UTTARAKHAND ELECTRICITY REGULATORY COMMISSION

'Vidyut Niyamak Bhawan', Near I.S.B.T., P.O.-Majra, Dehradun-248171

Coram

Shri M.L. Prasad	**Chairman**
Shri Anurag Sharma	**Member (Law)**
Shri Prabhat Kishor Dimri	**Member (Technical)**

UERC (Tariff and Other Terms for Supply of Electricity from Renewable Energy Sources and non-fossil fuel based Co-generating Stations) (Second Amendment) Regulations, 2025.

Statement of Reasons

1. The Commission had issued UERC (Tariff and Other Terms for Supply of Electricity from Renewable Energy Sources and non-fossil fuel based Co-generating Stations) Regulations, 2023 (hereinafter referred to as "Principal Regulations, 2023" or "RE Regulations, 2023") vide notification dated 26th August 2023.

2. Subsequently, the Commission vide notification dated 20.06.2024 issued first amendment to Principal Regulations, 2023 revising the Renewable Purchase Obligation trajectory specified by Ministry of Power, Government of India (MoP, GoI) vide notification dated 20.10.2023 and to comply with the Electricity (Rights of Consumers) Rules, 2020 regarding timelines for key activities for commissioning of grid interactive rooftop and small solar PV plants under net metering as per the directions given by MoP, GoI vide its letter dated 16.11.2023.

3. MoP, GoI vide resolution dated 10.03.2022 issued detailed guidelines for procurement and utilization of BESS as part of generation, transmission, or distribution assets, or along with ancillary services. Thereafter, MoP issued national framework for promoting energy storage system in August 2023. Further, UJVN Ltd. vide its letter dated 16.04.2025 submitted the proposal for its cost data and other performance norms prevalent in other States and requested the Commission for fixation of norms and setting of tariff/trading margin for proposed Battery Energy Storages System (BESS) in the State of Uttarakhand.

4. Further, the Commission had determined the benchmark capital cost and ceiling/levelized tariff for Canal Bank SPV and Canal Top SPV through its RE Regulations, 2023 and over a

period of time, there has been a rapid development in solar power sector in terms of investments, technology and innovations. Solar module cost which was USD 0.166/Wp during FY 2023-24 has drastically reduced to USD 0.066/Wp during FY 2025-26. Further, interest rates have also reduced in the last couple of years. Accordingly, the Commission proposed revised benchmark capital cost and levelized tariff for Canal Bank SPV and Canal Top SPV in draft Second amendment.

5. Further, Central/State Government had introduced/launched various Schemes for promotion of development of solar power plants. Accordingly, the Commission the draft Second amendment Regulation, 2025 covering (A) Provision regarding Battery Energy Storage System, (B) Review of Benchmark Capital Cost and levelized tariff of Canal Bank Solar PV Plants and Canal Top Solar PV Plant and (C) Provision for scheme-wise determination of generic tariff for solar energy based power plants. Last date of the submission of the comments/suggestions/objections was kept as 03.10.2025. The list of stakeholders who submitted comments is enclosed as **Annexure-1.**

Comments / Suggestions / Objections of the stakeholders and Analysis & Decision of the Commission:

1. Amendment in Regulation 2 i.e. *'Scope and extent of application'* of the Principal Regulations, 2023:

"*(1) These regulations shall apply in all cases where supply of electricity is being made from Renewable Energy Based Generating Stations, commissioned after coming effect of these Regulations, to the distribution licensees or local rural grids within the State of Uttarakhand:*

Provided that in cases of Wind, Small Hydro projects, Biomass power based on Rankine cycle, Non-Fossil Fuel based cogeneration projects, Solar PV, Canal Bank & Canal Top Solar PV projects, Solar Thermal power projects, Grid Interactive Roof Top and Small Solar PV plants, Battery Energy Storage System, Biomass gasifier and Biogas, Municipal Solid Waste and Refuse Derived Fuel based power project these Regulations shall apply subject to the fulfilment of eligibility criteria specified in Regulation 4 of these Regulations.

