 2026	Singapore Data Center Developer	1,400
Indonesia			***600***
27	Jun 2026	AI-native ecosystem	240
28	Aug 2026	CoreWeave	360
Thailand			***332***
29	Jul 2025	Bridge Data Centres	200
30	Mar 2026	Microsoft (self-build)	n.d.
31	Sep 2026	Evolution Data Centres	12
32	Oct 2026	Singapore Data Center Developer	120
Singapore			***25***
33	Apr 2026	Keppel	25
Southeast Asia (multi-country)			-
34	Sep 2026	Meta	n.d.
Australia (incl. NZ)			**1,719**
35	Jun 2025	AWS (self-build)	n.d.
36	Sep 2025	CDC Data Centres	100
37	Dec 2025	Hyperscaler (MoU) / NEXTDC	550
38	Mar 2026	Undisclosed global technology customer	n.d.
39	Mar 2026	Sharon AI / GreenSquareDC	15
40	Apr 2026	NEXTDC	250
41	May 2026	CDC Data Centres	555
42	May 2026	Sharon AI	n.d.
43	Jul 2026	Sharon AI / NEXTDC	72
44	Jul 2026	Sharon AI	14
45	Jul 2026	Sharon AI	n.d.
46	Aug 2026	Sharon AI	n.d.
47	Aug 2026	NEXTDC	163
48	Sep 2026	Hyperscaler / Zerra DC / Western Downs Digital Park	n.d.
Japan		公众号：调研先知 微信：DYXZ0524	**1,120**
49	Feb 2025	Colt Data Centre Services	20
50	Mar 2026	AirTrunk	100
51	Apr 2026	Microsoft / SoftBank / Sakura Internet (partner capacity)	n.d.
52	Aug 2026	Goodman Group	50
53	Aug 2026	Goodman Group	950
South Korea			**151**
54	Jun 2025	AWS / SK Group / SK Telecom	103
55	Nov 2025	Princeton Digital Group	48
Total			**10,570**

Source: Newsflow, Morgan Stanley Research

Global Comparable Companies

Exhibit 97: Utilities Global Comps

Company Name	Share Price, Last Close	Market cap, current, USD (Mn)	Rating	Price/Earnings (x)		EV/EBITDA (x)		Price/Book (x)		RoE (%)		Net debt to Equity	
India Companies				2026e	2027e	2026e	2027e	2026e	2027e	2026e	2027e	2026e	2027e
NTPC	298.0	31,060.0	Overweight	12.7 e	12.3 e	9.4 e	10.0 e	1.3 e	1.3 e	11.4% e	11.0% e	138.8% e	159.1% e
Power Grid Corporation of India	247.4	24,457.7	Equal-Weight	13.2 e	11.9 e	8.8 e	8.2 e	2.1 e	1.9 e	17.4% e	17.8% e	135.2% e	127.5% e
Adani Power Ltd	182.6	37,824.2	Overweight	27.8 e	27.4 e	18.1 e	17.4 e	4.6 e	3.9 e	19.9% e	16.8% e	96.1% e	110.2% e
Adani Energy Solutions Limited	1,220.0	16,771.3	Overweight	37.6 e	28.5 e	13.8 e	10.7 e	5.0 e	4.1 e	16.3% e	17.5% e	174.6% e	167.6% e
Adani Green Energy Ltd	1,185.1	21,797.3	Overweight	110.0 e	66.1 e	23.8 e	18.4 e	9.4 e	8.3 e	5.1% e	14.3% e	576.3% e	626.9% e
