REPORT SUMMARY | MARCH 2026

Catalysing Energy Storage in India

From Procurement to Reliable Power

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Although India has already met its 2030 renewable energy target, its renewable sector is facing challenges in scaling growth. While solar power continues to become more competitive, the need to meet daily evening peak demand is pushing electricity distribution companies (DISCOMs) to procure energy from hybrid systems or stand-alone battery energy storage systems (BESS) or explore other options such as firm and dispatchable renewable energy (FDRE), and round-the-clock (RTC) agreements.

To maintain a reliable and economic power grid, India will require over 60 GW of grid energy storage capacity by 2030, including 19 GW (128 GWh) of pumped storage projects (PSPs) and 42 GW (208 GWh) of BESS by 2030. As of July 2025, India has tendered 58 GWh of battery storage capacity, but only about 0.5 GWh is currently operational. By streamlining procurement and operations, India can rapidly convert this tendering momentum into operational assets and scale up storage capacity to meet its 2030 goals.

Storage technologies overview

The performance and cost-effectiveness of energy storage technologies vary by use case, with each technology suited to specific grid services depending on parameters like discharge duration, cycle life, and efficiency.

Lithium-ion (Li-ion) batteries, particularly lithium iron phosphate, currently dominate the Indian market due to their high efficiency, modularity, and rapidly declining costs. However, there is a strong interest in alternative storage technologies such as sodium-ion, flow batteries, and mechanical storage solutions such as PSPs. PSP remains especially cost-effective as a long-duration storage solution (8–10 hours).

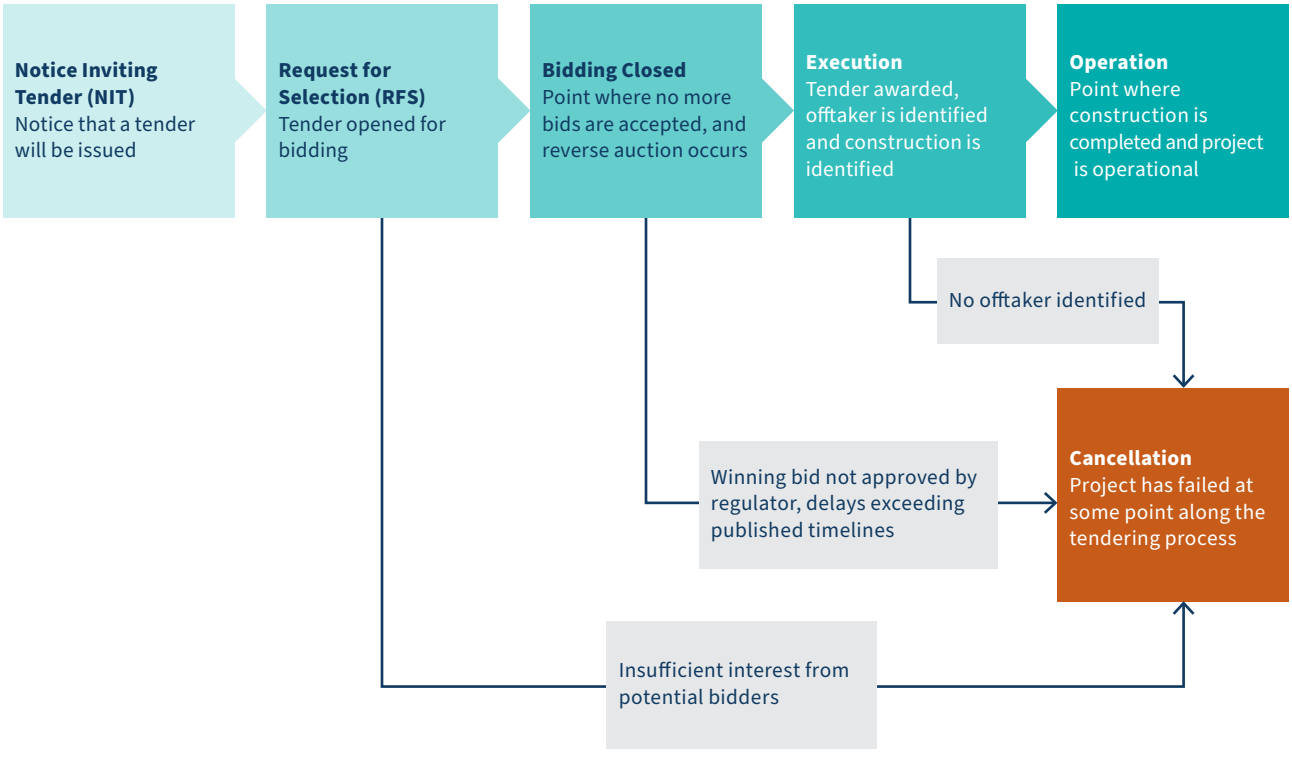
Selecting the appropriate storage technology will depend on performance metrics, life-cycle economics, and supply chain considerations. India has a cost advantage in balance of system, and engineering, procurement, and construction compared to global markets, but the complexity of sourcing, standardisation, and logistics for key components remains a challenge. The Indian power sector has an opportunity to scale up Li-ion BESS deployment in the short term while actively supporting domestic manufacturing and accelerating early pilots in alternative storage chemistries for longer-term resilience and cost reduction.

