

KERALA STATE ELECTRICITY REGULATORY COMMISSION
THIRUVANANTHAPURAM

Present : Shri T K Jose, Chairman
Adv. A.J Wilson, Member

OP No:38/2025

In the matter of : Petition filed under Section 63 of Electricity Act 2003 seeking approval for the adoption of the tariff discovered under Tariff- based Competitive Bidding for 125 MW/500 MWh of Grid-Scale Battery Energy Storage System (BESS) at four KSEBL substation premises with CPSU Component VGF by MoP to NHPC

Petitioner : Kerala State Electricity Board Ltd

KSEBL represented by : Shri. Rajan M.P, Chief Engineer (C&T)
Smt. Asha P A, Dy. Chief Engineer (REES & PED)
Shri. Shibu K Joseph, Dy. Chief Engineer (Com)
Smt. Latha S.V, Executive Engineer, TRAC
Smt. Anitha K, Executive Engineer, (Com)
Shri. Shine Raj, AEE, TRAC
Smt. Cini John, AEE
Smt. Sangeetha P, AEE (Com)
Shri. Prakash R, AE, REES
Smt. Asha A V, AE, TRAC

Respondents : 1. M/s NHPC Limited
2. M/s NTPC Green Energy Ltd
3. M/s Opera Energy Pvt Ltd
4. M/s Tata Power Renewable Energy Limited

M/s NTPC Green Energy Limited : Rajiv gupta, DGM Commercial, NGEL

M/s Opera Energy Private Limited, : Vivek Hisaria, Head Project, Finance
Tata Power Renewable Energy Ltd : Vaibhav Sharma, Manager BD
NHPC Ltd, Faridabad : Mukesh Negi, DGM commercial

Date of hearing : 23.07.2025 at 11:00 AM

Venue : Hearing through Hybrid mode

Order dated 06.08.2025

1. Kerala State Electricity Board Limited (hereinafter referred as petitioner or KSEBL) filed a petition on 11.07.2025 before the Commission with the following prayer:

“

1. *Grant approval for the implementation of BESS at Sreekantapuram (40 MW / 160 MWh), Mulleria (15 MW / 60 MWh), Areacode (30 MW / 120 MWh), Pothencode (40 MW / 160 MWh) substations under tariff based competitive bid.*
2. *Adopt the tariff, discovered in the tariff based competitive bid,, as per section 63 of Electricity Act 2003. Also requested to approve the trading margin of 7 paise per unit payable to NHPC.*
3. *Grant approval for entering in to BESSA with M/s. NHPC. ”*

2. Summary of the petition filed by M/s KSEB Ltd is given below.

- (1) As the renewable energy penetration increases across the Kerala grid, challenges associated with managing fluctuations in demand and supply have become increasingly pronounced, particularly during evening and morning peak hours when renewable energy is unavailable. This necessitates additional power dispatch to maintain grid stability.
- (2) The MoP vide the operational guidelines dated 10th March 2022, has recognized BESS as a critical infrastructure for integrating renewable energy into the grid and ensuring its stability.
- (3) KSEB Ltd submitted that, MoP vide order No: F. No. 42-26/1/2022-NRE(Pt-II) Dated 17.10.2024 had sanctioned CPSU Component VGF for BESS upto 30% of the capital cost for BESS or 27 Lakh / MWh whichever is lower for NTPC, NHPC & SJVN for implementing BESS capacity of 2000MWh, 1500MWh and 1500MWh respectively.
- (4) Considering the growing requirement for energy storage, increasing solar power penetration, rising peak power demand, and the prevailing price of peak power, KSEBL, vide B.O. No. 374/2024 dated 24.08.2024, decided to implement Battery Energy Storage Systems (BESS) across Kerala. A detailed feasibility assessment was conducted for installing BESS at various substations, and suitable locations were identified for phased implementation. The objective is to meet peak power and grid stability requirements while maximizing the Viability Gap Funding (VGF) support available from the Central Government under various schemes.
- (5) Ministry of Power, Gol, vide the letter dated 17.10.2024 has allocated 1500 MWh BESS capacity to M/s NHPC under CPSU component with the VGF support of Rs 27 Lakh/ MW/ month. KSEBL, vide letter dated 19.11.2024, requested to M/s NHPC to allocate BESS installation of 375 MW / 1500 MWh at seven substation premises of KSEBL. However, NHPC, in its letter

dated 10.12.2024, informed that due to high demand from other states, the BESS capacity allocation for Kerala under the CPSU VGF scheme would be restricted to 125 MW / 500 MWh.

Accordingly, KSEBL, vide letter dated 11.12.2024, informed NHPC to proceed with the installation of BESS of 40 MW / 160 MWh at Sreekandapuram and Pothencode, 35 MW / 140 MWh at Areacode, and 10 MW / 40 MWh at Ambalappuram under the CPSU component under the Scheme for Viability Gap Funding for development of Battery Energy Storage Systems in the State of Kerala.

- (6) However, considering the existing transmission constraints in Kasaragod district and the limited import capability from the Konaje Substation in Karnataka, it has been decided to further explore the feasibility of installing BESS at Mulleria and Vidyanagar substations.

Considering the grid requirements and certain legal disputes concerning land availability at the Ambalappuram Substation, KSEB Ltd has decided to proceed with the implementation of BESS under the NHPC CPSU component with revised capacity allocations and locations as detailed below;

Sl. No.	Location	Capacity (MW / MWh)	Connectivity Voltage Level (kV)
1	220 kV Substation, Areacode	30 / 120	110
2	220 kV Substation, Pothencode	40 / 160	110
3	110 kV Substation, Sreekandapuram	40 / 160	110
4	110 kV Substation, Mulleria	15 / 60	33

- (7) In view of the technical requirements and site-specific constraints, KSEBL has assessed the additional works needed for the proposed BESS installations at each location under the NHPC CPSU scheme. The factors such as connectivity voltage level, availability of bays, and associated Balance of Plant (BoP) works were considered and its details are given below;

(i) **Mulleria Substation(15 MW / 60 MWh)**

- The connectivity is at the 33 kV level.
- A 33 kV bay is already available at the substation for connecting the BESS.
- Since there is no requirement for a 33/110 kV transformer and associated control equipment, the BoP requirements are minimal, making the site highly feasible for early implementation.

- (ii) **Areacode Substation** (30 MW / 120 MWh)
 - The connectivity is at the 110 kV level.
 - One 110 kV bay is available for BESS integration.
 - BoP requirements are comparatively lower than other 110 kV substations, which simplifies project execution.
- (iii) **Sreekantapuram Substation** (40 MW / 160 MWh)
 - Two C2 columns are already available for extending the bay. However, additional C2 columns and beams are required, and the 110 kV bus will need to be extended to complete the connectivity.
 - These works are manageable within the scope of standard substation modification practices.
- (iv) **Pothencode Substation**(40 MW / 160 MWh)
 - The BESS is proposed to be installed adjacent to the existing 2 MW solar plant, located across the Panchayat Road from the main substation.
 - To connect the BESS to the 110 kV bus, approximately 300 meters of 110 kV underground cable needs to be laid.
 - This site involves relatively higher BoP works due to the geographical separation.
- (8) The existing transformer capacities of the above substation are as follows:
 - Mulleria has 2 × 16 MVA (110/33 kV) and 2 × 10 MVA (110/11 kV)
 - Areacode has 2 × 20 MVA (110/11 kV)
 - Sreekantapuram is equipped with 2 × 12.5 MVA (110/11 kV)
 - Pothencode has 4 × 12.5 MVA (110/11 kV).

KSEB Ltd submitted that these capacities are adequate to handle the discharge from the proposed BESS installations.
- (9) KSEBL further submitted that, a variation of about 5% in site-wise cost estimates is anticipated due to differences in BoP requirements and logistical considerations unique to each location.
- (10) The tender for the project was floated on 17th January 2025 by NHPC in accordance with the MoP bidding guidelines dated 10.03.2022, Operational Guidelines for CPSU component under the Scheme for Viability Gap Funding for development of BESS dated 17.10.2024.