Tata Power Co	348.1	11,958.0	Equal-Weight	23.9 e	23.2 e	10.1 e	9.9 e	2.6 e	2.4 e	12.0% e	11.2% e	125.1% e	145.0% e
Torrent Power Ltd	1,369.0	6,422.8	Equal-Weight	20.9 e	20.1 e	12.8 e	12.0 e	3.0 e	2.8 e	15.2% e	14.7% e	113.5% e	100.8% e
ISW Energy Limited	448.6	9,002.1	Overweight	46.8 e	35.9 e	12.6 e	12.1 e	2.1 e	2.0 e	5.7% e	5.9% e	173.7% e	214.9% e
India Average				**31.7**	**34.9**	**12.3**	**11.2**	**3.3**	**2.9**	**13.4%**	**13.4%**	**1.52**	**1.73**
Australia Companies													
AGL Energy Ltd	9.1	4,207.4	Underweight*	14.9	16.6 e	5.5	6.2 e	1.1	1.1 e	13.0%	10.8% e	59.2%	66.2% e
APA Group	11.5	10,751.8	Equal-Weight	57.0	45.5 e	12.4	12.3 e	5.0	6.7 e	8.8%	12.4% e	363.8%	585.0% e
Origin Energy Ltd	12.2	14,619.2	Underweight	12.0	19.7 e	6.9	7.7 e	1.9	2.3 e	15.9%	10.5% e	46.2%	58.2% e
Australia Average				**26.0**	**25.3**	**6.2**	**6.9**	**2.6**	**3.4**	**12.5%**	**11.2%**	**1.87**	**2.34**
China Companies													
Huaneng Power International Inc	5.6	3,436.3	Equal-Weight	7.3 e	7.8 e	7.6 e	7.4 e	1.0 e	1.0 e	14.5% e	12.8% e	389.7% e	347.6% e
China Longyuan Power Group	5.1	2,139.5	Equal-Weight	10.7 e	7.9 e	13.2 e	11.7 e	0.5 e	0.6 e	4.5% e	5.2% e	181.0% e	175.6% e
China Resources Power	18.6	12,357.3	Equal-Weight	8.0 e	7.9 e	7.5 e	7.5 e	0.8 e	0.7 e	10.1% e	10.0% e	169.6% e	166.5% e
CGN Power Co., Ltd	3.3	4,709.1	Equal-Weight	12.7 e	11.7 e	11.0 e	10.8 e	1.1 e	1.0 e	8.9% e	9.2% e	166.0% e	177.7% e
China Average				**10.5**	**10.0**	**10.1**	**9.6**	**0.7**	**0.7**	**8.5%**	**8.5%**	**2.29**	**2.19**
Hong Kong Companies													
CLP Holdings	76.1	24,437.4	Equal-Weight	13.4 e	13.1 e	6.8 e	6.4 e	1.7 e	1.6 e	13.3% e	12.9% e	42.1% e	33.1% e
Power Assets Holdings Ltd	60.6	16,360.0	Equal-Weight	22.5 e	24.5 e	10.7 e	12.8 e	1.3 e	1.3 e	6.3% e	5.2% e	155.2% e	153.3% e
CK Infrastructure Holdings Ltd	67.3	21,609.8	Equal-Weight	22.2 e	20.3 e	14.8 e	16.2 e	1.1 e	1.1 e	5.5% e	5.4% e	(23.5%) e	(23.2%) e
Hong Kong Average				**18.8**	**18.7**	**11.1**	**11.7**	**1.3**	**1.3**	**8.0%**	**7.5%**	**0.07**	**0.07**
Japan Companies													
Chugoku Electric Power	1,005.5	2,461.8	Overweight	9.2 e	6.3 e	18.1 e	16.8 e	0.5 e	0.4 e	5.0% e	7.3% e	405.2% e	403.3% e
Tohoku Electric Power	1,282.6	4,989.2	Equal-Weight	6.2 e	8.5 e	10.2 e	11.5 e	0.5 e	0.5 e	9.3% e	6.2% e	253.0% e	248.0% e
