PL Capital
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Manthan
Industrials

P=AI^n

Since the time first published in 1905, the one equation even non-science folks would most probably be aware of is Einstein's $E=mc^2$. The special relativity theorem simply suggests that every mass has an intrinsic amount of energy which if fully converted can generate a huge amount of energy- a principle used in nuclear fusion, nuclear fission, how Sun generates so much energy and light and so on.

However, the way Artificial Intelligence (AI) has been catching up, we believe that soon the one equation that could bring more attention to policy makers, industries and consumers could be $P=AI^n$, P standing for power, which the way it may unfold may rise at a much faster rate than the advancement in AI. Why we say so? Read on!

No matter how smart you may think of yourself, studies suggest that our mind thinks only at ~10bps! That is why one finds it difficult to focus on multiple things at a time. However, if the ego of human superiority has been hurt, do note that there are around 85 billion neurons that gather almost a billion bps, which then filters out to 10bps!

With advancement of AI, the mischievous human mind's ultimate aim will always gravitate towards creating its own replica. Power is not only required in the usage of AI but also in production of the chips and the whole value chain, thermal management, and peripherals like buildings to store data centres, security systems around it and what not!

If one looks at solely the power consumption by data centres, it stood at only 415TWh in 2024. Power demand by data centres is expected to rise to 945TWh by 2030. To put things in context, India consumed ~1,500TWh in 2024 while the world consumed ~30,000TWh. So just by these numbers alone, it does not appear to be a cause of worry. However, considering that data centres are not spread all over but concentrated based on say the basis of demand, these data centres would have a vast impact on not only the power generation but grid management too. Currently also, in certain regions, data centres are reported to be consuming significant amount of energy. For example, in Ireland, data centres consume 20% of the metered electric supply. In the US, there are six states where data centres account for more than 10% of the electricity consumption with Virginia leading at +25%.

The high concentration is likely to bring a wave of opportunities for the following industries: power generation, T&D, EPCs, towers/cables, transformers, switchgears, grid-scale inverters, renewables, BESS, thermal management systems, power electronics and what not- beneficiaries of $P=AI^n$. Could these outshine all other sectors for the next decade? What do you think?

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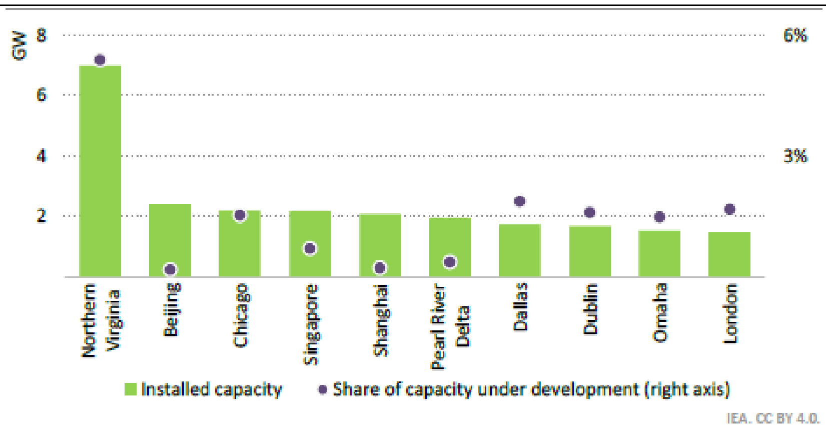
Exhibit 1: Global map of data centres, 2024

Data centres are often located in large clusters, potentially creating challenges for local electricity systems

Notes: GW = gigawatt. We define a data centre cluster as a group of data centres located within 100 km of each other. The ten largest clusters have been named. The Pearl River Delta encompasses the combined capacity of Guangzhou, Shenzhen and Hong Kong (China).

Source: IEA, PL

Exhibit 2: Top ten data centres, 2024



Based on the pipeline of announced projects, 15% of global data centre capacity under development is concentrated in the top 10 largest markets by installed capacity

Source: IEA, PL

PL's Recommendation Nomenclature

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

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