The e-Reverse Auction (e-RA) was successfully held on 21.05.2025, following which NHPC has shortlisted four project developers (L1 bidders) for the identified BESS locations in the State.

- (11) The capacities awarded and the lowest discovered monthly capacity charges for each site are given below:

Sl. No.	Substation Location	Shortlisted Developer Name	Capacity (MW / MWh)	Discovered Capacity Charges (Rs./MW/Month)
1	Sreekantapuram	M/s NTPC Green Energy Limited	40 / 160	Rs. 4,34,000
2	Mulleria	M/s Opera Energy Pvt. Ltd	15 / 60	Rs. 4,38,000
3	Areacode	M/s Tata Power Renewable Energy Ltd	30 / 120	Rs. 4,56,000
4	Pothencode	M/s NTPC Green Energy Limited	40 / 160	Rs. 4,57,000

- (12) After discovering the tariff, as a part of optimising power purchase, KSEBL has conducted negotiations with L1 bidders. Based on the negotiation, M/s Tata Power Renewable Energy Ltd has agreed to reduce the rate to Rs. 4,52,000/MW/month from Rs 4,56,000/MW/ month.
- (13) As per the provisions under Clause 1.12 of the Request for Selection (RfS) document, consent or confirmation of the Distribution Licensee (KSEBL) is mandatory for the offtake of energy from BESS at the discovered tariff/fixed capacity charges, prior to the issuance of Letter of Award (LoA) to the selected bidders.

NHPC has furnished the consolidated RfS document, along with the draft Battery Energy Storage Purchase Agreement (BESPA) and Battery Energy Storage Sale Agreement (BESSA), incorporating all the corrigenda issued during the bidding process.

Ministry of Power (MoP), vide Office Memorandum dated 02.06.2025, has informed that, as per the Operation Guidelines, the BESPA must be signed on or before 16.07.2025. Failure to comply with this timeline would result in automatic withdrawal of the capacity allocated to the respective BIA (Bidding Implementing Agency).

In view of the above, NHPC has requested that the acceptance and formal consent of KSEBL be conveyed at the earliest to enable timely issuance of LoAs and execution of the BESPA with the successful bidders.

- (14) KSEB Ltd submitted that as per the tender conditions and guidelines, the Scheduled Date of Commissioning (SCoD) for the Battery Energy Storage System (BESS) projects is specified as 15 months from the date of signing the Battery Energy Storage Purchase Agreement (BESPA). This timeline is critical to ensure timely deployment and availability of storage capacity for meeting the State's peak demand and grid support requirements.
- (15) As per the tender conditions, the tariff quoted by the developers shall remain fixed for a period of 12 years and is subject only to 'Change in Law'

provisions and applicable CERC regulations. After 12-year period, there is a provision for extending the project life by another 5 years, with applicable tariff capped at 60% of the initial tariff, subject to approval from the Hon'ble KSERC.

- (16) Further, to incentivize better performance, a degradation limit of 2.5% per year is allowed. If the actual degradation is below 2%, an incentive of Rs.1 per unit for the excess discharge is payable. Furthermore, if the Round-the-Efficiency (RtE) exceeds 85%, an additional incentive of Rs. 0.50 per kWh for the excess discharge is applicable.
- (17) KSEB Ltd submitted that the Ministry of Power (MoP), through its press release and notifications, has clarified that the objective of the VGF scheme is to bring down the Levelized Cost of Storage (LCoS) to the range of Rs. 5.50 to Rs. 6.60 per kWh. The rates discovered in the NHPC tender for Kerala is less than the benchmark rates, especially when combined with the benefits of Viability Gap Funding (VGF) support.
- (18) KSEB Ltd further submitted that, in order to avail the CPSU Component of VGF amounting to Rs.135 crore for this project, the Ministry of Power, vide letter dated 02.06.2025 has stipulated that BESPAs shall be signed by 16.07.2025 after obtaining necessary regulatory approvals. Further, since the sale agreement between KSEBL and NHPC is required to be executed before signing BESPAs, KSEBL's acceptance must be formally conveyed to NHPC at the earliest.
- (19) Further, the NHPC will act as the intermediary procurer and the applicable trading margin is Rs. 7 paise per unit.
- (20) KSEBL has also submitted that, four hours of storage is not common in the tender in the country. The rate discovered in the various tenders are shown below;

Sl	Tender Month	State	Power Capacity (MW)	Energy Capacity (MWh)	Cycle / Day	VGF (Rs Lakh/ MW)	Rate (L/MW/M onth)
1	November 2024	Rajasthan	500	1000	2	27	2.21
2	February 2025	Kerala	125	500	1	27	4.41
3	March 2025	Telangana	250	500	2	27	2.45
4	April 2025	Karnataka	500	1000	2	27	2.54

- (21) Since November 2024, there has been an approximate 10% increase in the discovered rates of BESS in recent tenders. However, the rates discovered under the NHPC tender are comparable to those obtained for the Mylatti BESS project, with only a nominal increase of about 1.3%.

The proposed BESS project does not require any capital investment from KSEBL. Payments will commence only after one month of Commercial Operation Date (CoD) and will be offset by savings in peak power purchase costs. The project, therefore, offers a financially sustainable solution for addressing the state's peak demand challenges while augmenting internal power storage capacity.

- (22) The planning process for transitioning to a greener energy mix necessitates integrating planned renewable capacity while maintaining grid reliability. The target of achieving 500 GW of non-fossil-based capacity by 2030, as outlined by the Government of India, underscores the importance of infrastructure like BESS and pumped hydro storage Plants.

In Kerala, the reliance on expensive electricity purchases from power exchanges during non-solar hours adds a significant financial burden. The implementation of BESS will mitigate this challenge by enabling the storage of low-cost solar power during the daytime for use during peak demand periods.

- (23) The internal power handling capacity of the state will increase by 125MW and dependence to that extent in the ISTS power corridor of 4260 MW will be reduced. Further the storage scheme will help to store energy to the extent of 500MWh (0.5 MU/day) for meeting peak power Requirements.

KSEB Ltd submitted that, storage system will directly replace equal quantum of peak power Purchase from the Power Exchange and payment for BESS can be made from the Savings effected in peak power purchase.

- (24) Considering all these aspects, KSEBL requested before the Commission to adopt the following discovered tariff, based on the provisions of Section 63 of Electricity Act 2003 and allow KSEBL to enter in to power purchase from this BESS, as per Regulation 77 of the KSERC (Terms and Conditions for determination of Tariff) Regulations 2021.

Sl. No.	Substation Location	Shortlisted Developer Name	Capacity (MW / MWh)	Discovered Capacity Charges (Rs./MW/Month)
1	Sreekantapuram	M/s NTPC Green Energy Limited	40 / 160	Rs. 4,34,000
2	Mulleria	M/s Opera Energy Pvt. Ltd	15 / 60	Rs. 4,38,000
3	Areacode	M/s Tata Power Renewable Energy Ltd	30 / 120	Rs. 4,52,000
4	Pothencode	M/s NTPC Green Energy Limited	40 / 160	Rs. 4,57,000

Hearing on the petition.

3. The hearing on the petition was conducted at the Court hall of the Commission at Thiruvananthapuram on 23.07.2025. Shri. Rajan M.P, Chief Engineer (Commercial & Tariff), Smt. Asha P.A, Deputy Chief Engineer (REES & PED) in

charge of Chief Engineer (REES), along with other officials of KSEBL appeared before the Commission on behalf of KSEBL. Shri. Mukesh Negi, DGM Commercial appeared on behalf of NHPC Ltd, Shri. Rajiv Gupta, DGM Commercial of NTPC Green Energy Ltd, Shri.Vaibhav Sharma, Manger of Tata Power Renewable Energy Ltd and Shri. Vivek Hisaria, Head Project Finance of M/s Opera Green Energy Ltd also appeared through online mode during the hearing. Summary of the deliberations during the hearings is given below.