Kansai Electric Power	2,734.0	19,311.9	Equal-Weight	9.7 e	14.1 e	11.0 e	14.2 e	0.8 e	0.8 e	5.1% e	5.9% e	104.4% e	109.4% e
Chubu Electric Power	2,620.0	12,515.9	Equal-Weight	11.0 e	9.9 e	14.6 e	15.1 e	0.6 e	0.6 e	5.7% e	6.1% e	93.2% e	91.1% e
Shikoku Electric Power	2,116.5	2,798.7	Equal-Weight	14.3 e	11.4 e	14.2 e	13.0 e	0.8 e	0.8 e	6.3% e	7.2% e	165.8% e	165.3% e
Hokuriku Electric Power	1,063.5	1,426.6	Equal-Weight	9.4 e	8.2 e	13.3 e	13.0 e	0.5 e	0.5 e	5.3% e	5.8% e	214.5% e	216.0% e
Hokkaido Electric Power	1,084.0	1,484.7	Overweight	9.4 e	5.8 e	17.4 e	15.2 e	0.5 e	0.4 e	5.2% e	8.1% e	354.9% e	343.4% e
Electric Power Development	3,995.0	4,461.7	Underweight	8.7 e	10.9 e	11.0 e	12.0 e	0.5 e	0.5 e	5.8% e	4.4% e	115.1% e	116.9% e
Japan Average				**9.7**	**9.4**	**14.1**	**13.8**	**0.6**	**0.6**	**6.0%**	**6.4%**	**2.13**	**2.11**
Malaysia Companies													
Tenaga Nasional	13.3	18,923.1	Overweight	15.3 e	14.2 e	4.8 e	4.7 e	1.5 e	1.4 e	10.0% e	10.5% e	118.4% e	121.3% e
Malaysia Average				**17.6**	**16.3**	**8.6**	**8.1**	**2.6**	**2.5**	**15.8%**	**16.5%**	**0.06**	**0.02**
Indonesia Companies													
Perusahaan Gas Negara	1,365.0	1,845.0	Equal-Weight	5.5 e	5.8 e	2.0 e	2.3 e	0.6 e	0.7 e	12.3% e	10.9% e	(48.2%) e	(51.0%) e
Indonesia Average				**5.5**	**5.8**	**2.0**	**2.3**	**0.6**	**0.7**	**12.3%**	**10.9%**	**- 0.48**	**- 0.51**
Philippines Companies													
Manila Electric Company	418.6	7,833.2	Overweight	8.6 e	7.9 e	7.7 e	6.7 e	2.5 e	2.2 e	33.0% e	31.4% e	84.3% e	69.0% e
Aboitiz Power Corp*	46.0	5,232.6	NA	9.2 e	8.7 e	10.5 e	10.0 e	1.5 e	1.4 e	16.4% e	16.6% e	1.33	1.24
Philippines Average				**8.9**	**8.3**	**9.1**	**8.4**	**2.0**	**1.8**	**24.7%**	**24.0%**	**1.09**	**0.96**
Thailand Companies													
Gulf Development PCL	61.8	27,469.1	Overweight	25.8 e	23.1 e	24.9 e	23.0 e	2.6 e	2.5 e	10.7% e	11.3% e	90.5% e	85.8% e
Global Power Synergy PCL	51.0	4,265.0	Underweight	27.2 e	23.7 e	10.8 e	10.7 e	1.3 e	1.3 e	5.1% e	5.7% e	79.1% e	69.0% e
Thailand Average				**25.3**	**21.0**	**17.9**	**16.7**	**1.6**	**1.8**	**7.2%**	**8.0%**	**1.23**	**1.29**
Singapore Companies													
SembCorp Industries Ltd	6.0	8,398.8	Overweight	11.4 e	10.5 e	10.4 e	8.8 e	1.8 e	1.7 e	16.9% e	17.0% e	202.5% e	187.2% e
Keppel Ltd	9.0	14,327.8	Overweight	16.4 e	14.9 e	13.2 e	12.4 e	1.7 e	1.7 e	10.6% e	11.3% e	41.9% e	26.0% e