Storage procurement strategies

Declining battery costs and increasing project flexibility have made BESS a critical enabler for integrating renewable energy and meeting peak demand, and it is increasingly becoming an economic option for DISCOMS to serve end users. However, the ability for DISCOMS to procure BESS is shaped by system readiness, institutional capacity, and access to finance.

Given this diversity, a one-size-fits-all approach to storage procurement is not feasible. Instead, the inherent flexibility of BESS allows for a wide range of ownership, business, and contracting models that can be tailored to meet specific system needs. For DISCOMS, selecting an appropriate model requires careful planning within India's competitive public procurement framework to ensure transparency and cost-effectiveness.

Tendering process in India



RMI Graphic. **Source:** RMI Analysis

DISCOMs have several ownership and contracting options when procuring BESS, ranging from direct asset ownership to third-party models such as PPAs. While stand-alone BESS contracting offers flexibility, operational control, and value-stacking opportunities, it can also shift more performance and resource risks to the purchasing DISCOM. To meet growing demand and integrate renewable energy, DISCOMs are increasingly turning to innovative PPA configurations, including solar + BESS, FDRE, and RTC models.

Hybrid projects combine generation and storage assets, allowing DISCOMs and project developers to realise efficiencies of shared infrastructure, material, land, and operation costs, while also potentially taking advantage of existing interconnection. A BESS asset co-located with renewables can reduce the transmission capacity needed to integrate these resources and increase the utilisation of the remaining capacity while also reducing curtailment of renewable generation.

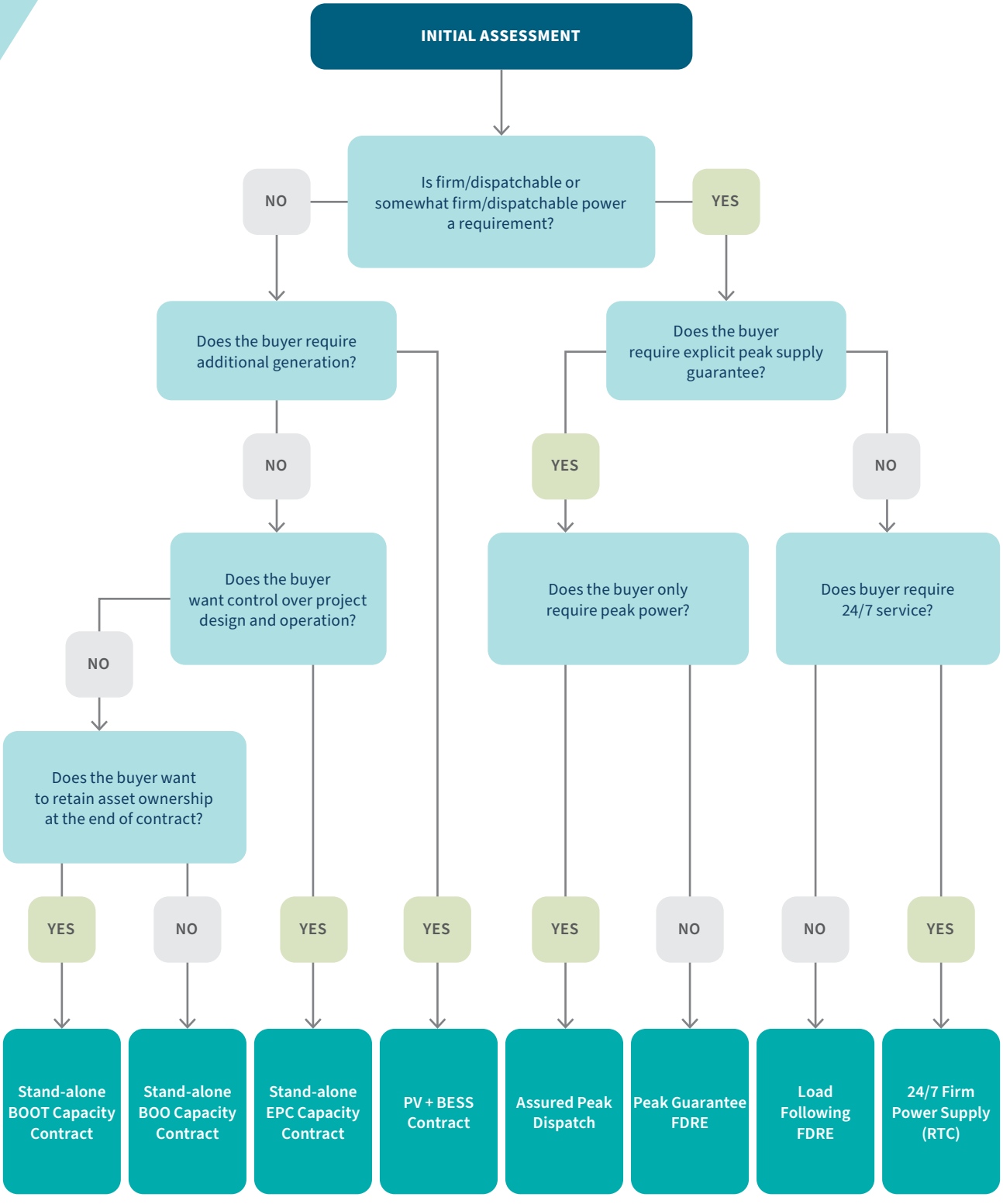
Selecting the right procurement pathway depends on a combination of need assessment, economic viability, risk appetite, and contract complexity.

