ANDHRA PRADESH ELECTRICITY REGULATORY COMMISSION (APERC)
Vidyut Niyantrana Bhavan, Adjacent to 220/132/33 KV AP Carbides SS,
Dinnedevarapadu Road, Kurnool - 518 002, Andhra Pradesh.
Phones: 08518 - 294823,24,25,26

Draft Regulation

Andhra Pradesh Electricity Regulatory Commission [Planning, Procurement, Deployment, and Utilisation of Battery Energy Storage Systems (BESS)] Regulations, 2025

Regulation .....of 2025

Preamble

The Electricity Act, 2003, empowers the State Electricity Regulatory Commissions to promote efficiency, economy, and competition in the electricity sector, and to regulate the purchase, distribution, supply, and utilisation of electricity within the State.

And whereas the Ministry of Power, Government of India, has issued guidelines dated 11 March 2022 for the procurement, utilisation, and integration of Battery Energy Storage Systems (BESS) as part of generation, transmission, and distribution assets, as well as for the provision of ancillary services in the electricity grid.

And whereas the Government of India has further notified a National Framework for Energy Storage Systems in August 2023 to support the integration of renewable energy, ensure grid stability, and enable market-based participation in energy storage technologies.

And whereas Battery Energy Storage Systems have emerged as a critical enabler for enhancing grid flexibility, maintaining frequency and voltage stability, managing peak loads, facilitating the integration of renewable energy, and providing ancillary and balancing services.

And whereas the Government of Andhra Pradesh has issued the "Andhra Pradesh Integrated Clean Energy Policy, 2024" with a commitment to promote renewable energy generation by creating a more conducive policy and investment framework to spur competition and private participation in the sector, while maintaining a balance in the interests of all stakeholders. The objectives of the policy inter alia are to promote decentralisation of renewable energy generation and develop an ecosystem for distributed Solar generation, to create an energy storage market in the State to integrate more RE into the grid and offer grid support services, such as peak reduction, curtailment management, contribution to reliability needs, transmission deferrals, intraday and seasonal variation management and to develop AP as a storage capital and clean energy hub in the country and the preferred destination for clean energy innovative projects. This policy aims to add over 160 GW of renewable energy capacity in the State and set a target for the addition of approximately 25 GWh of BESS under various modes.

In order to successfully implement the policy above, the Government of Andhra Pradesh (GoAP), acting through the Special Chief Secretary of the Energy Department, and invoking Section 108 of the Electricity Act, 2003, addressed a letter to the Commission. In the letter, the GoAP requested that the Commission devise appropriate guidelines and regulations in line with the MoP guidelines dated March 11, 2022, to promote the development of BESS and create a market for ancillary services within the State. The letter also stated that this will enable and

enhance market penetration of Battery Energy Storage Systems (BESS) and support grid stability through ancillary services.

In light of the above, there is a need to establish a comprehensive regulatory framework for the deployment, ownership, operation, and market participation of BESS in the State of Andhra Pradesh, in line with the evolving needs of the electricity market and grid management practices.

Therefore, in exercise of the powers conferred under subclause (zp) of Section 181(2) read with Sections 61, 66, and 86(1)(e), of the Electricity Act, 2003, and all other powers enabling it in this behalf, the Andhra Pradesh Electricity Regulatory Commission hereby makes the following draft Regulations to govern the planning, procurement, deployment, and utilisation of Battery Energy Storage Systems in the State of Andhra Pradesh.

1. Short Title, Commencement, and Applicability

1.1 These Regulations may be called the Andhra Pradesh Electricity Regulatory Commission [Planning, Procurement, Deployment, and Utilisation of Battery Energy Storage Systems (BESS)] Regulations, 2025.

1.2 These Regulations shall come into force from the date of their publication in the Andhra Pradesh Gazette.

1.3 These Regulations shall apply to all Licensees, Generating Companies, Renewable Energy Developers, Aggregators, Battery Energy Storage System (BESS) Service Providers, and other entities involved in the deployment, operation, or utilisation of Battery Energy Storage Systems within the State of Andhra Pradesh.

