

Annexure

Procedure for Scheduling, Metering, Accounting and Settlement for Ancillary portion (150MW/300MWh) of BESS (Pilot) Project

1. Background:

Battery Energy Storage Systems (BESS) pilot project of capacity 500 MW/1000 MWh (2 hours storage) at 400/220 kV Fatehgarh-III (Rajasthan) Sub-Station has been finalized through competitive bidding by SECI. The capacity (fixed) charges discovered through the bidding process is ₹ 10,83,500 per MW/month.

Based on the decision taken by Ministry of Power, 150 MW/300 MWh storage capacity has been earmarked for Ancillary Services as per the requirement of NLDC, Grid-India. Further, DISCOM and the merchant capacity of BESS can also participate under Ancillary services.

2. Role of NLDC, JSW(Developer), SECI:

- a) NLDC shall be the nodal agency for scheduling of power under Ancillary Service Regulation 2022, for the portion earmarked for Grid-India (150 MW/300 MWh) in case charging and discharging of BESS is done through SRAS and/or TRAS.
- b) Developer JSW shall coordinate payments related to deviation settlement, congestion charge, reactive power, RLDC Fees and Charges etc. for the entire BESS pilot project (500 MW/1000 MWh).
- c) SECI shall be the nodal agency for the coordination of procurement and scheduling of power for charging and discharging through market mechanism on behalf of BESS developer (JSW Renew Energy Five Limited) for the portion earmarked for Grid-India (150 MW/300 MWh). SECI shall also coordinate the payment and settlement related commercial aspects associated with the above activities.

3. Registration:

- a) BESS developer shall get registered at NRLDC separately for DISCOM quantum (150 MW), Grid Ancillary Services (150 MW) and Merchant quantum (200 MW) in line with the CERC (Fees and Charges of Regional Load Despatch Centre) Regulations 2019 or amendments or consolidation or re-enactment thereof in the “others” category for the purpose of the pilot project. As the physical grid connected entity, the developer shall be responsible for complying with all extant CEA Standards and CERC Regulations.
- b) Developer shall register as BESS in National Open Access Registry (NOAR) separately for DISCOM portion (150 MW), capacity earmarked for Grid Ancillary Services (150 MW) and for merchant quantum (200 MW) and provide the technical parameters for SRAS and TRAS as per the detailed procedures issued by NLDC.

4. Utilization of BESS under Ancillary Services Portion:

- a) BESS is proposed to be utilized for Primary Reserve Ancillary Services (PRAS), Secondary Reserve Ancillary Services (SRAS) and Tertiary Reserve Ancillary Services (TRAS) as per the extant CERC Ancillary Services Regulations 2022 (AS Regulations) and Indian Electricity Grid Code (IEGC).
- b) The compensation charge for settlement under Ancillary Service Regulation shall be considered as daily average Area Clearing Price (ACP) of the Day Ahead Market (DAM) of the Power Exchange having 80% or more volume in the DAM segment, applicable for the day of despatch. In case no Power Exchange has volume 80% or more in the DAM segment, the weighted average of the daily average ACP of the DAM of all power exchanges shall be taken as compensation charge.
- c) The deployment of BESS, under SRAS shall be based on the compensation charge and the ramp rate provided by the BESS developer.
- d) Based on the grid conditions, BESS under TRAS provision would be despatched as per the following methods.
 - i) Since this earmarked portion of BESS is akin to advance procurement of reserves and the fixed costs are fully paid for this resource, BESS under TRAS provision would be despatched before market procured ancillary service. This is also important from the viewpoint of maximum utilization of BESS for which full cost are already paid.

- ii) Alternatively, BESS may be dispatched (under TRAS) on merit order based on its compensation cost.

