

DEVELOPMENT OF BATTERY ENERGY STORAGE SYSTEMS

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The Government of India has set a target of achieving 500 GW of installed electricity generation capacity from non-fossil fuel-based sources by 2030, with a major share expected from solar and wind energy, which are inherently intermittent and variable in nature.

To facilitate the integration of such variable and intermittent Renewable Energy (RE) sources, deployment of Energy Storage Systems (ESS) is essential for storing surplus energy during periods of high RE generation to ensure 24x7 electricity supply. ESS can also provide critical ancillary services, including frequency regulation, voltage control, and black start capability. As per the National Electricity Plan (2023) published by the Central Electricity Authority (CEA), a requirement of 208 GWh of Battery Energy Storage Systems (BESS) has been projected by 2030 to enable seamless integration of the increasing share of renewable energy in the grid.

To support this energy transition, the Government of India has undertaken a series of coordinated policy, regulatory, demand-side, and supply-side measures to promote the development and deployment of energy storage technologies, including BESS. The details of these measures are provided in the **Annexure-I**.

As per the data available with the Ministry, the State/UT wise existing BESS capacity (for projects above 1 MWh) is provided in **Annexure-II**. Further, 35.8 GWh of BESS capacity is under construction.

ANNEXURE-I

I. Policy and Regulatory Measures

1. The Electricity Rules were amended in December 2022 to explicitly recognise Energy Storage Systems (ESS) as an integral part of the power system, enabling their participation across generation, transmission and distribution functions.
2. In October 2022, ESS were included in the Harmonised Master List of Infrastructure of the Ministry of Finance, facilitating access to long-tenure and lower-cost financing.
3. In June 2023, the Government issued Guidelines for Preparation of Resource Adequacy Plans by State utilities, under which energy storage has been incorporated as a key planning resource for meeting peak demand and ensuring system reliability.
4. A National Framework for Promotion of Energy Storage Systems was issued in September 2023, providing a comprehensive roadmap for deployment, market integration and regulatory facilitation of storage technologies.

5. To enhance safety and reliability of BESS installations and standardise design and construction practices, Draft CEA (Measures Relating to Safety and Electric Supply) (First Amendment) Regulations, 2025 and Draft Technical Standards for Construction of BESS Regulations, 2025 have been issued.

II. Demand-Side Enablers and Market Development Measures

6. Waiver of Inter-State Transmission System (ISTS) charges has been provided for co-located BESS projects commissioned up to June 2028, to improve project viability.
7. In January 2022, CERC allowed storage-based resources to provide ancillary services, including secondary and tertiary reserves, enabling ESS to support real-time grid balancing alongside conventional generators.
8. Tariff-Based Competitive Bidding (TBCB) Guidelines for procurement of BESS by distribution licensees were notified in March 2022, creating a transparent mechanism for large-scale storage procurement.
9. Under the Electricity (Rights of Consumers) Rules, 2020, amended in December 2022, consumers using diesel generator sets have been mandated to shift to cleaner backup solutions, including energy storage, within timelines specified by State Commissions.
10. Electricity supplied from BESS has been allowed to participate in the High-Price Day-Ahead Market, launched in March 2023, enabling storage to respond to peak price signals similar to gas-based generation.
11. The Government is implementing two Viability Gap Funding (VGF) schemes to support development of approximately 43 GWh of Battery Energy Storage Systems, launched in March 2024 and June 2025, to accelerate early-stage deployment.

III. Supply-Side and Manufacturing-Focused Measures

12. The Ministry of Heavy Industries is implementing a Production-Linked Incentive (PLI) Scheme with an outlay of ₹18,100 crore for establishing 50 GWh of Advanced Chemistry Cell manufacturing capacity, of which 10 GWh is earmarked for grid-scale storage.
13. CERC has allowed separate grid connectivity during non-solar hours, enabling additional renewable capacity at existing substations and facilitating storage-based shifting of power to evening and night hours.
14. Through amendment of the Electricity Rules in September 2025, energy storage systems have been permitted to be developed, owned, leased or operated by consumers, expanding the range of ownership and business models.
15. In February 2025, CEA issued an advisory on co-location of ESS with solar power projects, recommending storage capacity of at least 10% of installed solar capacity for a minimum duration of two hours, to improve dispatchability of solar power.

ANNEXURE-II

Details of Battery Energy Storage Systems State/UT wise (>1 MWh capacity)

State/UT	Capacity (in MWh)
Andaman & Nicobar	08
Bihar	282
Chhattisgarh	120
Delhi	50
Gujarat	77
Karnataka	150
Lakshadweep	01
Rajasthan	100
Uttar Pradesh	03
West Bengal	06
Total	798

This information was given by The Minister of State in the Ministry of Power, Shri Shripad Naik, in a written reply in the Rajya Sabha today.

NR/AP/MD