2. Definitions

(1) In these Regulations, unless the context otherwise requires:

a) **"Act"** means the Electricity Act, 2003 (36 of 2003);

b) **"Aggregator(s) or Distributed Energy Resources (DER) Aggregators" means** an entity registered/ appointed with/by the distribution licensee to provide aggregation of one or more services like demand response services under the demand response mechanism, Distributed Generation, Energy Storage, etc., within a control area. The aggregators shall support the DISCOM in the implementation of Distributed Generation like Solar Rooftop projects for residential & subsidised aggregation of consumers, DSM measures like Demand Aggregation of Industrial Consumers, empanelling vendors, construction of systems, disbursement of subsidies of the GoI, etc.

c) **"Automatic Generation Control" or "AGC"** means a mechanism through which the generation of the SRAS Provider in a control area is automatically adjusted in response to the Secondary Control Signal.

d) **"Ancillary Service" or "AS"** in relation to power system operation, means the service necessary to support the grid operation in maintaining power quality, reliability and security of the grid and includes Primary Reserve Ancillary Service, Secondary Reserve Ancillary Service, Tertiary Reserve Ancillary Service, active power support for load following, reactive power support, black start, and such other services as defined in the Indian Grid Code/ AP Grid Code.

e) **"AS capacity obligation"** is the capacity signalled for despatch by the Nodal Agency under SRAS or the capacity procured by the Nodal Agency under TRAS;

f) **"Banking"** means a facility through which the unutilised portion of energy (underutilisation by the consumer or excess generation over and above the schedule by the generator) from any of the Green Energy Sources during a billing month is kept in a separate account and such

energy accrued shall be treated in accordance with the conditions laid down in the Andhra Pradesh Electricity Regulatory Commission (Green Energy Open Access, Charges, and Banking) Regulation, 2024 (Regulation No 3 of 2024) as amended from time to time.

g) **"Battery Energy Storage Systems" or "BESS" shall** mean the system(s)/projects utilising methods and technologies such as electrochemical batteries (Lead Acid, Li-ion, solid state batteries, flow batteries, etc.), providing a facility that can store chemical energy and deliver the stored energy in the form of electricity, including but not limited to ancillary facilities (grid support, for example). Such systems may be co-located with RE Generating Stations or may be operated/ connected on a standalone basis at a Grid substation or a Distribution substation.

h) **"Commission"** means the Andhra Pradesh Electricity Regulatory Commission.

i) "**Distribution Licensee", "Transmission Licensee", "Generating Company", and "SLDC**" shall have the meanings assigned to them under the Act.

j) **"Firm and Dispatchable RE Power" means** the power profile configuration that is defined in the RfS that is sought to be met by RE power sources and will include configurations like assured peak power, Round the Clock RE with firm delivery of power at rated capacity at any hour of the day as per demand or load following power delivery as specified by DISCOM, Clean Energy Project with firm delivery of power for fixed hours of requirement by DISCOMs, etc.

k) **"Force Majeure"** means any event or circumstance which is beyond the reasonable direct or indirect control and without the fault or negligence of

the Clean Energy Producer or Developer and which results in Clean Energy Producer‟s/Developer‟s inability, notwithstanding its reasonable best efforts, to perform its obligations in whole or in part and may include rebellion, mutiny, civil unrest, riot, strike, fire, explosion, flood, cyclone, lightning, earthquake, act of foreign enemy, war or other forces, theft, burglary, ionising radiation or contamination, Government action, inaction or restrictions, accidents or an act of God or other similar causes.

l) **“Fuel Cell” means** an electrochemical cell that converts the chemical energy of a fuel and an oxidising agent (often oxygen) into electricity through a pair of redox reactions.

m) **“Nodal Agency”** means the Andhra Pradesh State Load Despatch Centre, which shall be responsible for the implementation of the Ancillary Services at the intra-state level through the Areal Load Despatch Centres.

n) **“Primary Reserve Ancillary Service” or “PRAS”** means the Ancillary Service which immediately comes into service through the governor action of the generator or through any other resource in the event of a sudden change in frequency;

o) **“Secondary Control Signal”** means an automated signal generated from the Nodal Agency through which injection or drawal, or consumption of an SRAS provider is adjusted, and includes AGC signal.

p) **“Secondary Reserve Ancillary Service” or “SRAS”** means the Ancillary Service comprising SRAS-Up and SRAS-Down, which is activated and deployed through a secondary control signal.

q) **“Secondary Reserve Ancillary Service Provider” or “SRAS Provider**" means an entity which provides SRAS-Up or SRAS-Down in accordance with these regulations;

r) **"SRAS-Down"** means an SRAS that reduces active power injection or increases drawal or consumption, as the case may be, in response to a secondary control signal from the Nodal Agency.

s) **"SRAS-Up"** means an SRAS that increases active power injection or decreases drawal or consumption, as the case may be, in response to a secondary control signal from the Nodal Agency.

t) **"Tertiary Reserve Ancillary Service" or "TRAS"** means the Ancillary Service comprising TRAS-Up and TRAS-Down and consists of spinning reserve or non-spinning reserve, which responds to despatch instructions from the Nodal Agency;

u) **"TRAS-Down"** means a TRAS that reduces active power injection or increases drawal or consumption, as the case may be, in response to despatch instructions of the Nodal Agency;

v) **"TRAS-Down Provider"** means an entity which provides TRAS-Down in accordance with these regulations.

w) **"TRAS-Up"** means a TRAS that increases active power injection or decreases drawal or consumption, as the case may be, in response to despatch instructions of the Nodal Agency;

x) **"TRAS-Up Provider"** means an entity which provides TRAS-Up in accordance with these regulations.

y) **"Un-Requisitioned Surplus" or "URS"** means the capacity in a generating station that has not been requisitioned and is available for despatch, and is computed as the difference between the declared capacity or maximum possible generation (Pmax), as the case may be, of the generating station and its total schedule.