5. Likely Dispatch Profile:

- a) Grid Ancillary Services (150 MW) portion:
 - i) NLDC shall inform about the periods when 150 MW/300 MWh shall be required to be made available for discharge for the next day depending on the anticipated system conditions on a day-ahead basis.
 - ii) The periods of despatch may be revised considering the real time system conditions.
 - iii) The periods other than those identified for discharging, shall be used for charging the BESS.
 - iv) Further, BESS shall be enabled to accept AGC signals under SRAS continuously for providing secondary control of frequency regulation.
- b) DISCOM (150 MW) portion:
 - i) DISCOM (s) shall coordinate with the BESS developer for scheduling and despatch of capacity earmarked to them i.e., 150 MW.
 - ii) In cases where more than one DISCOM has share, the efforts shall be made to provide a common agreeable schedule to BESS, as mutually agreed among the BESS developer and the DISCOMs.
- c) Merchant (200 MW) portion:

BESS developer shall be responsible for scheduling and despatch of 200 MW merchant capacity.

6. Declaration of availability by BESS and State of Charge (SOC):

- a) The BESS developer shall declare the available capacity separately for the 3 portions along with a single (combined) availability on a day-ahead basis to NRLDC.
- b) The State of Charge (SOC) separately for the 3 portions, along with a combined portion shall be part of the availability declaration.

- c) At 0000 hours on the date of commercial operation (COD date), the SOC for the Grid-India portion shall be maintained at 50% level of 150 MW/300 MWh. This would enable providing reserves in both directions (up and down).

7. Charging of BESS:

- a) Grid Ancillary Services (150 MW) portion:

- i) Charging through market and /or bilateral mode in consultation with NLDC:

- a. SECI shall arrange charging power on behalf of NLDC.
- b. The charging of BESS shall be done in the designated hours as per the likely despatch profile notified by NLDC.
- c. The charging power may be procured through I-DAM /RTM/TAM/Bilateral mode in a manner so as to minimise the charging power procurement cost.
- d. The cost for arranging the charging power shall be payable to SECI from the DSM pool on weekly basis, after issuance of weekly Ancillary Services accounts by NRPC. However, if the discharging of power of BESS for Grid-India portion is also made through SECI, any gain or loss due to charging and/or discharging of power shall be adjusted against the fixed charges payable to SECI for BESS developer on the Grid-India portion.
- e. The cumulative value of the trading margin payable to SECI i.e. the trading margin of 0.5% of the Capacity Charge plus the additional trading margin towards charging and discharging of BESS through I-DAM/RTM/TAM/Bilateral mode, shall be subject to a ceiling of Rs. 0.07/kWh.

- ii) Charging through Ancillary Services:

- a. The charging power may be arranged through TRAS and/or SRAS by NLDC, keeping in view of the grid conditions.

- b. In case of charging power through ancillary services is arranged by NLDC, then no additional trading margin over and above the 0.5% of the Capacity Charge shall be payable to SECI.

b) DISCOM (150 MW) portion:

BESS developer shall coordinate with DISCOM for charging and despatch of power. The charging by DISCOM shall be scheduled from its portfolio or from its identified generator or source.

c) Merchant (200 MW) portion:

BESS developer shall directly arrange for charging power for the Merchant portion.

8. Scheduling and Despatch:

a) Grid Ancillary Services (150 MW) portion:

- i) NLDC shall despatch the portion earmarked to it under SRAS / TRAS as per the real time system requirements and schedules will be provided accordingly to BESS Developer and/or SECI. The timelines for despatch shall be followed as per the Grid Code (IEGC) 2023 and Ancillary Services Regulations 2022 or its amendments or enactment.

- ii) Depending on the system conditions, NLDC may allow despatch of power through the I-DAM/RTM/TAM which shall be facilitated by SECI.

- a. If the charging of power of BESS for Grid-India portion is also made through SECI, any gain or loss due to charging and/or discharging of power shall be adjusted against the fixed charges payable to SECI for BESS developer on the Grid-India portion.

- b. The cumulative value of the trading margin payable to SECI i.e. the trading margin of 0.5% of the Capacity Charge plus the additional trading margin towards charging and discharging of BESS through I-DAM/ RTM/TAM/Bilateral mode, shall be subject to a ceiling of Rs. 0.07/kWh.

b) DISCOM (150 MW) portion:

- i) DISCOM shall coordinate with the BESS developer for the scheduling and despatch of power.