- (1) KSEBL during the hearing submitted the following;
 - (i) Growing penetration of renewable energy (RE) especially solar has creating severe operational challenges to the grid. As on date, the RE contributes about 1500MW, out of its solar alone accounts for 1264MW. This lead to surplus power during solar hours, however severe power shortage during non-solar hours.
 - (ii) Ministry of Power (MoP), Government of India (GoI) vide the Resolution dated 10.03.2022 has notified the bidding guidelines for procurement and utilisation of Battery Energy Storage Systems (BESS).
 - (iii) MoP had vide order No: F. No. 42-26/1/2022-NRE(Pt-II) Dated 17.10.2024 had sanctioned CPSU Component VGF for BESS upto 30% of the capital cost for BESS or 27 Lakh / MWh whichever is lower to the CPSUs namely NTPC, NHPC & SJVN for the implementation of BESS capacity of 2000MWh, 1500MWh and 1500MWh respectively.

KSEBL, vide letter dated 19.11.2024, conveyed its consent to M/s NHPC to allocate BESS capacity of 375 MW / 1500 MWh for implementation at seven substation premises of KSEBL by utilising the VGF under CPSU component. However, due to high demand from other states, NHPC vide its letter dated 10.12.2024 could allocate only 125MW/ 500MWh only under the scheme.

KSEBL has decided to proceed with the implementation of the BESS under CPSU component of VGF at four substations of KSEBL namely at 220kV substation at Areekode, 220kV substation of Pothencode, 110kV substation at Sreekandapuram and 110kV substation at Mulleria.

The existing transformer capacities of the substation also adequate to handle the discharge from the proposed BESS installations.

KSEBL further submitted that, due to the site specific reasons and Balance of Plant (BoP) requirements at each site, the site wise cost may vary upto 5%.

- (iv) NHPC on behalf of KSEBL has prepared the bidding documents and floated the tender on 17.01.2025 in accordance with the BESS bidding guidelines dated 10.03.2022 and BESS operational guidelines for CPSU component dated 17.10.2024. e-Reverse Auction (e-RA) was held on 21.05.2025. The L1 bidders at each of the four location is given below.

Sl. No.	Substation Location	Shortlisted Developer Name	Capacity (MW / MWh)	Capacity Charges (Rs./MW/Month)
1	Sreekantapuram	M/s NTPC Green Energy Limited	40 / 160	Rs. 4,34,000
2	Mulleria	M/s Opera Energy Pvt. Ltd	15 / 60	Rs. 4,38,000
3	Areacode	M/s Tata Power RE Ltd	30 / 120	Rs. 4,56,000
4	Pothencode	M/s NTPC Green Energy Limited	40 / 160	Rs. 4,57,000

After discovering tariff, KSEBL has conducted negotiations with L1 bidders. Based on the negotiations, M/s Tata Power Renewable Energy Ltd has reduced the rate to Rs 4.52,000/- per MW per month from Rs 4,56,000/- per MW per month.

- (v) KSEBL further submitted that,
- Round trip Efficiency (RtE) @85% set as the benchmark. Performance incentive @Rs 0.50/unit was proposed for energy discharged above this efficiency.
 - If the RtE falls below 70%, KSEBL is not bound to pay capacity charges. If the RtE is between 70% to 85%, liquidated damage shall be levied @APPC charges of previous financial year of KSEBL.
 - Capacity degradation was limited to 2.50% annually. If the degradation was below 2.0%, incentive @Rs 1.00/unit was provided for excess energy discharge.
 - Schedule of commissioning was 15 months from the effective date, i.e, from the date of signing the Battery Energy Storage Purchase Agreement.
 - If the RtE falls below 70%, KSEBL is not bound to pay capacity charges. If the RtE is between 70% to 85%, liquidated damage shall be levied @APPC charges of previous financial year of KSEBL.
 - The project duration is 12 years with an option for five year extension. In the extended period, energy will be procured at 60% of the original tariff.

- (vi) The tariff are discovered through transparent e-Reverse Auction and the tariff discovered is very competitive
 - (vii) Inorder to meet the grid stability, meeting peak demand and also for regulatory compliance, KSEBL requested to approve the BESS project of 125MW/ 500MWh at Sreekantapuram, Mulleria, Areecode and Pothencode substation of KSEBL.
- (2) NHPC has submitted the following during the hearing;
- (i) NHPC is the BESS Implementing Agency (BIA) for the project, for implementing the 125MW/ 500MWh BESS under CPSU component Scheme of VGF for development of BESS.
 - (ii) NHPC has floated the tender strictly as per the BESS guidelines dated 10.03.2022 and BESS operational guidelines dated 17.10.2014.
 - (iii) NHPC also clarified that, there is no deviations were made from the Bidding guidelines dated 10.03.2022. The Bid Evaluation committee constituted by the NHPC certified that, the Bid evaluation was done strictly as per the bidding guidelines.
 - (iv) The selected bidders for the four locations are highly experienced with significant portfolios in Renewable and BESS projects across India.
 - (v) The rates are very competitive, and slight variations in the rates is due to the balance of plant required at each site.
- (3) BESS developers submitted that, they shall comply with the timelines for implementation as per the bidding guidelines and commission the BESS project within 15months from the date of signing the agreement.
- (4) Commission during the hearing has observed the following;
- (i) As per the RfS and the draft Standard Battery Energy Storage Purchase Agreement (BESSPA), the Scheduled Commissioning date is specified at 15 months from the effective date, i.e., from the date of signing the agreement. There is provision for penalty for delay in commissioning of the project beyond the period of 15 months from the effective date. However, there is no provision in the RfS and other bidding documents for incentivising the early commissioning of the project.

The Commission is of the opinion that, since the batteries used in the BESS are now standardised, there is not much lead time for

manufacturing the batteries. Hence, the developers through their concert efforts can very well implement and commission the project much ahead of the stipulated maximum time limit of 15 months specified in the bidding documents.

If the BESS project can commission ahead of the schedule, it will be much beneficial for the utilities like KSEBL, which has been purchasing power during peak hours at excessive rates through short term market and power exchanges.

Early commissioning will be beneficial for the developers also, as it shall ensure early cash flow to the developer.

Hence, the Commission has directed the petitioner KSEBL and the respondents M/s NHPC and also the developers M/s NTPC Green Energy Ltd, M/s Tata Power Renewable Energy Ltd and M/s Opera Energy Private Ltd to look in to the possibility of earlier commissioning of the BESS project ahead of the schedule by providing suitable incentives for early commissioning.

- (ii) Commission also noted that, the trading margin claimed by NHPC @Rs 0.07/unit for the energy output from the BESS project, for the entire period of 12 years from the date of commissioning of the project.

The approximate amount of trading margin payable to NHPC during the entire life of the four BESS projects with total capacity 125MW/ 500 MWh would be more than Rs 20 crore.

The role of NHPC is limited to the initial process of bidding and awarding the contract to the BESS developers on behalf of the buying entity and also to monitor the performance of the BESS project. Practically, the role of NHPC after the commissioning of the project is very minimal. Hence the Commission is of the view that, considering the limited efforts and involvement of NHPC in the project, the trading margin claimed by NHPC is excessively high.

Further, the trading margin @7 paise per unit is the ceiling rate as per the BESS Bidding Guidelines dated 10th March 2022 notified by the MoP, GoI.

However, NHPC submitted that, the trading margin @ 7 paise per unit is claimed for all the tenders floated by NHPC as the BIA for the BESS Implementation under CPSU component of VGF for

development of BESS. NHPC also submitted that, other BIAs such as NTPC and SJVN also claiming the trading margin of 7 paise per unit of the energy discharged from BESS. KSEBL also agreed for this trading margin @7 paise unit. Hence NHPC informed their inability to consent to the observation of the Commission to reduce the trading margin from the agreed rate @Rs 0,07/unit of the BESS output.