Singapore Average				**13.9**	**12.7**	**11.8**	**10.6**	**1.8**	**1.7**	**13.7%**	**14.2%**	**0.42**	**0.26**
Asia Average				**17.6**	**15.8**	**9.9**	**9.5**	**1.8**	**1.8**	**12.9%**	**12.7%**	**0.90**	**0.83**
RWE AG	56.8	49,716.7	Overweight	19.5 e	15.6 e	10.0 e	9.1 e	1.4 e	1.3 e	6.3% e	7.0% e	6.9% e	19.8% e
SSE	2,564.0	41,931.5	Overweight	13.4 e	12.4 e	9.1 e	8.4 e	2.2 e	2.0 e	16.5% e	18.4% e	81.0% e	86.1% e
Orsted A/S	129.9	25,782.2	Overweight	18.1 e	17.1 e	7.1 e	6.4 e	1.3 e	1.4 e	7.9% e	7.8% e	56.9% e	62.3% e
National Grid plc	1,224.0	87,412.6	Overweight	13.3 e	12.5 e	11.4 e	10.8 e	1.5 e	1.4 e	11.7% e	11.8% e	114.8% e	121.9% e
Iberdrola SA	21.7	162,947.8	Equal-Weight	21.7 e	19.4 e	11.6 e	10.8 e	2.8 e	2.6 e	13.4% e	14.3% e	114.0% e	118.2% e
ENEL	9.2	107,656.0	Underweight*	12.9 e	13.2 e	8.2 e	8.3 e	2.9 e	2.8 e	21.7% e	21.8% e	229.2% e	248.3% e
Endesa SA	42.8	50,091.6	Underweight	18.3 e	17.7 e	9.1 e	9.1 e	5.4 e	5.7 e	28.3% e	30.4% e	135.6% e	153.2% e
E.ON	18.4	54,396.8	Overweight	16.8 e	14.2 e	10.4 e	9.2 e	2.4 e	2.2 e	14.9% e	16.6% e	231.7% e	226.0% e
ENGIE	23.1	12,920.8	Equal-Weight	21.4 e	18.6 e	10.5 e	9.2 e	1.8 e	1.7 e	8.6% e	9.5% e	112.9% e	108.3% e
EDP Renovaveis	11.9	14,116.5	Equal-Weight	24.7 e	25.1 e	10.5 e	10.8 e	1.2 e	1.2 e	4.8% e	4.9% e	87.5% e	84.3% e
EDP Energias de Portugal SA	4.7	22,275.7	Overweight	13.6 e	14.0 e	6.8 e	6.9 e	1.7 e	1.6 e	12.7% e	11.8% e	160.4% e	148.1% e
Veolia	31.8	26,527.1	Equal-Weight	14.3 e	13.1 e	6.0 e	5.5 e	2.3 e	2.2 e	15.0% e	17.3% e	224.1% e	196.0% e
European Average				**17.3**	**16.1**	**9.2**	**8.7**	**2.2**	**2.1**	**13.7%**	**14.3%**	**1.30**	**1.31**
AES Corp	15.0	10,680.2	Equal-Weight	5.8 e	5.6 e	8.9 e	8.5 e	2.1 e	1.7 e	45.4% e	36.5% e	606.3% e	511.7% e
NextEra Energy Inc	81.9	170,841.6	Overweight	20.2 e	18.6 e	16.4 e	14.9 e	2.4 e	2.2 e	12.7% e	13.1% e	124.0% e	137.7% e
American Electric Power Co	130.6	71,129.1	Overweight	20.0 e	18.6 e	13.6 e	13.4 e	2.1 e	2.0 e	11.5% e	11.1% e	152.5% e	156.2% e
Constellation Energy Corporation	256.2	90,422.8	Overweight	21.0 e	19.2 e	14.7 e	13.6 e	2.7 e	2.5 e	29.7% e	14.0% e	111.2% e	102.6% e
Public Service Enterprise Group Inc	72.7	36,245.1	Overweight	16.5 e	15.6 e	11.8 e	11.6 e	2.1 e	2.0 e	12.9% e	13.2% e	130.3% e	138.3% e