- ii) If No Objection Certificate (NOC) is provided by the DISCOM, this quantum may also participate in the Energy and/or Reserve market.
- c) Merchant (200 MW) portion:
BESS developer may schedule the power, in any mode viz. energy market, ancillary, bilateral, etc.

9. Metering:

- a) The BESS pilot project will have metering arrangement at project/aggregate (500MW/1000MWhr) level. Accordingly, computation for project performance shall be done at project/aggregated level.
However, for monitoring of SoC, performance and computation of SRAS/TRAS performance incentives, segment wise (DISCOM portion, Ancillary and Merchant portion of the BESS) SCADA and/or PMU and/or any other soft signals as specified by NLDC shall be provided by BESS developer.
- b) NRLDC shall provide the metering scheme and accordingly CTU shall install the Interface Energy Meters (IEM) at the site. The cost of the IEMs shall be borne by the BESS developer.
- c) Considering the fact that this is a pilot project, IEMs having facility for both 5-minute and 15-minute metering shall be installed as a part of the pilot project.
- d) BESS developer shall take weekly meter readings and transmit them to NRLDC as per IEGC provisions. Data flow from BESS to NRLDC shall be as per CERC Regulations and CEA Installation and Operation of Meters Regulations 2006 and its subsequent Amendment(s).

10. Voice and Data requirements:

- a) Reliable voice and data telemetry shall be provided by the BESS Developer.
- b) BESS Developer shall take all measures to ensure the telemetry of all signals/status to NRLDC.
- c) BESS should be ready in terms of infrastructure to accept AGC signals from NRLDC and/or NLDC.

11. Compensation Charge:

- a) For despatch under ancillary services, both SRAS and TRAS (including shortfall and/or emergency provisions), a compensation charge is required as per the Ancillary Service Regulations.
- b) Compensation charge for settlement under Ancillary Service Regulation shall be considered as daily average ACP of the Day Ahead Market (DAM) of the Power Exchange having 80% or more volume in the DAM, applicable for the day of despatch. In case no exchange has volume equal to or more than 80%, the weighted average of the daily average ACP of DAM of all power exchanges shall be taken as compensation charge.

12. Deviation Settlement:

- a) Through appropriate metering philosophy as decided by NRLDC, the actual delivery of BESS shall be recorded and deviations against aggregate schedule shall be worked out for each time block as per extant regulations.
- b) DSM accounts shall be prepared for BESS Pilot for its entire capacity (500MW/1000MWhr).
- c) The charges for deviation shall be as per the applicable regulatory provisions .
- d) NRPC shall issue the weekly DSM accounts for BESS.
- e) The reference charge rate for DSM computation shall be equal to the weighted average of compensation charge/PPA rate/Normal rate of charge, as applicable declared by BESS for all the three portions (Grid-India, DISCOM, Merchant).
- f) The treatment of auxiliary power consumption including transformer losses shall be duly factored by the BESS developer for computation of the ex-bus (MW) quantum of schedule.
- g) BESS Developer shall pay/receive charges for deviation in line with CERC Deviation Settlement Mechanism Regulations, 2022 and its subsequent amendment and/or extant order.
- h) BESS developer shall ensure timely payment of deviation charges to the respective DSM Pool account as per timelines notified in the extant Regulations.

13. Transmission Charges and Losses:

- a) **Grid Ancillary Services (150 MW) portion:** For despatch under Ancillary Services, no interstate transmission charges and losses shall be applicable in accordance with the Ancillary Service Regulations.

- b) **DISCOM (150 MW) portion:** Transmission Charges and Losses shall be applicable as per CERC Sharing Regulation 2020 and its amendment or enactment thereof.
- c) **Merchant (200 MW) portion:** Transmission Charges and Losses shall be applicable as per CERC Sharing Regulation 2020 and its amendment or enactment thereof.

