Before the
MAHARASHTRA ELECTRICITY REGULATORY COMMISSION
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Case No. 157 of 2025

Petition of Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL) seeking approval for procurement of storage capacity from 2000 MW/ 4000 MWh standalone Battery Energy Storage System (BESS) through Competitive Bidding and approval of the Request for Selection (RfS) document thereof.

IA. No. 134 of 2025 in Case No. 157 of 2025

Interlocutory Application of MSEDCL for seeking urgent Hearing in Case No. 157 of 2025.

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IA. No. 135 of 2025 in Case No. 157 of 2025

Application seeking permission to place on record additional documents in the present Petition.

M/s. Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL)… Petitioner

Coram
Sanjay Kumar, Chairperson
Anand M. Limaye, Member
Surendra J. Biyani, Member

For the Petitioner: Mr. Rajiv Naik (Adv)

ORDER

Date: 31 December 2025

1. Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL) filed the present Petition on 27 June 2025. MSEDCL in present Petition seeking approval for procurement of storage capacity from 2000 MW/ 4000 MWh (2 cycle) standalone Battery Energy

Storage System (BESS) through Competitive Bidding. For said purpose, MSEDCL has also prepared the Request for Selection (RfS) document and also praying for approval of the same. MSEDCL referred to Section 86 (1) (b) & (e) of the Electricity Act, 2003, Regulation 94 of the MERC (Conduct of Business) Regulations, 2004 and Regulations 18 & 19 of MERC (Renewable Purchase Obligation, its Compliance and Implementation of Renewable Energy Certificate Framework) Regulations, 2019 and its successive Amendments.

2. **MSEDCL's main prayers are as under:**

"

a) To accord approval for initiation of competitive bidding process for procurement of 2000 MW/4000 MWh (2 cycle) power through competitive bidding under Section 63 of the Electricity Act, 2003.

b) To admit the present Petition under Maharashtra Electricity Regulatory Commission (Multi Year Tariff) Regulations, 2024.

c) To grant approval to the draft Request for Selection (RfS) document

"

3. **MSEDCL in its Petition has stated as follows:**

3.1. As per MSEDCL's Resource Adequacy (RA) Report, the projected total energy demand for the Multi-Year Tariff (MYT) period from FY 2025–26 to FY 2029–30 is estimated at approximately 10,48,444 Million Units (MUs). These projections have been made to ensure long-term planning for reliable and adequate power procurement in line with expected consumer demand growth and grid stability requirements.

3.2. In keeping with the Renewable Purchase Obligation (RPO) Regulations and national energy transition goals, MSEDCL has laid out a strategic plan to meet a significant portion of its power requirement through renewable energy sources, supported by emerging technologies such as BESS.

3.3. As per RPO Regulations, Distribution Licensees need to fulfil Storage Obligation along with other RPO categories. Energy Storage Obligation is specified as 1.5% for FY 2024-25 and increasing 0.5% every year. For FY 2029-30, Distribution Licensees have to fulfil Energy Storage Obligation of 4%. This proposed procurement of BESS will help MSEDCL to fulfil the Energy Storage Obligation considering the increasing energy demand.

3.4. The year-wise projections of energy demand and peak load as per the RA study are as follows:

Demand projections as per RA study by MSEDCL

Years	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Energy (in MU)	189520	199869	209646	219443	229966
Peak (in MW)	27732	30520	33521	34287	35334

3.5. In view of the projected demand growth and evolving generation mix outlined in the Resource Adequacy (RA) Study, it is evident that a significant portion of MSEDCL's future capacity addition plan is centred around intermittent renewable energy sources, particularly solar, wind and hybrid systems.

3.6. The optimal annual capacity addition from solar alone exceeds 9,500 MW in FY 2025–26, with continued capacity buildup across solar, hybrid and FDRE technologies in the subsequent years. Concurrently, the cumulative installed capacity of solar increases from 16,012 MW in FY 2025–26 to 32,377 MW by FY 2029–30, while hybrid and DRE (Distributed Renewable Energy) sources also see a substantial rise.

