

Insights Unwrapped

Energy Storage Systems- Key Insights



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Some Types of Energy Storage Systems



Battery Storage

- + Long-term storage capability, readily available technology
- Limited storage capacity, high cost to capacity ratio
- 🕒 Can provide up to a few hours of energy

Thermal Storage

- + Cost effective, large storage capacity
- Short-term energy storage, limited by material density
- 🕒 Can provide energy for longer hours up to a couple of days



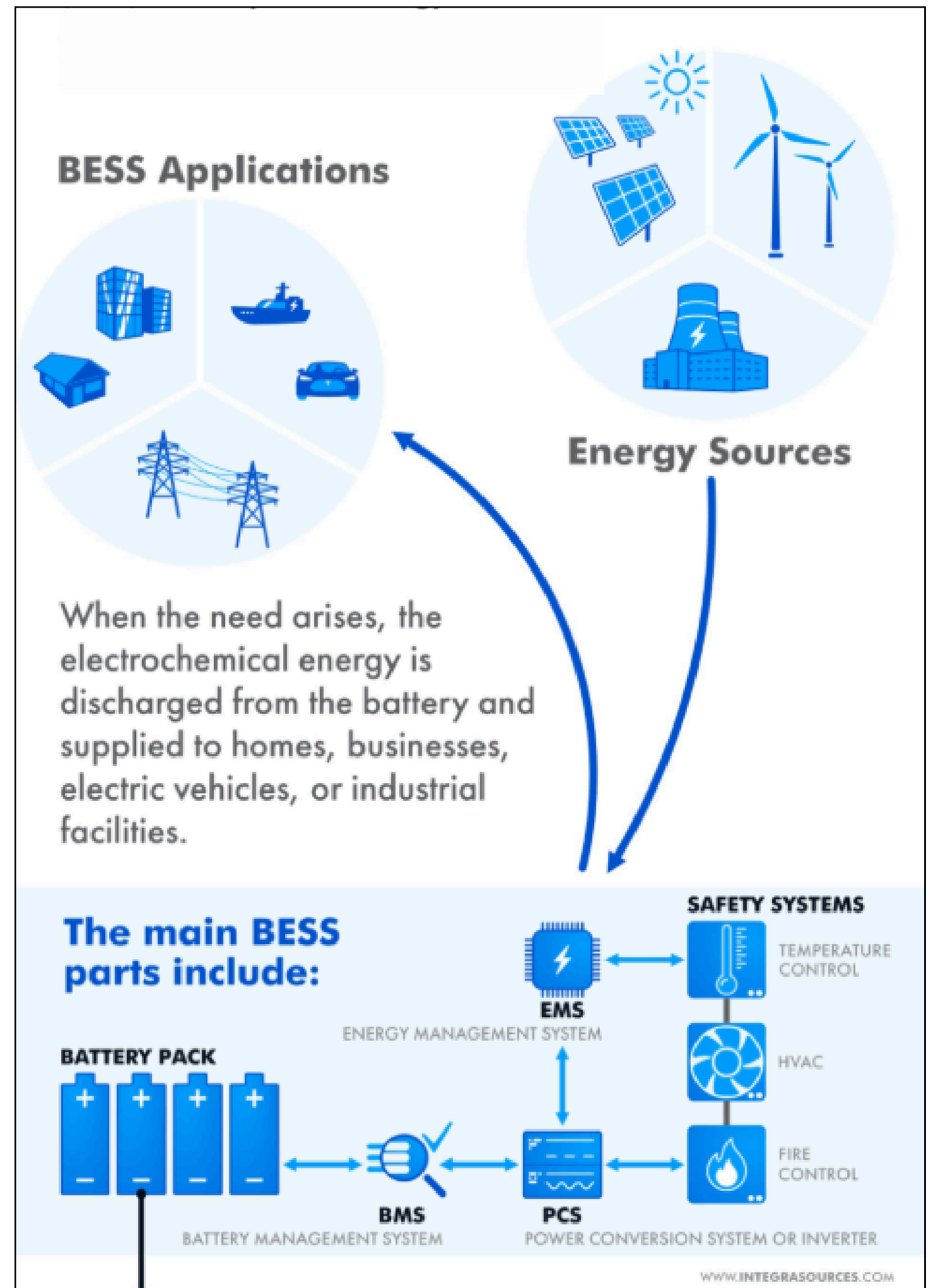
Pumped Hydro Storage

- + Ultra large capacity, long-term storage capability
- High initial investment, geographical complexities
- 🕒 Can provide energy for long-term duration