(2) Save as aforesaid and unless repugnant to the context or the subject-matter otherwise requires, words and expressions used in these

regulations and not defined, but defined in the Act, or the Grid Code or any other regulation of the Commission/CERC shall have the meaning assigned to them respectively in the Act or the Grid Code or such other regulation.

(3) Reference to any Act, Rules and Regulations shall include amendments or consolidation or re-enactment thereof.

3. Objectives

The primary objectives of these Regulations are:

(a) To enable deployment and utilisation of BESS as part of generation, transmission, and distribution assets;

(b) To facilitate the participation of BESS in ancillary services and energy markets;

(c) To promote cost-effective energy storage solutions that support grid stability, frequency management, and renewable energy integration;

(d) To establish a framework for Aggregators and third-party BESS developers to participate in the electricity market.

4. Ownership and Business Models

4.1 BESS may be developed and owned by:

- Distribution Licensees;
- Transmission Licensees;
- System operators
- GENCOs
- Independent Power Producers (IPPs);
- Renewable Energy Developers;
- An independent energy storage service provider
- Aggregators;
- Any other third-party investors.

4.2 BESS may be deployed as:

- Co-located with renewable or conventional generators;
- Standalone grid-connected storage;
- Embedded in distribution or transmission networks;
- Behind-the-meter (consumer-level) storage.

4.3 The Energy Storage System shall be utilised either as an independent energy storage system or as part of the generation, transmission, or distribution system or integrating the consumer's load with RE sources co-located behind the meter.

4.4 The Energy Storage System can be developed, owned, leased, or operated by a generating company, a transmission licensee, a distribution licensee, a consumer, a system operator, or an independent energy storage service provider.

4.5 The Energy Storage System shall have the same legal status as that of the owner:

Provided that if such an Energy Storage System is not co-located with, but owned and operated by, the generating station or distribution licensee or consumer, the legal status shall still be that of the owner but for the purpose of scheduling and dispatch and other matters it shall be treated at par with a separate storage element.

5. Planning and Procurement

5.1 The reverse power flow from lower voltage to higher voltage at various substations shall be the criterion for finalising the BESS locations in the Distribution System or Transmission System by Distribution/Transmission licensees.

5.2 Preference shall be given to co-located BESS for the procurement of ancillary services by DISCOMS/TRANSCO/SLDC, as it will save grid integration costs.

5.3 Minimum individual project size of power rating of 1MW and above, with a suitable energy rating of at least four hours based on the application at one site.

5.4 The Distribution Licensees may also set up BESS at the DTR level to store the power from SRTs locally. In such cases, the capacity as specified in clause 5.3 would not apply.

5.5 The licensees shall obtain prior approval from the Commission for BESS capacity procurement.

6. Utilisation for Ancillary Services

BESS shall be eligible to provide:

- Frequency regulation (primary, secondary, tertiary);
- Spinning and non-spinning reserves;
- Voltage support;
- Black start services.

7. Role of Aggregators

7.1 Aggregators may aggregate BESS resources from multiple sites to provide services to the grid or to market participants.

7.2 Aggregators shall register with SLDC and obtain approval from it following the notified eligibility conditions.

8. Commercial Agreements

Aggregators and AS providers may enter into commercial agreements with Licensees or other market participants for the provision of BESS services.

9. Tariff and Market Participation

9.1 Cost recovery for Licensee-owned BESS assets shall be through tariff determination by the Commission based on prudent investment norms. For procurement from BESS service providers, the Commission will adopt the tariff determined under competitive bidding.

9.2 Market-linked BESS services shall be compensated based on market-clearing prices in the ancillary services market or other mechanisms approved by the Commission.

10. Technical Standards

10.1 BESS installations shall conform to technical standards specified by the CEA and other relevant authorities. BESS shall comply with technical specifications approved by MNRE.

10.2 BESS providers shall submit periodic data to SLDC and the Commission in the prescribed formats notified by SLDC.

11. Safety, Cybersecurity, and Environmental Norms

11.1 BESS systems shall comply with applicable regulations, standards and codes issued by the Central Electricity Authority (CEA) regarding safety.

11.2 Cybersecurity and communication protocols shall adhere to the guidelines of the Ministry of Electronics and Information Technology (MeitY), the Central Electronics Authority (CEA), and the Ministry of Power (MoP).