Optimal capacity mix as per the RA study by MSEDCL (in MW)

Year	Thermal + Gas	Nuclear	Large-Hydro	PSP-BSES Storage	Wind	Solar	Hybrid	FDRE	Bagasse + Biomass	Small Hydro	DRE
FY-2025-26	0	0	0	0	0	9587	300	0	0	0	399
FY-2026-27	0	0	109	750	0	12364	780	1468	345	0	559
FY-2027-28	0	0	313	0	0	1000	3264	0	345	0	782
FY-2028-29	0	0	104	1750	0	3000	0	0	0	0	1095
FY-2029-30	1828	0	0	2074	0	0	0	0	0	0	1533

Cumulative capacity mix with current capacity addition plan as per the RA study by MSEDCL (in MW)

Year	Thermal + Gas	Nuclear	Large-Hydro	PSP-BSES Storage	Wind	Solar	Hybrid	FDRE	Bagasse+ Biomass	Small Hydro	DRE	Total
FY-2025-26	22551	1191	2819	250	2855	16012	300	0	2911	317	2675	51882
FY-2026-27	22551	1191	2928	1000	2855	28377	1080	1468	3256	317	3234	68257
FY-2027-28	22551	1191	3241	1000	2855	29377	4344	1468	3601	317	4016	73961
FY-2028-29	22551	1191	3345	2750	2855	32377	4344	1468	3601	317	5111	79910
FY-2029-30	24379	1191	3345	4824	2855	32377	4344	1468	3601	317	6644	85345

3.7. However, these renewable technologies are inherently variable and non-dispatchable in nature, necessitating the integration of flexible and dispatchable energy storage systems to ensure grid stability, firm power delivery, and peak load management. This is further reinforced by the growing contribution of FDRE (Firm and Dispatchable Renewable Energy), which relies heavily on the integration of BESS and Pumped Storage Projects (PSPs) to meet round-the-clock and peak supply obligations.

3.8. The RA Study explicitly identifies BESS and PSPs as critical enablers for system flexibility. This underscores the strategic need for accelerated procurement of BESS capacity to complement the expanding renewable base, balance intra-day variability, provide frequency regulation, and support compliance with Renewable Purchase Obligation (RPO) trajectories.

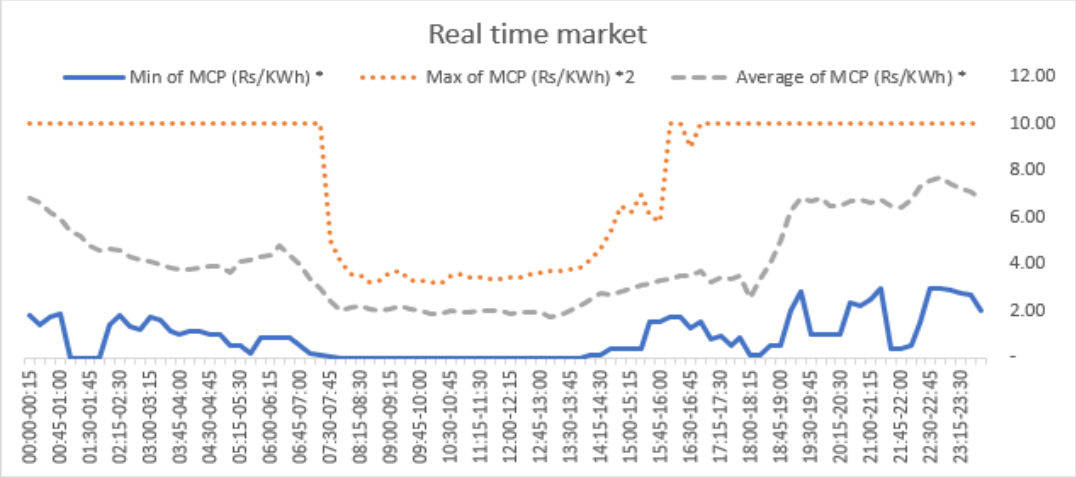
3.9. Given the scale of renewable energy integration, especially solar power, MSEDCL anticipates a recurring surplus of power during daytime hours each year. This is primarily due to the must-run status of renewable energy (RE) plants and the inflexibility in backing down thermal power plants, which must operate at or above their technical minimum threshold (~55%).