- (iii) The Commission also noted the variations in the capacity charges determined through bidding in the four substation locations. KSEBL claimed that, this variation is due to the site specific conditions including the 'balance of plant (BoP)' at each of the substation location.

The Commission has directed KSEBL to clarify the additional works, if any, required to be carried out by the KSEBL as the buying entity.

- (iv) The Commission has noted that, the charging power for the BESS shall be provided by the buying entity KSEBL. Commission has directed KSEBL to clarify how to meet the charging power and what is the approximate tariff for the same during the entire life of the BESS project. However, KSEBL could not provide a clarity on this issue to the satisfaction of the Commission.
- (v) Commission has also noted that, the bidders are quoted the capacity charges @Rs/MW/month basis. However, KSEBL has not estimated the storage cost @per kWh basis and the levelized storage cost for the entire life of the project.

KSEBL has also could not provide a clarity on the per unit cost of energy delivered from the BESS project during peak hours including the cost of charging power, compare to the cost of peak power from other avenues. Without these information, the Commission could not realistically assess the benefit of the proposed BESS project 120MW/500 kWh proposed at four substation location of KSEBL.

4. Subsequently, KSEBL vide the letter dated 23.07.2025 has submitted a copy of the Battery Energy Storage Sale Agreement (BESSA) dated 14.07.2025 signed between NHPC Ltd and KSEBL, for sale of BESS Capacity 125MW/ 500MWh on long term basis, for the formal approval of the signed BESSA.

Analysis and Decision of the Commission

5. Commission having examined the petitions filed by KSEBL dated 11.07.2025, deliberations during the hearing held on 23.07.2025, provisions of the Electricity Act, 2003, bidding guidelines notified by Ministry Power (MoP), Government of India (GoI) dated 10.03.2022, Operational guidelines dated 17.10.2024 for CPSU component under the Scheme for Viability Gap Funding for development of Battery Energy Storage Systems notified by MoP, GoI, other relevant Rules and Regulations in force, decided on the matter as follows.
6. KSEBL had filed the petition dated 11.07.2025 before the Commission with the following prayers;
“
 - (1) *Grant approval for the implementation of BESS at Sreekantapuram (40 MW / 160 MWh), Mulleria (15 MW / 60 MWh), Areacode (30 MW / 120 MWh), Pothencode (40 MW / 160 MWh) substations under tariff based competitive bid.*
 - (2) *Adopt the tariff, discovered in the tariff based competitive bid,, as per section 63 of Electricity Act 2003.*
 - (3) *Approve the trading margin of 7 paise per unit payable to NHPC.*
 - (4) *Grant approval for entering in to BESSA with M/s. NHPC. ”*
7. Commission has examined the prayers of the petitioner as above, and noted the following;
 - (1) Ministry of Power (MoP), Government of India (GoI) vide the resolution dated 10.03.2022 has notified the ‘Guidelines for Procurement and Utilization of Battery Energy Storage Systems as part of Generation, Transmission and Distribution assets, along with Ancillary Services’ with the following specific objectives;

“2. Objectives

The specific objectives of these Guidelines are as follows:
 - a. *To facilitate procurement of BESS, as part of individual RE power projects or separately, for addressing the variability/firming power supply / increasing energy output / extending the time of supply from an individual RE project or a portfolio of RE projects, augmentation of existing RE Projects and/or to provide ancillary, grid support and flexibility services for the grid.*
 - b. *To facilitate procurement of BESS for optimum utilization of transmission and distribution network.*
 - c. *To ensure transparency and fairness in procurement processes/ and to provide for a framework for an Intermediary Procurer as an Aggregator / Trading*

licensees / Implementing Agency for the inter-state/intra-state sale-purchase of power.

- d. *To provide standardization and uniformity in processes and a risk-sharing framework between various stakeholders, involved in the energy storage and storage capacity procurement, thereby encouraging competition and enhanced bankability of the Projects.”*

However, this Guidelines is silent on the financial support in the form of VGF or other means, to be extended by the Central Government for the development of Battery Energy Storage System.

- (2) MoP, Gol vide the Order dated 15.03.2024 has sanctioned a budgetary support of Rs 3760.00 crore for the development of 4000MWh BESS capacity. VGF allowed is upto 40% of the capital cost of BESS, and the same shall be fully funded by the Central Government.
- (3) Subsequent to the above, MoP, Gol vide the letter dated 17.10.2024 has communicated to NTPC, NHPC and SJVN the following;

“Subject: Implementation of CPSU component of Scheme for Viability Gap Funding for development of Battery Energy Storage System (BESS)-regarding.

Sir,

I am directed to refer to this Ministry's Order No. 42-26/1/2022- RCM (Pt.I) dated 15.03.2024 conveying the sanction of the Scheme for Viability Gap Funding (VGF) for development of 4000 MWh BESS capacity with a budgetary support of INR 3,760 Cr. The operational guidelines for this component for development of BESS through Market Mechanism were also issued vide the aforementioned Order.

2. With declining trend of cost of BESS, it has been decided to extend the Viability Gap Funding (VGF) support for higher BESS capacity. A budgetary support of ₹1,350 Cr. for development of 5000 MWh BESS capacity by NTPC, NHPC and SJVN has been provided. This initiative aims to accelerate the deployment of BESS to enhance the integration of variable renewable energy sources in the electricity grid. This would help in achieving the goal of energy security along with energy transition.

3. Accordingly, the Operational Guidelines for Implementation of CPSU component under the Scheme for Viability Gap Funding for development of BESS are enclosed which shall serve as separate guidelines under the sanctioned Scheme. All the agencies concerned are required to take time bound action for development of BESS under this component in accordance with the operational guidelines as well as other relevant rules, regulations, guidelines etc. issued by Central Government and Appropriate Commission.

4. NTPC, NHPC and SJVN, as BESS Implementing Agencies (BIA), have been allocated BESS capacity of 2000 MWh, 1500 MWh and 1500 MWh respectively under the CPSU component.

5. This issues with the approval of the Minister of Power.”

- (4) The Central Government vide the notification dated 17.10.2024 has notified the 'Operational Guidelines for **CPSU component** under the Scheme for Viability Gap Funding for development of Battery Energy Storage Systems. The relevant paragraph of the said guidelines are extracted below for ready reference.

“ 1. Introduction

.....

1.4. *The Central Government, on 15th March 2024, has sanctioned the Central Sector Scheme 'Viability Gap Funding (VGF) for Development of Battery Energy Storage Systems (BESS)' hereinafter referred to as the scheme'. The Operational Guidelines issued under the scheme support Market Based Development of ISTS connected BESS, hereinafter referred to as 'Market Component'.*

1.5. *In order to fast track implementation of BESS in the country, another component of the Scheme is proposed to be implemented by Power Sector CPSUs, by providing predetermined VGF support.*

2. CPSU Component Overview

2.1. *The definitions shall be as per the scheme guidelines approved on 15th March 2024.*

2.2. *Viability Gap Funding (VGF): VGF of upto 30% of capital cost for BESS or Rs 27 lakh per MWh, whichever is lower, shall be provided by the Central Government. The VGF shall be a non- recurring expenditure and shall be fully funded from central grant.*

2.3. *Commissioning Period: The projects are required to be commissioned within a period as per BESS TBCB Guidelines issued by MoP under section 63 of the Electricity Act 2003.*

2.4. *Eligible BIAs: Central Public Sector Undertaking (CPSUs) declared by Ministry of Power shall be the eligible BESS Implementing Agency (BIAS) under CPSU Component.*

2.5. *Eligibility: Eligible BIAs are required to invite bids and sign Battery Energy Storage Purchase Agreement (BESPA) within 9 months from the date of issuance of these guidelines to be eligible under the CPSU Component. Eligible capacities of each CPSU shall be as allocated by Ministry of Power.*

.....