Vistra Corp	140.8	47,267.5	Overweight	17.7 e	17.6 e	10.0 e	9.7 e	12.6 e	9.0 e	113.0% e	70.2% e	398.4% e	290.6% e
Consolidated Edison Inc	116.3	42,996.3	Underweight	18.3 e	17.2 e	10.4 e	9.6 e	1.6 e	1.5 e	5.3% e	9.3% e	101.3% e	99.0% e
Talen Energy	351.4	15,676.2	Overweight	24.4 e	11.2 e	17.6 e	10.0 e	5.6 e	4.1 e	59.1% e	48.7% e	374.0% e	249.8% e
Duke Energy Corp	125.4	97,774.7	Equal-Weight	18.7 e	17.9 e	11.7 e	11.2 e	1.8 e	1.7 e	10.3% e	10.4% e	152.2% e	152.4% e
Sempra	84.8	55,431.1	Overweight	16.7 e	15.0 e	14.7 e	16.8 e	1.6 e	1.6 e	10.7% e	10.9% e	59.2% e	57.2% e
Pinnacle West Capital Corp	106.6	12,920.8	Equal-Weight	21.4 e	18.6 e	10.5 e	9.2 e	1.8 e	1.7 e	8.6% e	9.5% e	112.9% e	108.3% e
Southern Company	93.8	30,159.3	Equal-Weight	20.0 e	18.6 e	13.4 e	12.7 e	2.1 e	1.9 e	11.3% e	11.3% e	140.9% e	147.1% e
PG&E Corp.	13.0	28,586.7	Equal-Weight	7.7 e	7.0 e	8.3 e	7.9 e	0.8 e	0.8 e	11.6% e	11.6% e	178.7% e	167.5% e
Ameren Corp	108.9	30,159.3	Equal-Weight	20.0 e	18.6 e	13.4 e	12.7 e	2.1 e	1.9 e	11.3% e	11.3% e	140.9% e	147.1% e
US Average				**17.7**	**15.7**	**11.1**	**10.6**	**3.0**	**2.5**	**25.9%**	**20.1%**	**1.99**	**1.77**
Latin America Companies													
Enel plc SA	6.5	6,583.1	Overweight	15.7 e	13.2 e	6.4 e	8.0 e	1.6 e	1.5 e	11.3% e	12.2% e	171.0% e	166.3% e
Engie Brasil	31.1	8,141.9	Underweight*	9.4 e	12.2 e	5.8 e	7.0 e	2.3 e	2.1 e	29.8% e	19.0% e	182.8% e	171.5% e
Enel Chile	8.4	5,957.3	Overweight	10.6 e	11.2 e	6.2 e	6.2 e	1.1 e	1.1 e	11.1% e	10.1% e	53.7% e	53.4% e
CPFL ENERGIA	49.5	11,304.9	Underweight	10.3 e	12.4 e	7.2 e	8.0 e	2.7 e	2.6 e	24.7% e	21.7% e	174.5% e	191.1% e
Transmissora Alianca Energia Eletrica SA	44.9	3,066.4	Underweight	14.2 e	11.3 e	10.9 e	9.3 e	15.3 e	15.3 e	101.5% e	136.8% e	1,184.8% e	1,143.6% e
Latin America Average				**11.9**	**12.1**	**7.7**	**7.7**	**4.6**	**4.5**	**35.7%**	**39.8%**	**3.53**	**3.45**
Global Average				**16.1**	**14.9**	**9.5**	**9.1**	**2.9**	**2.7**	**21.9%**	**21.7%**	**1.9**	**1.9**

Source: Refinitiv, Morgan Stanley Research estimates. Price data as at Oct 22, 2025

Exhibit 98: Power Equipment Comps

Company Name	Share Price, Last Close	Market cap, current, USD (MM)	Rating	Price/Earnings (x)			EV/EBITDA (x)			Price/Book (x)			RoE (%)			Dividend yield (%)		