3.10. As a result, MSEDCL expects to witness a cumulative daytime surplus of approximately 76,440 MU over the MYT period. The year-on-year daytime surplus energy is presented in the table below:

Surplus power

Financial Year	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	Total
Excess (MUs)	4,346	16,511	22,993	17,080	15,510	76,440

3.11. Given the current market dynamics, selling surplus power in the Day Ahead Market (DAM) has become increasingly challenging. During FY 2024-25, only 46% of the total bid volume was cleared in DAM, clearly indicating intense competition and limited absorption capacity in the exchange market. Similarly, the Real-Time Market (RTM) witnessed a significant price crash during solar hours, further highlighting the limited economic viability of selling excess solar power during the day. MSEDCL has analyzed the RTM market data for the FY 2025-26 (till 16th June):



3.12. It is evident from the above graph that during solar hours, the Real-Time Market (RTM) price often drops to near-zero levels. The minimum RTM price during these hours is consistently close to Rs. 0/kWh, indicating extremely low demand for surplus power. Furthermore, the average RTM price during solar hours hovers around Rs 2/kWh, reflecting limited market value for solar-generated excess energy.

3.13. In contrast, the average RTM price during non-solar hours ranges from Rs. 4 to Rs. 8 per unit, highlighting a clear price differential between peak and off-peak periods. This disparity reinforces the need for energy shifting solutions such as BESS, which can store low-cost surplus energy during solar hours and discharge it when market prices and demand are higher.

3.14. To address this issue and optimize the utilization of surplus renewable energy, MSEDCL is proposing the installation of BESS, 2 cycle with a total capacity of 2,000 MW and 2-hour duration, amounting to 4,000 MWh of storage.

3.15. Under this plan the BESS will be charged during solar hours when surplus power is available in the grid. The stored energy will be discharged during non-solar hours or peak demand periods, thereby reducing reliance on thermal generation, and improving system efficiency.

3.16. This strategic deployment of BESS will not only help MSEDCL manage its renewable surplus effectively but also enhance grid flexibility, reduce curtailment of renewable energy, and contribute to meeting peak power demand in a cost-effective and sustainable manner.

3.17. Further, MSEDCL has recently concluded a competitive bidding process for procurement of BESS services, wherein the discovered tariff is Rs. 2,19,001/- per MW per month for a contract period of 12 years. The procurement comprises a base capacity of 250 MW / 500 MWh, with an additional 500 MW / 1000 MWh under the Green Shoe

Option. The Commission, vide its Order dated 20 March 2025 has granted approval to the said tariff and procurement. The Battery Energy Storage Purchase Agreement (BESPA) is signed on 21 February 2025 and SCOD is 20 August 2026.

3.18. Draft Bidding document

3.18.1. The MoP has approved the Viability Gap Funding (VGF) vide its letter dated 09 June 2025 Ref. No. F.No. 48-15/7/2025-NRE SECTION for proposed BESS capacity in Maharashtra supported through Power System Development Fund (PSDF) at the rate of Rs. 18 Lakhs per MWh of BESS capacity.

3.18.2. In view of this scheme, the RfS document has been prepared based on the Guidelines for 'Procurement and Utilization of Battery Energy Storage Systems as part of Generation, Transmission and Distribution assets, along with Ancillary Services', issued by Ministry of Power vide Notification dated 10 March 2022 and subsequent amendment dated 30 May 2022.

3.18.3. MSEDCL has designed the present bid document based on Availability based Fixed Charge tariff framework in line with MoP's SBD Guidelines dated 10 March 2022 and its amendments.