3. Implementation Model

3.1. *The BIA shall secure the charging power for the BESS project preferably from renewable energy sources, and meet the remaining requirement through any other source.*

3.2. *BESS Discharge Management by the BIA. The BIA shall arrange discharge of the BESS through various avenues. These avenues include:*

a. *Power Exchange Sales: BIA will participate in the power exchange market, to sell the electricity discharged by BESS.*

b. Bilateral Tie-Ups: The BIA may enter into bilateral contracts with Distribution Companies to provide targeted energy support.

c. Ancillary Services: BIA may participate in ancillary services markets to provide BESS discharge under different types of grid stability services.

3.3. The BIA shall bear any revenue shortfalls and shall retain any gain from operation of the Scheme. No additional financial support apart from the VGF shall be provided to the BIA by the Central Government.

3.4. The capacity of BESS to be developed by each CPSU under this component shall be as allocated by the Central Government.

4. Selection of BESS Developers

4.1. Bidding Process. The capacity will be offered through tariff based competitive bidding (TBCB) process.

4.2. Project Developer Capacity Limits. To ensure wider participation, a single project developer should be awarded a maximum of 50% of the total capacity offered in a particular bid for the projects with capacity of more than 500 MWh.

4.3. Project Developer Eligibility. It shall be ensured that both public and private sectors participate in the bid and that there is at least one bid from a private sector participant in every bid, failing which the bid shall be cancelled and tender will be floated afresh.

4.4. Contract Period. The project contract period, shall be pre- specified in the RfS document, in line with the provisions of BESS TBCB Guidelines. The contract shall be awarded on Build Own Operate (BOO) / Build Own Operate Transfer (BOOT).

4.5. Developer Selection. Projects shall be awarded using the Tariff-Based Competitive Bidding (TBCB) process conducted by the BIAs in accordance with the RfS document.

4.6. Contract. The BIA initiates the bidding process and signs a Battery Energy Storage Purchase Agreement (BESPA) with the successful bidder for the specified contract period.

4.7. The BIA shall mention the VGF amount and the cap on tariff, in the RfS.

4.8. Bidding Parameter. Developers shall compete based on the annualized fixed cost they offer, expressed in Rupees per Megawatt (MW) per Month subject to the tariff cap after factoring in the VGF specified in the RfS.

.....”

8. Commission has examined the bidding process and selection of bidders for implementing 125MW/ 500MWh BESS project at four substations of KSEBL and noted the following;

- (1) M/s NHPC on 10.12.2024 has allocated 125MW/ 500MWh BESS to Kerala out of 1500MWh of BESS capacity allocated by MoP, GoI, to NHPC under 'implementation of CPSU component of Scheme for Viability Gap Funding for development of BESS'.

- (2) KSEBL has identified four substations, namely Sreekantapuram 110 kV S/s (40MW/ 160 MWh), Mulleria 33kV S/s (15MW/ 60MWh), Arreacode 110kV S/s (30MW/ 120MWh) and Pothencode 110kV S/s (40MW/ 160 MWh).
- (3) M/s NHPC, as the BESS Implementing Agency (BIA) has floated the tender for the selection of the developers, in accordance with the bidding guidelines dated 10.03.2022 read along with the BESS Operational guidelines for CPSU component under VGF for development of BESS dated 17.10.2024.

NHPC certified that, the bidding documents was prepared as per the applicable bidding guidelines dated 10.03.2022 and operational guidelines dated 17.10.2024.

- (4) e-Reverse Auction (e-RA) was held on 21.05.2025. After completing the bidding process, the Tender Evaluation Committee (TEC) constituted by NHPC has recommended for award of work "Selection of Battery Energy Storage Systems (BESS) Developers for setting up of 125MW/ 500 Mwh InSTS. The recommendation of the TEC dated 07.07.2025 is extracted below.

" 4.0 RECOMMENDATIONS OF TEC:

4.1 In view of above deliberations, the committee recommends for award of the work "Selection of Battery Energy Storage System (BESS) Developers for setting up of 125MW / 500MWh InSTS connected standalone Battery Energy Storage Systems (BESS) in the state of Kerala under Tariff Based Competitive Bidding (TBCB) with Viability Gap Funding (VGF) support (NHPC-Tranche-I-BESS) (2024-25)" to

a) M/s Tata Power Renewable Energy Limited at the quoted tariff of Rs. 4,52,000 /MW/Month for 220kV Substation Areacode location of 30MW/120MWh;

b) M/s NTPC Green Energy Limited at the quoted tariff of Rs. 4,57,000/ MW/ Month for 220kV Substation Pothencode location of 40MW/160MWh;

c) M/s NTPC Green Energy Limited at the quoted tariff of Rs. 4,34,000/ MW/ Month for 110kV Substation Sreekantapuram location of 40MW/160MWh; and

d) M/s Opera Energy Private Limited at the quoted tariff of Rs. 4,38,000 /MW/Month for 110kV Substation Mulleria location of 15 MW/ 60MWh."

Based on the recommendations of the TEC, NHPC has decided to award the BESS project at the four substations of KSEBL to successful bidders at the tariff determined through the competitive bidding route.

- (5) Subsequently, on 14.07.2025, M/s NHPC and KSEBL has entered into 'Battery Energy Sale Agreement (BESSA) for sale of BESS capacity 125MW/ 500MWh on long term basis.

9. The Commission has examined the bidding process done by M/s NHPC for implementing 125MW/500MWh BESS at four substation locations of KSEBL by utilising the VGF of Rs 135.00 crore, sanctioned by MoP, GoI vide the Order dated 17.10.2024 under CPSU component of Scheme for Viability Gap Funding for development of BESS.

M/s NHPC vide dated 31.07.2025 certified that, the Notice Inviting Tender (NiT) dated 17.01.2025 for the 'Selection of Battery Energy Storage System (BESS) Developers for setting up of 125MW/ 500MWh InSTS connected standalone BESS in the State of Kerala under Tariff Based Competitive Bidding (TBCB) with VGF support (NHPC- Tranche-I-BESS) (2024-25), there is no deviation from the guidelines in the process of the 'Tender ID: 2025-844873_1) dated 17.01.2025.

After conclusion of the bidding process, Tender Evaluation Committee (TEC) constituted by NHPC has certified that, the technical bid evaluation and financial bid evaluation were carried out as per the provisions of the NiT dated 17.01.2025 and the Bidding guidelines dated 10.03.2022 and Operational guidelines dated 17.10.2024 notified by MoP, GoI.

M/s NHPC and KSEBL has signed the 'Battery Energy Sale Agreement (BESSA) for sale of BESS capacity 125MW/ 500MWh on long term basis on 14.07.2025. KSEBL submitted that, by implementing the project, the internal power handling capacity of the state will increase by 125MW. Further the storage scheme will help to store energy to the extent of 500MWh (0.5 MU/day) for meeting peak power Requirements. The storage system will directly replace equal quantum of peak power purchase from the Power Exchange and payment for BESS can be made from the savings effected in peak power purchase.

KSEBL also submitted that, the proposed BESS project does not require any upfront capital investment from the licensee. Payments will commence only after one month of COD and will offset by savings in peak power purchase costs. The project, therefore, offers a financially sustainable solution for addressing the State's peak demand challenges while augmenting internal power storage capacity.

Considering the distributed electricity requirement and also to meet the grid stability across the State, KSEBL decided to implement the BESS project at four substation locations of the State.

Considering all these aspects, KSEBL requested before this Commission to 'grant approval for the implementation of the BESS project at four substations of the State namely, *Sreekantapuram (40 MW / 160 MWh), Mulleria (15 MW / 60 MWh), Areacode (30 MW / 120 MWh), Pothencode (40 MW / 160 MWh) substations under tariff based competitive bid.*

KSEBL also requested to 'adopt the tariff, discovered in the tariff based competitive bid,, as per section 63 of Electricity Act 2003.'

10. The Commission after appraising the entire matter in detail, decided to approve the first two prayers of the KSEBL as extracted under paragraph 6 of this Order, subject to the following observations and directions.