Provided further that the location and benefits to be derived from BESS projects should be clearly identified by the discom based on some scientific study and approval of the Commission shall be sought before issuance of the bids.;

Provided further that Regulations in Chapter 4 & 5 (except clause (B) & (C) of sub-Regulation (1)

of Regulation 27) of these Regulations shall not be applicable for generating stations commissioned prior to coming into effect of these Regulations and their existing tariffs shall continue to be applicable;

Provided also that clause (d) of sub-Regulation (3) of Regulation 11, 2nd & 3rd proviso of sub-Regulation 7 of Regulation 15 shall be applicable to such stations commissioned prior to coming into effect of these Regulations;

Provided that the tariff computation norms shall be in accordance with the Regulations prevalent during the year of commissioning of those stations;

Provided also that normative levelised tariff of 12 paise/unit, over and above the generic tariff for solar thermal/PV generating stations and normative levelized tariff of 5 paisa/unit, over and above the generic tariff for Small Hydro Plants as specified in Regulation 16(1)(c) shall also be applicable to such stations commissioned prior to coming into effect of these Regulations;

Provided also that the Regulations other than those in Chapter 4 and 5 shall apply to other generating stations located in the State of Uttarakhand, which are based on Renewable Sources of Energy including non-fossil fuel based Co-generation and which transmit and/or supply electricity to any person other than the distribution licensee of the State utilizing State Transmission and/or Distribution System.

(2) The existing projects, which are at present supplying power to third party shall have the option to switch over to supply to the distribution licensee subject to provisions of Regulation 7 of these Regulations or the local rural grid, at generic tariffs as was applicable at the time of commissioning of their project or seek determination of project specific tariff from the Commission. The option shall be for the balance life of the project and shall not be allowed to be changed once it is exercised.

(3) The generic tariff specified for Wind, Battery Energy Storage System, Solar PV and Solar Thermal power projects under these Regulations shall be the maximum tariff and the distribution licensee shall invite tariff based competitive bids from generators/developers for procurement of power from these generators/developers. The distribution licensee shall enter into a PPA with the generators/developers bidding lower tariff.

Provided that implementation of Canal Bank and Canal Top Solar Power Plants by the eligible government organisation shall be done through tariff based competitive bidding process. In such cases PPA for sale of power from these plants shall be signed with distribution licensee with the eligible Government organisation who shall get a margin of 4% of the tariff quoted by L-1 bidder towards their resources employed, however, the tariff plus a margin of 4% shall not exceed the

generic tariff determined by the Commission for the year of commissioning.

Provided that in case of an Intermediary Agency, for implementation of Battery Energy Storage System for the discom, the trading margin shall be 5 paise per unit. The L-1 tariff plus a margin of 5 paise shall not exceed the generic tariff determined by the Commission for the year of commissioning.

Provided further that in no case PPA for purchase of power by the distribution licensee shall be executed at a tariff exceeding the ceiling tariff as specified by the Commission in accordance with the regulations.

(4) The generating stations covered under these Regulations shall be deemed to be the generating station of a generating company and all functions, obligations & duties assigned to such generating company under the Electricity Act, 2003 shall apply to these generating stations."

Comments received:

1.1. **UJVN Ltd.**

(i) With regard to second proviso of the proposed amendment to Regulation 2(1) of the Principal Regulations 2023, UJVN Ltd. submitted that assigning responsibility of location and benefits derived from BESS projects to Discom does not fully reflect the practical requirement and established institutional framework. The identification of BESS projescts require a holistic approach, involving:

- Technical Studies for grid stability, peak shaving, and RE integration.
- Assessment of land availability analysis.
- Cost benefit and financial viability analysis.
- Long term operational accountability and coordination with SLDC and UPCL.

UJVN Ltd. is already performing these functions in practice. UJVN Ltd. submitted that while preparing DPRs, BESS project locations have been finalised after duly considering demand-side requirement of Discom as well as availability of land in and around UJVN ltd. benefits can be derived when project identification is carried out in a coordinated manner. Accordingly, it proposed the following:

"Provided further that the location and benefits to be derived from BESS project should be identified by the DISCOM ***in consultation with implementing agency as may be***

designated by the State Government/Commission, *based on a scientific study, and approval of the Commission."*

(ii) With regard to the proposed amendment to Regulation 2(3) of Principal Regulations 2023, UJVN Ltd. submitted that the provision "the distribution licensee shall invite tariff based competitive bids from generator/developers for procurement of power…" is not aligned with MoP recent notification dated 19.09.2025 which permits BESS to be developed, owned, leased or operated by generating companies, transmission/distribution licensees, consumers, system operators or independent energy stargate service provider. Further the distribution licensee or a consumer, shall have the same legal status as that of the owner, even if not co-located with the generating station or distribution licensee.