3.19. The Salient features of the RfS are as under:-

a. Tender Capacity: 2000 MW/ 4000 MWh (2 cycle)

b. Minimum Project Storage Capacity: The minimum bid size is 100 MW/ 200 MWh.

c. Scope Of Works: Build, Own and Operate (BOO) BESS, with the objective of making the energy storage facility available to MSEDCL for charging / discharging, on an 'on demand' basis.

d. Project location: In the vicinity of Substations of the MSEDCL/MSETCL network in the State of Maharashtra. Land identification and allocation for the Projects will be under scope of the MSEDCL.

e. Connectivity with the Grid: BESS shall be connected at 33 kV /EHV level at MSEDCL /MSETCL substation.

f. Viability Gap Funding (VGF): VGF of up to Rs. 18 lakh per MWh will be provided by Ministry of Power.

g. Commissioning: 18 months from the effective date of BESPA.

h. Availability: Minimum system availability of 95% on annual basis.

i. Round trip efficiency: Minimum 85% on monthly basis.

3.20. The tariffs will be discovered through an e-reverse auction so that the increased

competition can help in the discovery of competitive rates. Therefore, the lower averaged out tariff will also help in the reduction of MSEDCL's average power purchase cost basket which is an imperative in its role as a public utility, while at the same time ensuring stable round the clock power to its consumers.

4. On 29 October 2025, MSEDCL filed IA No.134 of 2025 in Case No.157 of 2025 for urgent listing of matter. MSEDCL also filed IA No. 135 of 2025 in Case No. 157 of 2025 seeking permission to place on record addenda issued by it in RfS under consideration.

5. **MSEDCL in its IA No. 135 of 2025 stated as follows:**

5.1. MSEDCL has issued certain addenda to the draft bid documents, incorporating certain revisions, amendments and clarifications to the RfS and the draft BESPA. The said Addenda represents the final revised RfS and BESPA proposed for approval by the Commission.

5.2. Details of addenda issued by MSEDCL are as below:

(a) Addendum 1 dated 14 August 2025:

In respect of RfS issued on 25 July 2025, the pre-bid meeting venue and time along with link for VC was shared.

(b) Addendum 2 dated 07 September 2025:

In respect of RfS issued on 25 July 2025, whereby a change in Project configuration and the last date for submission of technical and financial bids, Technical Bid opening and Financial Bid Opening followed by Reverse E-auction were revised. Vide said addendum, discharge cycle is revised from 2 to 1.

(c) Addendum 3 dated 17 September 2025:

In respect of RfS issued on 25 July 2025, whereby there is a change in Project configuration.

(d) Addendum 4 dated 29 September 2025:

In respect of RfS issued on 25 July 2025, whereby the last date for submission of technical and financial bids, Technical Bid opening and Financial Bid Opening followed by Reverse E-auction were revised. MSEDCL revised the term of BESPA from 12 years to 15 years from the date of full commissioning of the Project.

(e) Addendum 5 dated 30 September 2025:

In respect of RfS issued on 25 July 2025, amendments in Clause 9.1-5 of RfS and Clause 4.4.2.4 of Draft BESPA has been carried out.

Proposed changes are as below:

"

5/4.4.2.4 Taking into consideration capacity degradation, the minimum Dispatchable energy to be made available by the BESSD at the end of as given year shall be as follows:

Year	***Minimum Dispatchable Capacity at the end of Year (as a % of Capacity at the Beginning of Life / Final COD)***
1.	*97.50%*
2.	*95.00%*
3.	*92.50%*
4.	*90.00%*
5.	*87.50%*
6.	*85.00%*
7.	*82.50%*
8.	*80.00%*
9.	*78.50%*
10.	*75.00%*
11.	*72.50%*
12.	*70.00%*
13.	*67.50%*
14.	*65.00%*
15.	*62.50%*

"

(f) Addendum 6 dated 09 October 2025:

In respect of RfS issued on 25 July 2025, the last date for submission of technical and financial bids, Technical Bid opening and Financial Bid Opening followed by Reverse E-auction were again revised.

(g) Addendum 7 dated 17 October 2025: In respect to RfS issued on 25 July 2025 following changes were incorporated:

1. The condition mandating DC-coupled BESS for co-located existing solar projects is withdrawn. Bidders can set up an AC-coupled BESS with these co-located solar projects.
2. Billing methodology for existing project where co-located BESS will be installed
    - For billing of the existing project having PPA with MSEDCL where co-located BESS will be installed, MSEDCL will compute the technical loss

based on the meter readings available at the Generation Meter (project site) and the Delivery/Injection Meter (substation).