(1) After appraising the entire bidding process done by M/s NHPC Ltd, the Commission concluded that, the bidding process for the Selection of Battery Energy Storage System (BESS) Developers for setting up of 125MW/ 500MWh InSTS connected standalone BESS, at four substations of KSEBL was done as per the Section 63 of the Electricity Act 2003 and the bidding guidelines notified by MoP, Gol dated 10.03.2022 for the procurement of BESS systems and BESS Operational guidelines dated 17.10.2024 for implementation BESS under CPSU component of VGF for development of BESS.

Hence the Commission has decided to adopt the tariff determined through competitive bidding as per Section 63 of the EA-2003.

(2) However, the Commission is very concerned about the following aspects in connection with the proposed BESS project.

(i) Charging power of the BESS.

As per the bidding documents and agreements signed between the parties, KSEBL as the buying entity shall provide the electricity required for charging BESS during the entire 12 year term of the agreement. The tariff of the electricity used for charging is definitely a deciding factor in assessing the viability of the proposed BESS project.

However, KSEBL is yet to submit the details of the source of the electricity and its tariff, proposed to use for charging the BESS project. Without firmness of the source and tariff of the BESS project, the Commission cannot realistically assess the per unit tariff of the electricity discharged from the BESS project and its benefit in meeting the peak demand of the State.

Considering the importance of the matter, Commission hereby direct KSEBL that, within two months from date of this Order, KSEBL shall submit the firm source for charging power including its tariff, proposed to use for the BESS project during its entire term of 12 years.

(ii) Storage cost in per unit basis.

Commission noted that, BESS developers quoted the capacity charges on Rs per MW per month basis as per the BESS bidding guidelines and RfS documents. But, the capacity charges quoted by the developers does not give a clear understanding of the storage cost of the BESS project in terms of the energy discharged from it.

The charging power required for charging the BESS batteries is the responsibility of KSEBL.

The per unit cost of the electricity discharged from the BESS project includes (a) Storage cost (Rs/kWh) and (b) the tariff of the electricity used for charging with the RtE.

Hence, the Commission hereby direct that, hence forth, while submitting petitions for approval of the implementation of BESS projects, KSEBL shall provide the details of the estimate of the per unit tariff of the electricity discharged from the proposed BESS project. Without such details, the Commission may be constrained to reject such approvals.

(iii) Balance of Plants (BoP) requirements at each substation location.

Commission has also noted the wide variations in the capacity charges quoted by the BESS developers at the four substation locations of KSEBL.

KSEBL submitted during the deliberations of the subject matter that, this variation is due to the BoP requirements and site specific works required at each substation locations for implementation and connectivity of the BESS project with the State Grid.

However, KSEBL has not provided the details of the BoP and site specific works included under the scope of the BESS developer and works, if any, has to be carried out by KSEBL as the buying entity as well as the STU of the State.

Hence, inorder avoid any dispute in future and also avoid delay in commissioning of the project, the Commission hereby direct KSEBL to clearly identify the BoP and other site specific works included under the scope of the BESS developers at each substation location, and also the details of the works, if any, coming under the scope of KSEBL as the buying entity and the STU of the State. The above details also shall be submitted before the Commission within two months from the date of this Order.

(iv) Early commissioning of the project.

As per the concluded bidding documents and agreements, the Scheduled Commissioning of the project is within 15 months from the date of signing of the agreement between NHPC and the BESS developers. There is also provision for penalty for the delay in commissioning of the project. However, the bidding documents and agreements do not have any provision for incetivising early

commissioning of the project ahead of the 15months specified above.

The batteries used in the BESS projects are standardised and the lead time required for supplying batteries for the BESS project once orders are placed are very minimal now. Hence the BESS projects of this kind can be completed much ahead of the schedule specified in the bidding documents and agreements between the parties.

If the BESS project can be commissioned ahead of the schedule, it will be much beneficial for the buying entity, which has been purchasing power during peak hours at excessive rates through short term market and power exchanges.

Early commissioning will be definitely beneficial for the developers also, as it shall ensure early cash flow to the developer.

Considering all these aspects, the Commission hereby direct KSEBL, M/s NHPC as the BIA and the BESS developers, to look into the possibility of early commissioning of the project through mutual discussions at their top management level. The results of the outcome of such discussions may be informed to the Commission within two months from the date of this Order.

With the above observations, the Commission a hereby approve the following;

- (1) ***Implementation of BESS at Sreekantapuram (40 MW / 160 MWh), Mulleria (15 MW / 60 MWh), Areacode (30 MW / 120 MWh), Pothencode (40 MW / 160 MWh) substations under tariff based competitive bid with CPSU component of VGF by Ministry of Power (MoP), Government of India (Gol) to M/s NHPC Ltd.***
- (2) ***Adopt the tariff of the above BESS projects , discovered in the tariff based competitive bid,, as per section 63 of Electricity Act 2003.***

Trading Margin

11. KSEBL has also requested before the Commission to approve the trading margin of 7 paise per unit payable to M/s NHPC as the BESS Implementing Agency (BIA). In this matter, the Commission noted the following;

- (1) As per the Article 1.1 of the Battery Energy Storage Sale Agreement (BESSA) signed between NHPC and KSEBL dated 14.07.2025 provide as follows;

*“The tariff applicable for the sale of BESS capacity by NHPC to Buying Entity under this Agreement shall be the Tariff as applicable for payment by NHPC to BESSD under the terms of the BESPAs between NHPC and the BESSD (individual BESSDs tariff as per Schedule B) fixed for the entire term of agreement at delivery point and in addition thereto a **Trading Margin of 7 paise of Discharged Units(as recorded in Joint Meter Reading)** and any taxes and duties including GST (if applicable) for making BESS capacity available to the Buying Entity under this Agreement, shall be payable by the Buying Entity to NHPC over and above the Applicable Tariff under BESPAs, which NHPC shall be entitled to appropriate as its income.”*

As above, in terms of the signed BESSA between NHPC and KSEBL, the buying entity KSEBL agreed for the trading margin of 7 paise per unit of the discharged unit to the BESS Implementing Agency(BIA), M/s NHPC.

(2) The Commission has also examined the provisions of the trading margin in the prevailing Regulations notified by the CERC and also the BESS bidding guidelines dated 10.03.2022 and BESS operational guidelines dated 09.10.2024. The relevant provisions are discussed below.

(i) Regulation 8(1)(d) of the CERC (Procedure, Terms and Conditions for grant of trading license and related matters) regulations, 2020, (herein after referred to as Trading Licensee Regulations, 2020) provides as follows;

*“8(1) (d) For transactions under long term contracts, **the trading margin shall be decided mutually between the Trading Licensee and the seller:***

Provided that in contracts where escrow arrangement or irrevocable, unconditional and revolving letter of credit as specified in clause (10) of Regulation 9 is not provided by the Trading Licensee in favour of the seller, the Trading Licensee shall not charge trading margin exceeding two (2.0) paise/kWh.”

As above, as per the CERC Trading Licensee Regulations, 2020, the trading licensee and the other party can mutually agreed for the trading margin.

(ii) The Clause G(4) of the Guidelines for Procurement and Utilization of Battery Energy Storage Systems as part of Generation, Transmission and Distribution assets, along with Ancillary Services dated 10.03.2022 notified by MoP, Gol provide as follows.

*“ **G(4).** The Intermediary Procurer shall enter into the Battery Storage Purchase Agreement (BESPA) / Power Purchase Agreement with the Developer(s) and enter into a Battery Storage Sale Agreement (BESSA) /Power Sale Agreement with the distribution licensee(s)/ consumer(s). The BESSA shall contain the relevant provisions of the BESPAs on a back-to-back basis. **The Intermediary Procurer shall be entitled to charge***

trading margin of seven paise/kWh or 0.5% of the Capacity Charges (as applicable) from the Buying entity / Procurer for purchase and sale of such energy/capacity.”