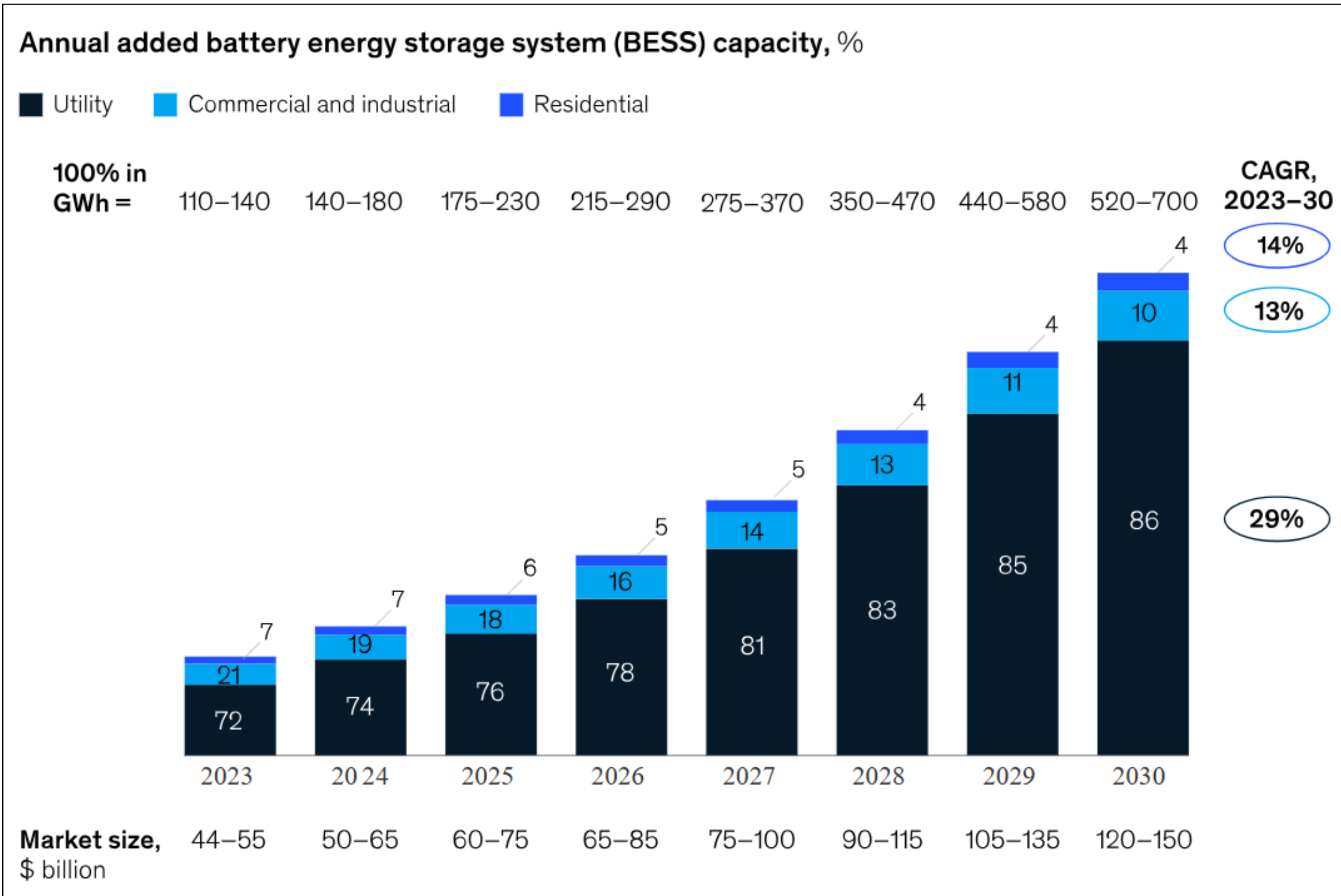
- India's Energy Storage System (ESS) market is set for remarkable growth, fueled by the nation's bold renewable energy goals and the critical need for grid stability as large-scale renewable energy capacities come online.
- Players such as IndiGrid and HG Infra Engineering are focused on Battery + ESS (BESS). In contrast, Greenko is solely concentrated on Pumped Hydro Storage (PHS), while JSW Energy has a presence across both BESS and PHS segments.