- Subsequently, billing of said solar project under existing PPA will be done as per generation meter (project site) by adjusting the technical loss determined in step-1.

(h) Addendum 8 dated 25 October 2025:

In respect of RfS issued on 25 July 2025, the last date for submission of technical and financial bids, Technical Bid opening and Financial Bid Opening followed by Reverse E-auction were again revised.

6. **The IAs along with main matter was listed for hearing on 4 November 2025.** Advocate appearing on behalf of MSEDCL pointed out that it is intending to go ahead with the procurement process in time bound manner and pleaded urgency in the matter. Considering the request the Commission heard the merits of the mater. He narrated the scheme of arrangement and features of bidding documents. Based on averments made during the hearing, the Commission reserved the matter for Orders.

Commission's Analysis and Rulings:

7. MSEDCL has filed this Petition seeking approval for initiating bidding process and associated bidding documents for procurement of 2000 MW/ 4000 MWh (1 cycle) standalone BESS through Competitive Bidding.

8. Based on submissions on record, the Commission frames following issues for its consideration:

a. Regulatory mandate for procurement of Energy Storage Capacities.

b. Assessment of the quantum of energy Storage component.

c. Consonance of Request for Selection (RfS) with Guidelines issued by MoP

9. **Issue A: Regulatory mandate for procurement of Energy Storage Capacities.**

9.1. MSEDCL submitted that it intend to utilize the day time solar energy for charging BESS. Charged up capacity will be utilized for meeting peak demand. As RE power is utilized for charging of BESS, it will be considered for meeting its RPO targets. For supporting averments, MSEDCL has relied upon the Commission's MERC (Renewable Purchase Obligation, its Compliance and Implementation of Renewable Energy Certificate Framework) (First Amendment) Regulations, 2024 (RPO Amendment Regulations).

9.2. The Commission notes that its RPO Amendment Regulations specify RPO targets till 2029-30. In said Regulations, the Commission has introduced new RPO categories, viz.,

Wind RPO, Hydro Power Obligation (HPO), Distributed RPO and Other RPO along with Energy Storage Obligation (ESO).

9.3. As per RPO Amendment Regulations, trajectory of ESO have been specified in Regulation 7.7 of RPO Amendment Regulations, which reads as below:

" 7.7 Energy Storage Obligation

(a) The Energy Storage Obligation shall be calculated in energy terms as a percentage of total consumption of electricity and shall be treated as fulfilled only when at least 85% of the total energy stored in the Energy Storage System (ESS), on an annual basis, is procured from renewable energy sources.

(b) The following percentage of total energy consumed shall be solar/wind energy along with/through storage:

Year	*Storage (on Energy basis)*
2024-25	*1.5%*
2025-26	*2.0%*
2026-27	*2.5%*
2027-28	*3.0%*
2028-29	*3.5%*
2029-30	*4.0%*

...."

9.4. Considering above regulatory mandate, MSEDCL is required to procure Energy Storage Services. Hence, the proposed procurement of Energy Storage Services in terms of BESS is justified.

10. **Issue B: Assessment of the quantum of energy Storage component.**

10.1. For demand projections, MSEDCL has relied upon its Resource adequacy Study and justified BESS capacity procurement.

10.2. The Commission notes that submission on demand and capacity mix in present Petition are varying with reference to MSEDCL's revised Short-Term Distribution Resource Adequacy Rollover Plan (ST-DRAP) & revised Medium Term Distribution Resource Adequacy Rollover Plan (MT-DRAP) dated 23 September 2025. Hence, for reference, the Commission is relying on reported data in ST-DRAP and MT-DRAP.

10.3. The Commission notes that Peak demand projected by MSEDCL in ST-DRAP and MT-DRAP and 20th EPS (which is up to FY 2031-32) are as below:

Peak Demand Projections (MW)

Year	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36
20th EPS	27732	29115	30582	32271	33897	35573	37601	38781	39884				
MSEDCL in ST-DRAP and MT-DRAP			26712	27898	29223	30616	32155	33666	35324	37092	38981	40987	43096

From above, it is evident that MSEDCL's projections are far less than projections in 20th EPS.