As above, as per the Bidding Guidelines, the maximum trading margin can be claimed by the trading licensee from the Buying entity is 7 paise per unit.

- (iii) The Clause 4.6 of the Operational Guidelines for Scheme for Viability Gap Funding for development of Battery Energy Storage Systems provide as follows.

*“4.6. The trading margin payments to BIAs are calculated based on the energy sold from BESS. The rate of trading margin shall **be four paise per kWh of energy sold**. Should the BIA generate more than 10% surplus revenue annually, it shall be entitled to an additional trading margin of three paise per kWh of energy sold during the year, subject to the condition that the total expenditure on this account does not exceed the revenue surplus generated in that year. Conversely, if there is a revenue deficit of more than 10% annually, a penalty of one paise per kWh of the energy sold annually shall be levied. “*

As above, the trading margin specified in the VGF guidelines dated 15.03.2024 is ‘4 paise per unit only’.

12. In the instant case, the trading margin claimed by NHPC @Rs 0.07/unit for the energy output from the BESS project, for the entire period of 12 years from the date of commissioning of the project.

The approximate amount of trading margin payable to NHPC during the entire life of the four BESS projects with total capacity 125MW/ 500 MWh would be about 20 crore.

However, the role of NHPC is limited to the initial process of bidding and awarding the contract to the BESS developers on behalf of the buying entity and also to monitor the performance of the BESS project.

The charging power and associated ancillary services are met by the buying entity KSEBL only.

Practically, the role of NHPC after the commissioning of the project is very minimal. Hence the Commission is of the view that, considering the limited efforts and involvement of NHPC in the project, the trading margin claimed by NHPC is excessively high.

Further, the trading margin @7 paise per unit is the ceiling rate as per the BESS Bidding Guidelines dated 10th March 2022 notified by the MoP, Gol.

13. Regarding the trading margin, Central Commission also through its various orders clarified that, trading margin @7 paise per unit is the ceiling rate as per the BESS Bidding Guidelines dated 10th March 2022 notified by the MoP, Gol. In this matter, the paragraphs 55 to 57 of the Order dated 16th May 2024 in Petition No. 249/MP/2013 is extracted below.

“55. The Commission, during the course of the hearing, enquired about providing only one trading margin either at Rs 0.07/kWh or 0.5% of the capacity charge envisaged in the BESS guidelines issued by the MoP. SECI, in its reply, has submitted that the intermediary agency is entitled to 0.5% of the capacity charge discovered through the bid process from the end procurer. The additional trading margin of Rs. 0.07/kWh corresponds to the additional responsibility of charging and discharging the BESS capacity through market operations.

56. The Commission notes that though the MoP guidelines do not envisage the responsibility for SECI to charge and discharge the ancillary portion of the BESS capacity, providing an additional trading margin of Rs. 0.07/kwh would result in an additional financial burden on the statutory DSM and Ancillary Services Pool Account and also tantamount to double payment of trading margin for the same quantum of power. In fact, to avoid such instances of double payment, the Central Electricity Regulatory Commission (Procedure, Terms, and Conditions for grant of trading licence and other related matters) Regulations, 2020 (“Trading Regulations, 2020”) provided in Regulation 8(2) as under:

(2) The trading margin specified under these regulations shall be the cumulative value of the trading margin charged by all the traders involved in the chain of transactions between the generator and the ultimate buyer, that is to say, trading margin in case of multiple trader-to-trader transactions and shall not exceed the ceiling of trading margin specified under these regulations.

57. The Commission also notes that the Commission fixes only the ceiling of trading margin, and within the ceiling the contracting parties, are expected to make mutual agreement for the trading margin to be paid/received, subject to the provisions of the Trading Regulations, 2020. The instant case being a pilot project, it would be in the interest of the power sector to optimise cost wherever possible.. In view of the above discussion and in line with Regulations 8(2) of the Trading Regulations, 2020, the Commission hereby directs that for the quantum of power earmarked for Ancillary Services, Respondent No. 2 shall be entitled to charge trading margin such that the cumulative value of the trading margin (i.e. the trading margin of 0.5% of the Capacity Charge plus the additional trading margin towards charging and discharging of BESS) should not exceed Rs. 0.07/kWh. Further, in case charging of power is arranged through ancillary services by the Petitioner, no additional trading margin (over and above the 0.5% of the Capacity Charge) shall be payable to the Respondent No.2. “

14. The role of the CPSU M/s NHPC is limited to initial process of bidding and awarding the contract to the BESS developers on behalf of the buying entity and also to monitor the performance of the BESS developers during the entire term of the Agreement.

KSEBL as the distribution licensee has been arranging the charging power at its own risk and cost.

Since the charging power and other ancillary services are arranged by the Buying Entity, there is no rationale to claim the trading margin at the ceiling rate of 7 paise per unit.

15. However, in the present case, KSEBL has agreed to a trading margin of Rs 0.07/kWh in the BESSA signed with NHPC dated 14.07.2025. Since the BIA and the buying entities have mutually arrived at a consensus and agreed for the trading margin of 7 paise per unit, this Commission is constrained to approve the trading margin @7 paise/kWh of BESS discharge output.
16. However, the Commission hereby clarify that, the approval of trading margin @7 paise per unit of the BESS output cannot be quoted as a precedent in future. KSEBL has the responsibility to optimise the cost of BESS output cost to the possible extent. Hence, the Commission hereby direct that, in future, KSEBL shall negotiate with the BESS Implementing Agencies (BIAs)/ Intermediary Procurer to reduce the trading margin strictly as per the provisions of the Bidding Guidelines for the implementation of the BESS projects, notified by MoP, GoI dated 10.03.2022 under Section 63 of the EA-2003.

Approval of the Battery Energy Storage Sale Agreement (BESSA)

17. KSEBL vide the additional submission dated 23.07.2025 has submitted a copy of the Battery Energy Storage Sale Agreement (BESSA) for sale of BESS capacity of 125 MW/500 MWh signed with M/s NHPC Ltd dated 14.07.2025.

The Commission has examined the BESSA dated 14.07.2025, and suggested to incorporate clarifications on the following clauses of the BESSA as an addendum/ supplementary agreement to the original BESSA dated 14.07.2025.

(1) Average Cost of Power Purchase.

Commission noted that, in Clause 1.3 of the BESSA, the liquidated damages payable from the BESS developer for not maintaining the Round-trip Efficiency (RtE) below is based on the APPC tariff for previous financial year applicable to KSEBL. However, the term APPC is not defined in the BESSA and the RfS.

Hence, in order to get clarity and to avoid disputes in future regarding subject, the term 'APPC' may be defined as follows as per the prevailing orders and Regulations in force;

“Average Power Purchase Cost ‘ or ‘APPC’ during a year means the weighted average cost of the power purchased by KSEBL including the cost of self generation by KSEBL”.

(2) Incentive for excess discharge of energy from the BESS for better capacity degradation of the BESS.

As per the Clause 6.1(iv) of the RfS and also as per Clause 4.4.2 (b) of the standard Battery Energy Storage Purchase Agreement (BESPA), the annual capacity degradation of the BESS is specified as 2.5%.

Further, the Clause 4.4.2 (d) of the standard BESPA provide as follows;

“4.4.2(d) The BESSD shall be eligible for incentive from completion of one year after CoD of entire project capacity @ Rs.1.00 per unit for the excess discharge of energy for the quantum discharged by KSEBL in excess of the minimum dispatchable energy taking into consideration YoY capacity degradation as 2 %.”

Though the incentive for less capacity degradation is payable by the Buying Entity, the same is not included in the BESSA signed with the Buying Entity. Further, proper methodology for the computation of the incentive, if any, payable to the BESS developer for achieving reduction in capacity degradation is also not specified in the RfS, standard BESPA and the signed BESSA between NHPC and KSEBL.