14. Accounting and Settlement for BESS:

a) Grid Ancillary Services (150 MW) portion:

- i) NRPC shall issue weekly Ancillary Services accounts including BESS as per the formats provided in the Detailed Procedure of Ancillary Service Regulation issued by the Nodal agency.
- ii) Charges on account of Ancillary Services shall be settled (pay-in/pay-out) by SECI as per the RPC accounts.
- iii) SECI will raise weekly payment invoice in the name of Grid-India after issuance of weekly Ancillary Services Accounts by the NRPC.
- iv) GST and TDS shall be applicable as per the prevailing rates on the invoice raised by SECI.
- v) TDS as applicable shall be deducted by Grid-India on the invoice raised by SECI. For this, TDS amount will be drawn from the NR DSM pool account by NRLDC (on behalf of Grid-India).
- vi) Grid-India will pay GST on the amount payable to SECI for the weekly fixed/capacity charge and SECI's trading margin.
- vii) The concerned RPC shall issue weekly Ancillary Services Accounts including BESS as per the formats provided in the Detailed Procedure of Ancillary Service Regulation issued by Nodal agency.
- viii) Weekly charges payable to SECI shall be given priority over all other payments from the DSM and Ancillary Pool.
- ix) For charging and/or discharging through the I-DAM/RTM/TAM/Bilateral/Market based TRAS, SECI shall maintain all relevant accounts.
- x) Net payment received on account of Ancillary Service dispatch (except performance based incentive for SRAS) and any gains through I-DAM/RTM/TAM/Bilateral would be used to offset the capacity (fixed) charges.

- xi) Any shortfall in the charges for procurement in charging energy through the market would be disbursed from the Ancillary and DSM Pool Account.
- xii) The cost of charging and discharging of BESS for Grid-India portion is as followed:

Weekly charges payable(f) = (Fixed charges computed per week, payable from DSM Pool (#)) - (Sale through TRAS for discharging - Purchase through TRAS for charging) – (Sale through TRAS market for discharging - Purchase through TRAS market for charging) - (Discharging through SRAS UP – Charging through SRAS DOWN) – (Sale through I-DAM /RTM/TAM/Bilateral – Purchase through I-DAM/RTM/TAM/Bilateral) + Weekly SRAS incentive

(#) Note1 - Fixed charges computed per week, payable from DSM Pool are inclusive of SECI's Trading Margin, Tax (GST) as applicable, Power exchanges transaction fees, open access charges and other incidental charges.

(#) Note2 - Weekly charges payable will also include late payment surcharge if any, subject to annual truing up.

- xiii) Following formulation shall be adopted for payment of weekly fixed charges from Northern Region Ancillary and Deviation Pool Accounts to SECI:

Weekly charges payable(f) = [Fixed charges computed per week, payable from DSM Pool (#)] – (Sale through TRAS UP market for discharging - Purchase through TRAS DOWN market for charging) - (Sale through I-DAM/RTM/TAM/Bilateral – Purchase through I-DAM/RTM/TAM/Bilateral)

(#) Note1 - Fixed charges computed per week, payable from DSM Pool is inclusive of SECI's Trading Margin, Tax (GST) as applicable, Power exchanges transaction fees, open access charges and other incidental charges.

(#) Note2 - Weekly charges payable will also include late payment surcharge if any, subject to annual truing up.

(#) Note3 – The applicable TDS amount shall be deposited by NRLDC after drawn from the DSM pool account.

- xiv) The incentive and/or penalty for performance/availability as per contract for the battery operation will be settled by SECI annually as onetime payment (for incentive) /receivable (for penalty) to/from BESS developer through SECI, subject to annual truing up of availability incentives/penalties, rebate, surcharge, if any, as per the applicable rules thereunder, after the availability certification by NRPC.
- b) DISCOM (150 MW) portion: Monthly Energy Accounts shall be prepared by NRPC.
- c) Merchant (200 MW) portion: Monthly Energy Accounts shall be prepared by NRPC.