In case of distribution licensee itself implementing BESS/solar PV etc, will have to invite tariff based bids which is not feasible, therefore, a proviso may be added for transmission/distribution licensee implementing BESS by itself.

(iii) With regard to proposed 1st & 2nd proviso of Regulation 2(3) of the Principal Regulations 2023, UJVN Ltd. submitted that draft Regulation restricts solar projects by government agencies only to Canal Bank and Canal Top SPV projects and Ground mounted SPVs have been left. It may create unnecessary barriers if suitable canal site are unavailable, ground mounted solar projects on government land should also be permitted. It is requested to retain the existing regulation.

UJVN Ltd. further submitted that the draft proposes trading margin of 4% for Solar canal top & canal bank projects and 5 paisa/unit for BESS projects. In the matter it is submitted that a sudden reduction of 50% is inconsistent with the past finding (10% to 8%). Further, the proposed per-unit facilitation margin of 5 paisa/unit for BESS project is inadequate considering that UJVN Ltd. functions as the implementing agency owing the land, signing contracts, and being responsible for scheduling, availability and compliance over life of project. Margin should be structured as percentage of capacity charge (per MW/month). Per unit margin may create significant operational and billing difficulties. Unlike solar projects, the actual energy discharged from BESS is not constant but fully dependent on scheduling instructions from UPCL/SLDC and demand. For instance, if SLDC/UPCL does not

schedule energy from BESS for 2-3 days, the BESS records zero generation despite being fully available.

UJVN Ltd. submitted that at 5 paise/kWh, while implementing 150 MWh BESS project, it would earn less than Rs. 0.60 Crore annually (150 MWH *2*365= 109.5 MUs*0.05= Rs. 54.75 Lakh) while recurring costs already exceeds Rs. 1 Crore. Such low margin would certainly erode the financial sustainability of the implementing agency and discourage the development of BESS. UJVN Ltd. suggested that percentage of 8% margin linked to capacity charges may be considered.

(iv) On the Regulation 2(4) of the Principal Regulations 2023, UJVN Ltd. submitted that it is not functioning merely as an intermediary agency but rather as a full implementing agency bearing long term and substantive responsibilities throughout the entire life cycle of solar and BESS projects. UJVN Ltd. provides Land, prepares DPR, undertakes regulatory processes, sign agreements and contracts, coordinate with UPCL and SLDC and remain fully accountable for the entire life of the project. UJVN Ltd. submitted that in both categories, UJVN Ltd.'s role is continuous, resource-intensive, and long-term. It therefore submitted that characterizing this role as "minimal" after commissioning, or providing only a nominal facilitation margin, would not reflect the true nature of UJVN Ltd.'s responsibilities.

UJVN Ltd. requested the Commission to kindly recognize its complete responsibilities as an Implementing Agency and to ensure that the regulatory framework and facilitation margin are designed in a manner that duly reflects and compensate these continuous obligations over full project life cycle.

1.2. **UPCL**

(i) With regard to 2nd proviso of Regulation 2(1) of the Principal Regulations 2023, UPCL submitted that "Scientific study" should be made public/ peer reviewed, with stakeholder consultations, and criteria for benefit allocation be clearly specified. Further, UPCL also requested the Commission to clarify who would bear the cost of the said study and timeline for such approval so that procurement is not delayed.

(ii) With regard to 6th proviso of Regulation 2(1) of the Principal Regulations 2023,

UPCL submitted that the normative levelized tariff of 12 paise/unit, over and above the generic tariff for solar thermal/PV generating stations and normative levelized tariff of 5 paisa/unit, over and above the generic tariff for Small Hydro Power Plants, may also be incorporated and corrected in Regulation 16(1)(c) accordingly.

(iii) With regard to Regulation 2(3) of the Principal Regulations 2023, UPCL submitted that a model RfS/PPA template/guidelines for BESS specifying technical eligibility, performance guarantee, penalties, despatch rights etc. may be provided by the Commission. It also requested to provide clarification on bidder qualification, minimum size of BESS and modularity.

(iv) With regard to 2nd proviso of Regulation 2(3) of the Principal Regulations 2023, UPCL submitted that eligible Government Organisation basically serves as an Intermediary Procurer like SECI so as such the trading margin is required to be capped at the level of allowable trading margin, i.e. Rs. 0.07/unit as provisioned in "CERC (Procedure, Terms and Conditions for grant of trading license and other related matters) Regulations, 2020" or 4% of the tariff quoted by the L-1 Bidder, whichever is less.