11.3 Environmental management and end-of-life disposal of batteries shall be in accordance with the guidelines/regulations of the SPCB, MoEF&CC.

12. Role of Distribution Licensees

12.1 The Distribution Licensees shall publish potential sites at the 11 kV voltage level in their 33/11 kV substations for establishing a BESS of the required capacities based on the feeder level solarisation and SRT installations in the feeder purview. This data shall be updated annually.

12.2 Licensees shall include BESS in their resource planning and file their proposals for Commission approval through investment plans, MYT filings, or other regulatory mechanisms.

12.3 BESS procurement by Licensees shall be undertaken through competitive bidding, subject to guidelines issued by the Government of India, if any.

13. Role of APTRANSCO

13.1 Licensees shall include BESS in their resource planning and file their proposals for Commission approval through investment plans, MYT filings, or other regulatory mechanisms.

13.2 BESS procurement by Licensees shall be undertaken through competitive bidding, subject to guidelines issued by the Government of India, if any.

13.3 APTRANSCO shall prepare the standard agreement format for procuring ancillary services and obtain the Commission's approval before entering into agreements.

14. Role of Nodal Agency (APSLDC)

13.4 APSLDC shall verify the governor settings of all generators regarding their automatic primary response to changes in the system frequency, as per IEGC, for the automatic adjustment of generation to meet demand in the System. The action taken and status report shall be posted on its website within three months from the date of the publication of this Regulation. The report shall also specify the requirements for the BESS capacity required under SRAS or TRAS, as well as the locations in the Grid Substations. The report shall be updated annually.

13.5 The SLDC shall estimate the requirement of SRAS and TRAS for each DISCOM area for the specified period, using an appropriate methodology, and publish the same on its website. It shall reassess the requirement of SRAS and TRAS on a day-ahead basis, along with

any incremental requirements on a real-time basis, and update this information on its website.

13.6 The SLDC shall register eligible BESS resources for ancillary services through Aggregators/AS, based on technical criteria and operational performance. The SLDC shall prepare the eligible conditions for registration of Aggregators/AS providers within one month from the date of the notification of this Regulation.

13.7 The SLDC shall prepare a procedure for Scheduling, Metering, Accounting, mechanisms for remuneration, settlement, and verification of ancillary service provision for approval of the Commission within one month from the date of publication of this Regulation.

13.8 The SLDC shall monitor:

- State of Charge (SoC),
- Round-Trip Efficiency,
- Availability and response time,
- Aggregated performance metrics.

15. Role of GENCOS/IPPs/CPPs

RE developers may establish BESS at the generation point, or co-location, or separately and participate in the competitive bidding conducted by licensees, or may participate in the ancillary market as per the Central Electricity Regulatory Commission (Ancillary Services) Regulations, 2022, as amended from time to time. RE IPPs may also establish BESS at the point of generation for their own use or their consumers through open access.

16. Consumers/Prosumers

Consumers/Prosumers not covered under net-metering/billing may establish behind-the-meter BESSs along with Solar power plants without requiring permission from the concerned DISCOMs/Transcos. However, all such systems shall comply with the technical standard for connectivity Regulations issued by the CEA. The DISCOMS/APTRANSCO shall be informed before commissioning behind the meter. If there is any lapse on such standards, they shall be rectified and get certified by DISCOMS/Transco before integration with the Grid. However, if the system is operated standalone, such inspections are not required.

17. Open Access to BESS

The APERC Green Energy Open Access Charges and Banking Regulation 2024, as amended from time to time, shall govern the open Access and charges.

18. Role of the Commission

The Commission shall:

- Approve capacities, investment and tariff proposals for BESS deployment/procurement by Licensees;
- Approve the Procurement by SLDC under SRAS/TRAS
- Approve the Procedures and eligibility conditions prepared by the Nodal Agencies
- Approve the Agreement formats prepared by the licensees
- Monitor implementation of these regulations through reports and compliance filings.

19. Power to give directions

The Commission may, from time to time, issue such directions and orders as it considers appropriate for the implementation of these Regulations.

20. Power to relax

The Commission may, by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected, may relax any of the provisions of these Regulations on its own motion or on an application made before it by an interested person.

21. Power to amend

The Commission may, from time to time, add to, vary, alter, suspend, modify, amend, or repeal any provision of these Regulations.

22. Power to remove difficulties

If any difficulty arises in giving effect to the provisions of these Regulations, the Commission may, by an order, make such provisions, not inconsistent with the provisions of the Act and these Regulations, as may be necessary for removing the difficulty.

(By Order of the Commission)

Place: Kurnool,
Date :30.06.2025

Sd/- 30.06.2025
P.KRISHNA
Commission Secretary(I/c)