- Stand-alone storage projects provide high levels of flexibility for DISCOMs, particularly those with a need for additional power capacity but may involve higher risk and responsibility for the DISCOM to manage project development and operation.

- Simpler solar + BESS PPAs are suitable for near-term reliability needs.

- FDRE contract models address longer-term dispatchability challenges, but require long-term load profile projections that may be challenging for DISCOMs with dynamic and evolving demand. However, such contracts may be especially appealing for large-scale commercial and industrial consumers with more consistent and predictable electricity demand.

Energy storage procurement options decision tree



Note: BOOT = build-own-operate-and transfer; BOO = build-own-operate.
RMI Graphic. **Source:** RMI Analysis

Battery energy storage system applications and value

BESS assets offer considerable flexibility in siting and sizing, allowing deployment across the electricity system — from co-location with solar photovoltaics to transmission, distribution, and behind-the-meter applications — each delivering system-level benefits such as load shifting, peak shaving, and capacity deferral.

Stand-alone BESS systems sited at the transmission or distribution network can shift the timing of power flows in the transmission and distribution network, reducing load on key transmission corridors, substations, and transformers. This can help avoid costly equipment failures and extend the life of existing assets. These assets can also provide a range of other services, including ensuring the system remains balanced and shifting load through arbitrage.

India recently implemented the **market-based ancillary services** to create a short-term market for BESS. It also updated its **resource adequacy (RA) framework guidelines** and potential eligibility for BESS for capacity credits to provide long-term signals. However, these short-term and long-term market initiatives have yet to fully mature and achieve a streamlined implementation.

Behind-the-meter BESS installed at commercial, industrial, or residential sites is regaining relevance due to rising utility tariffs and growing reliability concerns, especially with nighttime peak loads and electric vehicle charging. Behind-the-meter storage can offer backup power, improve power quality, manage demand charges, and enable participation in aggregated services like virtual power plants.

Pathways for accelerated storage deployment

The Government of India has taken several policy initiatives laying the groundwork for an enabling environment for energy storage. As the market transitions from planning to execution, attention must now shift to improving tender design, streamlining regulatory approvals, and enhancing institutional capacity to operate and manage BESS assets effectively. Ensuring that storage resources are reliably integrated into system planning and daily operations will determine how quickly India can scale up deployment and realise the full value of storage across the grid.

The next step in accelerating deployment is to integrate BESS into power sector operations through action across four key pillars: procurement, market development, regulatory reform, and institutional capacity building.

Recommendations for accelerating energy storage deployment in India are summarised below.

Pillar	Focus Area	Near-Term Recommendations	Medium-Term Recommendations
Procurement	**Tender Design**	Refine tender guidelines for BESS and hybrid projects	Align local and central planning
Market Development	**Monetising Value Streams**	Clarify BESS capacity rules for RA and the pathway for ancillary service participation	Consider additional appropriate market products
Regulatory Reforms	**Accelerate Project Regulatory Review and Approval**	Guide DISCOMs and state regulators on BESS value streams and evaluation methodology; derisk project cancellations	Deploy technological and software interventions to improve system optimisation and BESS integration
Institutional Knowledge Building	**Ensure State and Central Participants are prepared to integrate BESS**	Needs assessment for addressing state-level entities' BESS knowledge gaps	Establish BESS Knowledge Hub

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