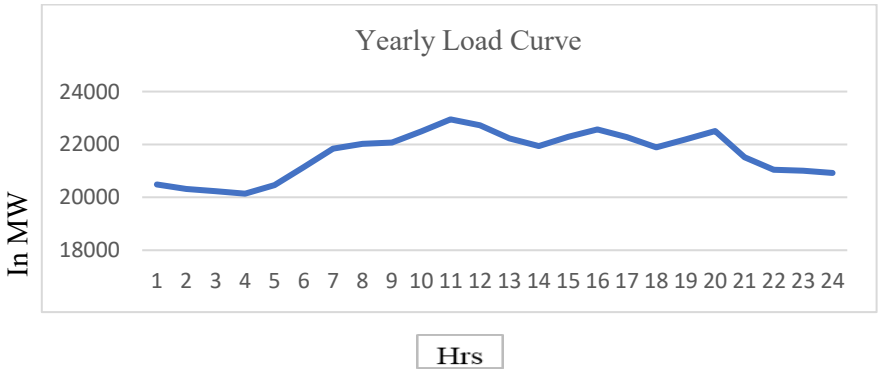
10.4. Further, in FY 2024-25, actual incident peak demand pattern of MSEDCL is as below:

Sr. No.	Max. Demand in MW	Date	Time
1	24775	30 April 2024	01:00 Hrs.
2	24146	06 May 2024	16:00 Hrs.
3	23855	01 June 2024	16:00 Hrs
4	20362	03 July 2024	21:00 Hrs.
5	21891	21 August 2024	20:00 Hrs.
6	22117	18 September 2024	19:00 Hrs
7	22484	29 October 2024	19:00 Hrs
8	24074	15 November 2024	11:00 Hrs.
9	25254	24 December 2024	11:00 Hrs
10	26256	30 January 2025	11:00 Hrs
11	26227	27 February 2025	11:00 Hrs
12	26495	13 March 2025	11:00 Hrs.

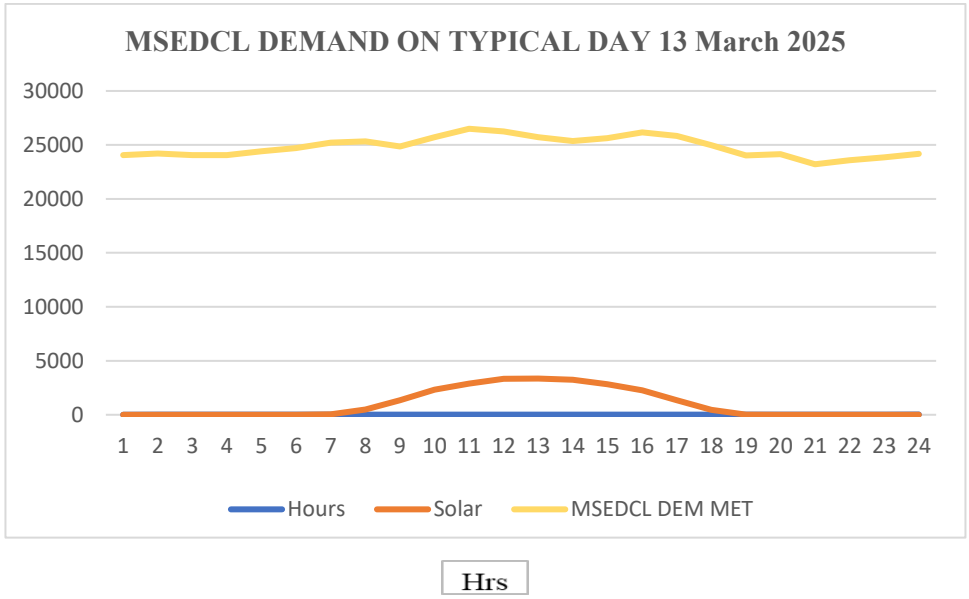
(Source-SLDC)