1.3. **UREDA**

With regard to Regulation 2(3) of the Principal Regulations 20023, UREDA submitted that as per Uttarakhand State Solar Policy, 2023 total capacity under Type-I and Type-IV of Clause 8.1 shall be as per RPO target specified by the Commission from time to time and UREDA shall invite proposals from time to time for selection of solar power plants through a tariff-based competitive bidding process separately for hilly and plain terrains. There shall be a set of qualification criteria fixed by UREDA for the prospective Developers of solar power plants.

UREDA submitted that the proposed draft is contradictory and not as per Solar Policy, 2023. Further, it may hinder in the process defined by GoUK for achievement of the target defined in Solar Policy, 2023. Further, as per Point 7.1 of the Solar Policy 2023, UREDA is the nodal agency for these schemes.

Commission's view and decision

1.4. With regard to the comments of UJVN Ltd. that BESS projects should be identified by distribution licensee in consultation with implementation agency, it is pertinent to

mention that identification of optimal BESS locations requires detailed analysis of load profiles, network constraints, feeder-wise bottlenecks, reliability indices, and local demand-supply dynamics data etc. which resides primarily with Discoms. Besides power flows two way from such projects, i.e. for charging as well as during discharging, hence, as Discoms are responsible for planning, operating, and maintaining the distribution network, they are best placed to finalise the location based on a scientific study. UJVN Ltd.'s suggestion that Discoms should identify locations in consultation with the implementing agency, in this regard it is relevant to note that. the implementing agency's role begins after the location and technical requirements are identified and approved, involving the implementing agency in the location-identification stage may compromise the objectivity and independence of the study and could also lead to conflicts of interest. However, in order to provide necessary flexibility, the scope for such assistance, if required, from any external agency can be left to the discretion of Discom. Therefore, the Commission is of the view that location found by any other entity may be considered for installation of BESS subject to the consent given by distribution licensee.

With regard to the comment that Draft Regulation 2(3) of the Principal Regulations, 2023 is not aligned with the MoP, GoI notification dated 19.09.2025, the Commission clarifies that the RE Regulations are applicable in cases where power or services are procured by the State Distribution Licensee. Accordingly, any BESS developer providing storage services to the Distribution Licensee shall fall within the ambit of these Regulations. Further, the Regulations clearly specify that the responsibility for inviting tariff-based competitive bids lies with the Distribution Licensee, which may do so either directly or through any other authorised agency.

With regard to UJVN Ltd.'s comment on inclusion of ground-mounted Solar PV projects in the first proviso to Regulation 2(3) of the Principal Regulations, 2023, the Commission observes that the draft provisions permits any Government organisation to install solar power plants on Canal Bank and Canal Top in accordance with the Solar Policy, 2023 and the RE Regulations, 2023, as amended from time to time, however, it does not include ground mounted Solar PV Plants.. This non-inclusion may inadvertently create an unnecessary barrier for Government organisations wishing to

utilise available unutilised land for development of ground-mounted Solar PV plants. In view of the above, the Commission accepts the proposal of UJVN Ltd. in this matter.

Further, as far as UJVN Ltd. comment on trading margin for intermediary agency, it is pertinent to mention that the margin allowed to implementing Government organisations is not a return on equity, but is a recovery towards expenses incurred for the administrative efforts, coordination roles and other efforts carried out by it. Moreover, the Commission also observes that a 4% trading margin translates to approximately Rs. 0.16/kWh for ground-mounted SPV, Rs. 0.17/kWh for Canal Bank SPV, and Rs. 0.18/kWh for Canal Top SPV. These values are significantly higher when compared with the ceiling trading margin of Rs. 0.07/kWh prescribed by the Central Commission, thereby indicating that the proposed 4% margin already provides sufficient compensation for such consequential expenses. Further, the salary and administrative expenses submitted by the stakeholder are general establishment expenses that are not attributable to any single project. From the details submitted, it appears that the employees and administrative resources are deployed across multiple solar and not exclusively any one project. Accordingly, the Commission is of the view that the proposed 4% margin offers an appropriate balance between compensating the implementing agency and ensuring that consumer tariffs remain reasonable.

Furthermore, with regard to margin allowed to intermediary agency for BESS projects, it is clarified that DPR preparation costs are one-time expenditures and cannot serve as the basis for determining trading margin. As an intermediary agency, the proposed trading margin of Rs. 0.05/kWh is reasonable with the limited facilitation role assigned to such agency. The stakeholder is advised to prudently manage its internal expenses. Accordingly, the stakeholder's proposal to fix an 8% margin for BESS projects is not accepted.