Considering the above facts, the Commission hereby direct M/s NHPC and KSEBL to have a joint discussion with the BESS developers and arrive a methodology for the computation of incentive, if any, payable by the Buying Entity KSEBL to the BESS developers for delivering excess energy discharge by achieving reduction in capacity degradation of 2.5% per annum.

(3) Measurement of Round-trip Efficiency.

Commission noted that, the RfS document and the signed BESSA do not have the procedure for measuring the Round-trip Efficiency.

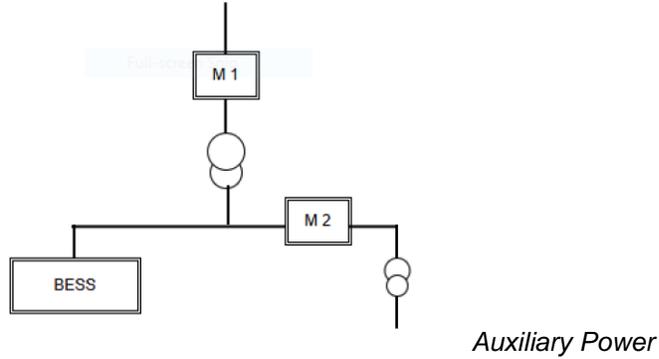
In this matter, the Commission in the Order dated 31.07.2025 in petitions OP No. 23/2025 and OP No.24/2025 has approved a methodology for the measurement of RtE, which is extracted below for ready reference.

“Measurement of Roundtrip Efficiency (RtE):

As directed by the Commission during the hearing, a methodology for computing RtE was formulated in order to avoid future litigations. When the auxiliary power is drawn separately (power is availed through a separate metered connection with KSEBL), the illustration for RtE is provided as follows;

$$RtE = \frac{\text{Energy Discharged by BESS}}{\text{Energy Consumed for Charging}}$$

In cases where the Auxiliary Power is drawn through the Interconnecting Transformer, and without having a dedicated KSEBL supply for auxiliary consumption, RtE is measured as follows;



*M1 – Main Meter at 110 kV,
M_{1E} is Export to Grid & M_{1I}- Import from grid
M 2 – Meter for measuring Auxiliary Consumption.*

$$RtE = \frac{M_{1E}}{(M_{1I} \cdot M_2)}$$

The Commission hereby direct that, suitable provisions for the measurement of RtE as above may be incorporated as part of the BESSA as an addendum/ supplementary agreement.

(4) Early commissioning ahead of scheduled date of Commissioning of the BESS project.

Commission during the hearing held on 23.07.2025 directed the parties to look into the possibility of early commissioning of the BESS project ahead of the Schedule through proper incentive mechanism. The observation of the Commission on this important matter is discussed in detail under paragraph 3(4) and paragraph 10(2)(iv) of this Order.

The NHPC and the BESS developers during the hearings submitted that, there is no provision in the RfS and other standard bidding documents for facilitating early commissioning of the project. However, on detailed appraisal of RfS and other standard bidding documents, it is seen that, there is enough provisions for facilitating early commissioning of the BESS projects. The relevant provisions are extracted below for ready reference.

(i) Section-4, Clause-9 of the RfS provide as follows;

“9 Early Commissioning.

The BESSD shall be permitted for full commissioning as well as part-commissioning of the Project even prior to the SCD. Early commissioning of the Project will be allowed solely at the risk and cost of the BESSD, and the NHPC may purchase the capacity from such early commissioned Project at the BESPAs charges (for the Contracted Capacity), and KSEBL/Buying Entity shall purchase the same at the BESPAs tariff plus NHPC’s facilitation charges in the form of trading margin. KSEBL shall provide in principle acceptance to offtake the early commissioned BESS capacity at BESPAs Tariff, subject to approval from KSERC. The developer shall give fifteen (15) days advance notice to the Procurer(s)

regarding the advance commissioning of full or part capacity. The Procurer(s) shall give acceptance for availing such capacity within 15 days from the date of service of notice.

(ii) Standard Battery Energy Storage Purchase Agreement (BESPA)

Clause 5.1.9

5.1.9 Early Commissioning.

The BESSD shall be permitted for full commissioning as well as part commissioning of the Project even prior to the Scheduled Commissioning Date. Early commissioning of the Project will be allowed solely at the risk and cost of the BESSD, and NHPC may purchase the BESS capacity from such early commissioned Project at BESPA tariff (for the Contracted Capacity) and KSEBL / Buying shall purchase the same at BESPA tariff plus facilitation charges in the form of trading margin payable to NHPC under BESSA. Such intimation for early commissioning shall be provided to NHPC at least 15 days before the proposed early commissioning date as per the Commissioning Procedure. UCOD/COD of the Project under the BESPA will be the date on which the commissioning certificate is issued upon successful commissioning of the part/full capacity of the Project.

Clause 10.3.4

10.3.4 Subject to the Article 9 of this Agreement, in the event of early Commissioning of the Project and subject to acceptance by NHPC, the payment for the Capacity charges may be accounted from the date of UCOD, and BESSD would be allowed to raise Bills against such capacity as per Article 10.2.1, subject to the conditions as stipulated in Article 9. However, payment against the 1st such bill raised by the BESSD, will be made subject to acceptance of the bill by the Buying entity.

(iii) Battery Energy Storage Sale Agreement

Clause 1.2

As per provisions of the BESPA, the BESSDs are permitted for full as well as part commissioning of the Project even prior to the SCD. In case of early part / full commissioning of the Project(s) prior to SCD, Buying Entity shall purchase the BESS Capacity at Applicable capacity charges / tariff as per the BESPA, plus NHPC's Trading Margin of 7 paise / kWh as per BESPA.

As extracted above, the RfS, the standard BESPA and the signed BESSA has enough provisions for facilitating early commissioning of the BESS project, however, there is no proper incentive mechanism therein for facilitating early commissioning.

Considering the matter in detail, the Commission hereby direct the parties to discuss and arrive at a consensus on incorporating suitable incentive mechanism for facilitating the early commissioning of the BESS project within the provisions of the RfS documents for early commissioning of the project, and the same may be incorporated as an addendum/ supplementary agreement to the original BESSA dated 14.07.2025.

KSEBL shall initiate the discussion at its top management level and communicate the results within two months from the date of this Order.

With the above observations and directions, the Commission hereby approve the Battery Energy Storage Sale Agreement (BESSA) dated 14.07.2025 signed between M/s NHPC Ltd and KSEB.

Order of the Commission

18. Commission after examining the petitions filed by KSEBL dated 11.07.2025, deliberations during the hearing held on 23.07.2025, the provisions of the Electricity Act, 2003, bidding guidelines notified by Ministry Power, Government of India dated 10.03.2022, the Operational Guidelines dated 17.10.2024 for CPSU component of VGF for BESS, other relevant Rules and Regulations in force, hereby Orders the following;
- (1) Ratify the action taken by KSEBL for the Implementation of BESS at Sreekantapuram (40 MW / 160 MWh), Mulleria (15 MW / 60 MWh), Areacode (30 MW / 120 MWh), Pothencode (40 MW / 160 MWh) substations under tariff based competitive bid with CPSU component of VGF by Ministry of Power (MoP), Government of India (GoI) to M/s NHPC Ltd.
 - (2) Adopt the tariff of the above BESS projects , discovered in the tariff based competitive bid, as per section 63 of Electricity Act 2003, with the observations given under paragraph-10 above.
 - (3) Approve the trading margin @Rs 0.07/kWh payable by KSEBL to the BESS Implementing Agency (BIA) M/s NHPC Ltd, with the observations and directions given under paragraphs 12 to 14 above.
 - (4) Approve the Battery Energy Storage Sale Agreement (BESSA) dated 14.07.2025 signed between M/s NHPC Ltd and KSEBL, with the observation and directions given under paragraph 17 above.

The petition stands disposed of. Ordered accordingly.

**Sd/-
T K Jose
Chairman**

**Sd/-
Adv. A J Wilson
Member**

Approved for issue

**Sd/-
Mohanakumar B V
Secretary(I/C)**