10.5. Actual recorded maximum demand for FY 2024-25 is in line with trend considered in MSEDCL's ST-DRAP and MT-DRAP.

10.6. MSEDCL categorically submitted that Renewable Energy (mainly Solar power) will be utilized for charging operation. MSEDCL intends to utilize the energy storage facility on a 'On-Demand' basis, suited to its requirements during the peak and off-peak hours. The Commission notes that yearly load curve for FY 2024-25 of MSEDCL's system is as below:



Solar generation is available between 08:00 Hrs to 18:00 Hrs. Once Solar generation is gone, demand falls on conventional thermal units. Thermal units have their own limitations and required considerable ramp up time. Further, Wind is more unpredictable and may increase variability in gird operations. For this purpose BESS is the effective solution. MSEDCL's demand and Solar generation pattern for a high peak demand day (i.e. 13 March 2025) is as below:



10.7. MSEDCL in its ST-DRAP and MT-DRAP has worked out firm capacity during solar peak and non-solar peak as below:

Firm Capacity (in MW) during Solar Peak					
	2026-27	**2027-28**	**2028-29**	**2029-30**	**2030-31**
Thermal	19433	1433	20753	21145	21233
Solar	14156	20400	24021	24021	24021
Wind	210	210	210	210	210
PSP	0	0	0	0	0
BESS	0	0	0	0	0
Others	2725	22609	5684	5684	5684
Total	**36524**	**44652**	**50668**	**51060**	**51148**
Firm Capacity (in MW) during Non-Solar Peak					
	2026-27	**2027-28**	**2028-29**	**2029-30**	**2030-31**
Thermal	19433	19433	19433	20934	21233
Solar	0	0	0	0	0
Wind	500	500	500	500	500
PSP	250	250	2000	3750	4074
BESS	750	2750	2750	2750	2750
Others	5964	5413	5821	4719	5398
Total	**26897**	**28346**	**30504**	**32653**	**33955**

10.8. Total BESS capacity planned in 2750 MW by FY 2030-31. The Commission notes that in its Order dated 20 March 2025 in Case No.173 of 2024, it has accorded approval to procurement of storage capacity from 250 MW/ 500 MWh with additional Green Shoe capacity up to 500 MW/1000 MWh standalone BESS. Considering earlier approved quantum and present procurement of 2000 MW/ 4000 MWh is well within the planned capacity. Hence, the Commission allows MSEDCL to go ahead with proposed long term power procurement of BESS capacity of 2000 MW/ 4000 MWh (1 Cycle).

11. **Issue C: Consonance of Request for Selection (RfS) with Guidelines issued by MoP:**

11.1. The Commission notes that MSEDCL will make arrangement for the power required for charging the BESS Storage project. As the projects are connected to the MSEDCL/MSETCL substation the dispatch instructions will be issued by SLDC/MSEDCL on day ahead basis. MSEDCL is intending to utilize the energy storage facility, on a 'On Demand' basis, suited to its requirements during the peak and off- peak hours to meets its power requirement. MSEDCL will provide required power for charging BESS considering Round Trip Efficiency (AC to AC) under the agreement.

11.2. The Commission noted the above features of bidding document prepared by MSEDCL. As there is no reference bidding document notified by the Central Government under Section 63 of the EA 2003 for procurement of Battery Energy Storage Systems through competitive bidding process, the Commission has evaluated these documents independently and found that proposed provisions are appropriate and also consistent with Guidelines. Accordingly, the Commission approves RfS documents proposed by MSEDCL in present matter.

Hence, the following Order:

ORDER

1. **Petition in Case No. 157 of 2025 is allowed and IA No. 134 of 2025 & IA No.135 of 2025 are disposed of accordingly**

2. **The Commission accords its approval for initiating process for procurement of 2000 MW/ 4000 MWh Battery Energy Storage Systems capacities on long term basis through competitive bidding.**

3. **Request for Selection (RfS) procurement of Battery Energy Storage Systems Capacity is approved.**

Sd/-	Sd/-	Sd/-
(Surendra J. Biyani)	**(Anand M. Limaye)**	**(Sanjay Kumar)**
Member	**Member**	**Chairperson**

(Dr. Rajendra G. Ambekar)
Secretary