Solar Equipment				2026e	2027e	2028e	2026e	2027e	2028e	2026e	2027e	2028e	2026e	2027e	2028e	2026e	2027e	2028e
DR Laser	86.4	3,581.2	Equal-Weight	27.4 e	23.9 e	NA	24.9 e	21.6 e	NA	4.7 e	3.9 e	NA	20.6% e	19.7% e	NA	NA	NA	NA
First Solar Inc	171.3	18,404.2	Overweight	NA	6.3 e	5.6 e	6.4 e	3.4 e	2.1 e	1.6 e	1.3 e	1.1 e	20.7% e	26.0% e	23.2% e	0.0% e	0.0% e	0.0% e
Suzhou Maxwell Technologies Co Ltd	138.4	5,558.0	Underweight	63.3 e	52.5 e	NA	33.1 e	27.5 e	NA	4.5 e	4.1 e	NA	7.5% e	8.5% e	NA	0.2% e	0.2% e	NA
Xinyi Solar Holdings Ltd	1.8	2,118.3	Overweight	19.4 e	6.1 e	5.1 e	8.2 e	5.6 e	4.9 e	0.5 e	0.4 e	0.4 e	2.4% e	7.6% e	8.8% e	2.6% e	8.1% e	9.7% e
Flat Glass Group Co Ltd	5.1	272.9	Overweight	NM	20.8 e	8.9 e	10.2 e	6.9 e	5.2 e	0.5 e	0.5 e	0.4 e	(2.5%) e	2.2% e	5.1% e	0.0% e	1.7% e	4.0% e
China Jushi	32.9	19,528.4	Overweight	17.5 e	9.4 e	8.3 e	12.0 e	6.7 e	5.7 e	3.7 e	3.0 e	2.5 e	24.2% e	39.8% e	36.6% e	2.5% e	4.7% e	5.2% e
Hangzhou First Applied Material Co. Ltd	13.2	5,044.9	Overweight	21.5 e	17.0 e	15.0 e	11.7 e	9.7 e	8.3 e	1.9 e	1.8 e	1.7 e	9.7% e	11.4% e	12.2% e	1.1% e	2.4% e	3.0% e
LONGi Green Energy Technology Co Ltd	11.3	12,668.3	Underweight	NM	91.4 e	77.4 e	18.6 e	6.4 e	5.3 e	1.7 e	1.6 e	1.6 e	(5.1%) e	1.8% e	2.1% e	0.0% e	0.0% e	0.0% e
Tongwei Co. Ltd	11.5	7,519.3	Equal-Weight	NM	77.3 e	30.6 e	12.9 e	6.7 e	5.6 e	1.5 e	1.5 e	1.4 e	(11.7%) e	1.9% e	4.7% e	0.0% e	0.0% e	0.0% e
JA Solar Technology Co Ltd	6.6	3,208.3	Equal-Weight	NM	65.3 e	43.9 e	7.9 e	3.2 e	2.2 e	1.0 e	1.0 e	1.0 e	(12.6%) e	1.6% e	2.3% e	0.0% e	0.2% e	0.2% e
Solar Equipment Average				**29.8**	**37.0**	**24.4**	**14.6**	**9.8**	**4.9**	**2.2**	**1.9**	**1.3**	**5.3%**	**12.1%**	**11.9%**	**0.7%**	**1.9%**	**2.8%**
Battery Equipment																		
Contemporary Amperex Technology Co. Ltd	237.6	145,595.4	Overweight	11.3 e	9.6 e	7.7 e	6.6 e	5.2 e	3.7 e	2.8 e	2.4 e	2.1 e	28.2% e	28.3% e	30.2% e	4.4% e	5.2% e	7.2% e
EVE Energy Co Ltd	44.3	13,607.3	Equal-Weight	13.5 e	11.7 e	10.8 e	8.4 e	8.4 e	6.6 e	1.9 e	1.7 e	1.5 e	16.1% e	16.4% e	15.5% e	1.2% e	1.5% e	1.5% e
LG Chem	238,000.0	12,563.6	Equal-Weight	NM	33.2 e	17.2 e	6.4 e	5.0 e	4.1 e	0.5 e	0.5 e	0.5 e	(1.1%) e	1.5% e	2.8% e	0.0% e	0.0% e	0.6% e
Samsung SDI	512,000.0	31,099.3	Overweight	68.8 e	49.2 e	33.7 e	13.8 e	11.2 e	9.6 e	1.8 e	1.7 e	1.6 e	2.7% e	3.6% e	5.1% e	0.0% e	0.0% e	0.0% e