What is a BESS

A Battery Energy Storage System (BESS) is an energy storage system that captures energy from different sources like renewables, the grid, or generators and stores it in rechargeable batteries for later use.

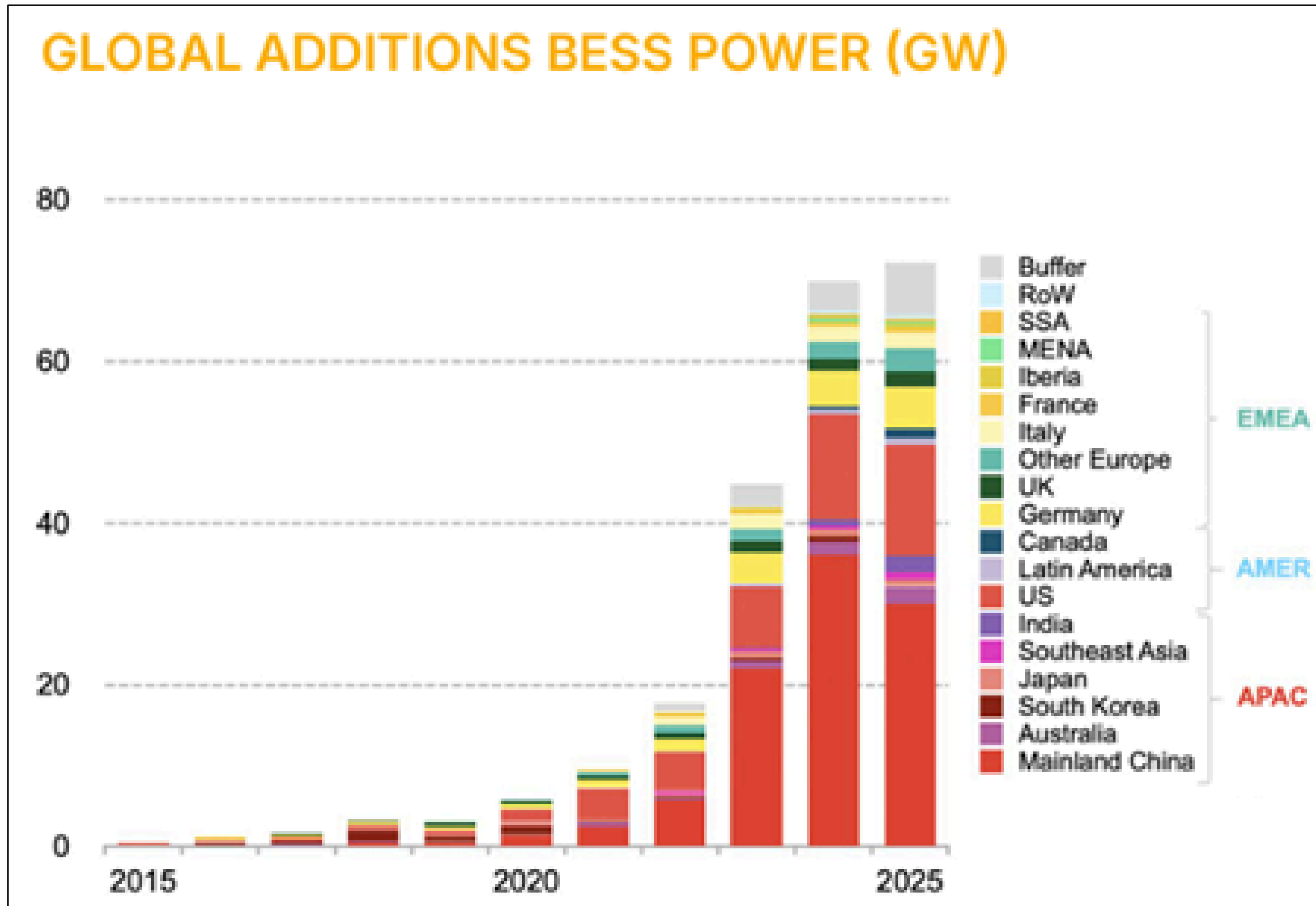


BESS Capacity is likely to be 5x between now and 2030



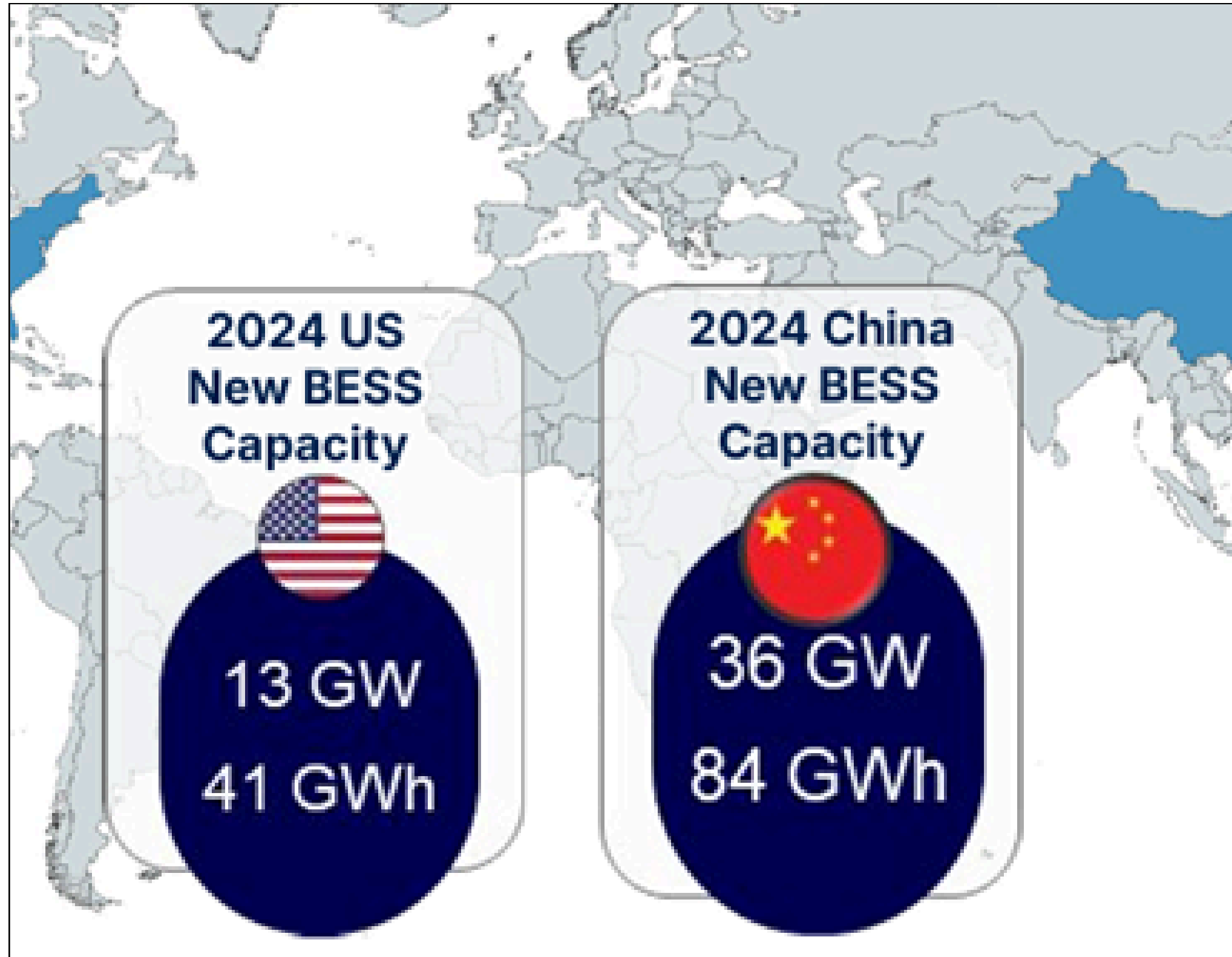
Source: McKinsey Energy Storage Insights

Steady Rise in BESS Power Additions



- In 2024, global BESS deployments reached 69GW, a 55% increase from 2023's 69GW, exceeding expectations
- The growth is driven by a few key regions: China (36GW), the US (13GW), Europe (10GW), and Australia (2GW)
- The data suggests a rapid global adoption of BESS, dominated by a few key players, aligning with the trend of increasing energy storage demand

China and US Markets lead in BESS Deployments



- The US and China together account for approximately 70% of all BESS projects in 2024 on a power basis
- China's BESS installations in 2024 added 36 GW / 84 GWh, a 64% increase from 2023
- The US energy storage deployments in 2024 are expected to reach 13 GW / 41 GWh, a 72% increase from 2023

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