SK Innovation Co Ltd	141,700.0	18,055.8	Overweight	5.4 e	8.3 e	11.3 e	3.4 e	5.1 e	5.3 e	0.9 e	0.8 e	0.8 e	20.0% e	11.0% e	7.4% e	0.0% e	1.8% e	1.2% e
Tesla Inc	374.6	1,480,513.7	Equal-Weight	458.2 e	458.2 e	264.5 e	147.4 e	136.5 e	98.6 e	14.6 e	13.6 e	12.6 e	3.2% e	2.9% e	4.8% e	NA	NA	NA
Battery Equipment Average				**111.4**	**95.0**	**67.5**	**31.0**	**28.6**	**21.3**	**4.3**	**4.0**	**3.7**	**11.5%**	**10.8%**	**11.0%**	**0.9%**	**0.9%**	**0.9%**
Wind Equipment																		
Goldwind	7.3	701.2	Equal-Weight	6.4 e	5.3 e	4.4 e	8.8 e	7.6 e	6.4 e	0.6 e	0.5 e	0.5 e	9.4% e	10.6% e	11.8% e	4.7% e	5.8% e	6.9% e
Rhyut Heavy Industry Co., Ltd.	8.8	1,325.1	Overweight	12.1 e	10.0 e	8.9 e	5.3 e	4.8 e	4.6 e	0.8 e	0.8 e	0.8 e	7.3% e	8.4% e	9.1% e	3.4% e	4.7% e	5.7% e
Vestas Wind Systems A/S	190.2	28,449.5	Equal-Weight	18.5 e	15.1 e	13.2 e	11.7 e	9.9 e	8.7 e	5.7 e	4.7 e	3.8 e	35.1% e	36.8% e	34.5% e	1.1% e	1.3% e	1.5% e
GE Vernova	827.4	220,369.7	Overweight	26.1 e	36.4 e	25.0 e	34.8 e	22.7 e	15.3 e	18.7 e	18.1 e	15.5 e	75.5% e	50.3% e	70.9% e	0.2% e	0.4% e	0.4% e
Siemens Energy AG	122.2	116,480.1	Overweight	30.7 e	17.7 e	13.3 e	16.0 e	8.1 e	6.1 e	13.8 e	10.4 e	8.6 e	38.6% e	63.1% e	74.1% e	1.6% e	2.7% e	3.7% e
Wind Equipment Average				**18.8**	**16.9**	**13.0**	**16.3**	**10.6**	**8.2**	**7.9**	**6.9**	**5.8**	**33.2%**	**33.8%**	**40.1%**	**2.2%**	**3.0%**	**3.6%**
Green Hydrogen Equipment																		
LONGi Green Energy Technology Co Ltd	11.3	12,668.3	Underweight	NA	91.4 e	77.4 e	18.6 e	6.4 e	5.3 e	1.7 e	1.6 e	1.6 e	(5.1%) e	1.8% e	2.1% e	0.0% e	0.0% e	0.0% e
ITM Power	80.7	747.3	Overweight	NM	3,152.7 e	57.2 e	NM	33.4 e	15.1 e	2.6 e	2.6 e	2.4 e	(9.3%) e	0.1% e	4.5% e	0.0% e	0.0% e	0.0% e
NEL ASA	2.0	389.3	Underweight	NM	NM	NM	NM	NM	57.9 e	1.1 e	1.2 e	1.3 e	(12.7%) e	(10.2%) e	(7.4%) e	0.0% e	0.0% e	0.0% e
Plug Power Inc	1.4	1,928.1	Underweight	NM	NM	NM	NM	NM	NM	4.6 e	4.9 e	4.1 e	(57.2%) e	(62.0%) e	(33.5%) e	NA	NA	NA
Bloom Energy Corp	217.8	64,139.2	Overweight	84.7 e	54.1 e	29.5 e	66.5 e	31.6 e	16.5 e	31.5 e	17.6 e	9.9 e	97.0% e	52.8% e	54.2% e	NA	NA	NA
Hydrogen Equipment Average				**84.7**	**1,099.4**	**54.7**	**42.6**	**23.8**	**23.7**	**8.3**	**5.6**	**3.9**	**2.8%**	**-3.5%**	**4.0%**	**0.0%**	**0.0%**	**0.0%**
Grid Equipment																		
XJ Electric	22.8	3,479.4	Equal-Weight	22.4 e	18.9 e	17.3 e	10.5 e	8.6 e	7.5 e	1.8 e	1.7 e	1.5 e	8.5% e	9.5% e	9.6% e	0.9% e	1.0% e	1.1% e
NARI Technology	23.4	28,008.5	Overweight	20.0 e	17.6 e	15.7 e	13.5 e	11.8 e	10.3 e	3.3 e	3.0 e	2.8 e	17.8% e	18.6% e	19.2% e	2.7% e	3.0% e	3.4% e
Ningbo Orient Wires & Cables Co Ltd	35.7	4,262.5	Overweight	19.8 e	16.9 e	14.2 e	12.4 e	10.4 e	8.6 e	3.1 e	2.8 e	2.4 e	17.9% e	18.6% e	19.5% e	1.3% e	1.5% e	1.8% e
Henan Pinggao Electric	21.5	4,335.5	Overweight	21.6 e	17.9 e	15.6 e	10.7 e	8.7 e	7.7 e	2.4 e	2.2 e	2.1 e	12.0% e	13.5% e	14.4% e	1.9% e	2.2% e	2.6% e
Hitachi	5,562.0	166,817.3	Equal-Weight	26.0 e	21.1 e	17.4 e	12.0 e	10.1 e	8.7 e	3.7 e	3.3 e	2.9 e	14.6% e	17.3% e	19.0% e	1.0% e	1.1% e	1.2% e
GE Vernova	827.4	220,369.7	Overweight	26.1 e	36.4 e	25.0 e	34.8 e	22.7 e	15.3 e	18.7 e	18.1 e	15.5 e	75.5% e	50.3% e	70.9% e	0.2% e	0.4% e	0.4% e
Siemens Energy AG	122.2	116,480.1	Overweight	30.7 e	17.7 e	13.3 e	16.0 e	8.1 e	6.1 e	13.8 e	10.4 e	8.6 e	38.6% e	63.1% e	74.1% e	1.6% e	2.7% e	3.7% e
Sealtrium Limited	1.8	4,755.8	Underweight	14.0 e	12.5 e	13.2 e	7.2 e	6.3 e	7.2 e	0.9 e	0.8 e	0.8 e	6.6% e	7.1% e	6.3% e	2.1% e	2.4% e	2.3% e
Grid Equipment Average				**22.5**	**19.6**	**16.3**	**14.8**	**11.1**	**9.1**	**5.9**	**5.2**	**4.5**	**24.1%**	**25.2%**	**29.1%**	**1.5%**	**1.9%**	**2.1%**
Gas Power Equipment																		
Mitsubishi Heavy Industries	3,614.0	78,682.2	Overweight	28.0 e	24.2 e	21.0 e	11.2 e	9.5 e	8.2 e	3.4 e	3.0 e	2.7 e	14.0% e	14.2% e	14.4% e	1.2% e	1.3% e	1.4% e
Kawasaki Heavy Industries	2,163.0	12,101.0	Equal-Weight	19.1 e	14.8 e	13.4 e	11.1 e	9.3 e	8.6 e	2.3 e	1.8 e	1.6 e	12.4% e	13.2% e	13.2% e	NA	1.7% e	2.0% e
GE Vernova	827.4	220,369.7	Overweight	26.1 e	36.4 e	25.0 e	34.8 e	22.7 e	15.3 e	18.7 e	18.1 e	15.5 e	75.5% e	50.3% e	70.9% e	0.2% e	0.4% e	0.4% e
Siemens Energy AG	122.2	116,480.1	Overweight	30.7 e	17.7 e	13.3 e	16.0 e	8.1 e	6.1 e	13.8 e	10.4 e	8.6 e	38.6% e	63.1% e	74.1% e	1.6% e	2.7% e	3.7% e
Gas Power Average				**24.4**	**25.1**	**19.8**	**19.0**	**13.8**	**10.7**	**8.1**	**7.6**	**6.5**	**34.0%**	**25.9%**	**32.9%**	**0.7%**	**1.1%**	**1.3%**

* Indicates non-covered companies

Source: Refinitiv, Morgan Stanley Research estimates. Price data as at Oct 22, 2026