With regard to UJVN Ltd.'s request to recognize it as an implementation agency, the Commission at present does not find any need to constitute an implementing agency. However, the Commission may consider the same, if required, at later stage.

1.5. As far as UPCL's comment on bearing the expenses for the scientific study required to identify suitable locations for the BESS project, it is clarified that such expenditure shall form part of the overall project cost. Furthermore, it shall be at the discretion of the

distribution licensee to decide whether the scientific study is to be made publicly available for consultation.

Further, with regard to allowing lower of trading margin as specified by CERC of Rs. 0.07/kWh or 4% of tariff quoted by L-1 bidder, it is pertinent to mention that the Commission has already dealt with the issue in the preceding paragraphs of this SoR.

Further, with regard to UPCL's comment on the sixth proviso of draft Regulation 2(3) of the Principal Regulations, 2023 wherein it has been suggested that the additional 12 paise/unit and 5 paise/unit over and above the generic tariff for Solar Thermal/PV generating stations and Small Hydro Power Plants, respectively, be incorporated and corrected in Regulation 16(1)(c) of the Principal Regulations, 2023. The sixth proviso to Regulation 2(3) applies only to those plants that were commissioned prior to the issuance of the Principal Regulations, 2023. In contrast, Regulation 16(1)(c) of the Principal Regulations, 2023 is applicable to projects commissioned, or to be commissioned, after the issuance of the said Regulations. Hence, no change is required.

1.6. UREDA submitted that as per Solar Policy, 2023, it shall invite proposals from time to time for selection of solar power plants through tariff based competitive bidding process to meet RPO targets of discom. The draft regulation 2(3) of the Principal Regulations, 2023 is contradictory and does not align with the Solar Policy. In the matter, the Commission agrees with the proposal of UREDA and decides to make appropriate changes in the said provision.

Accordingly, based on the above discussion, the Commission hereby modifies Regulation 2 of the Principal Regulations, 2023 which shall now be read as follows:

Regulation 2 i.e. '*Scope and extent of application*' of the Principal Regulations, 2023:

"

(1) These regulations shall apply in all cases where supply of electricity is being made from Renewable Energy Based Generating Stations or Battery Energy Storage System, commissioned after coming effect of these Regulations, to the distribution licensees or local rural grids within the State of Uttarakhand subject to the fulfilment of eligibility criteria specified in Regulation 4 of these Regulations.

Provided further that the location and benefits to be derived from BESS projects, based on a scientific study, shall be identified by the DISCOM. However, in case it is identified by any other entity, it shall be subject to acceptance of DISCOM;

Provided further that Regulations in Chapter 4 & 5 (except clause (B) & (C) of sub-Regulation (1) of Regulation 27) of these Regulations shall not be applicable for generating stations commissioned prior to coming into effect of these Regulations and their existing tariffs shall continue to be applicable;

Provided also that clause (d) of sub-Regulation (3) of Regulation 11, 2nd & 3rd proviso of sub-Regulation 7 of Regulation 15 shall be applicable to such stations commissioned prior to coming into effect of these Regulations;

Provided that the tariff computation norms shall be in accordance with the Regulations prevalent during the year of commissioning of those stations;

Provided also that normative levelised tariff of 12 paise/unit, over and above the generic tariff for solar thermal/PV generating stations and normative levelized tariff of 5 paisa/unit, over and above the generic tariff for Small Hydro Plants as specified in Regulation 16(1)(c) shall be applicable to such stations commissioned prior to coming into effect of these Regulations;

Provided also that the Regulations other than those in Chapter 4 and 5 shall apply to other generating stations located in the State of Uttarakhand, which are based on Renewable Sources of Energy including non-fossil fuel based Co-generation and which transmit and/or supply electricity to any person other than the distribution licensee of the State utilizing State Transmission and/or Distribution System.

(2) The existing projects, which are at present supplying power to third party shall have the option to switch over to supply to the distribution licensee subject to provisions of Regulation 7 of these Regulations or the local rural grid, at generic tariffs as was applicable at the time of commissioning of their project or seek determination of project specific tariff from the Commission. The option shall be for the balance life of the project and shall not be allowed to be changed once it is exercised.

(3) The generic tariff specified for Wind, Battery Energy Storage System, Solar PV and Solar Thermal power projects under these Regulations shall be the maximum tariff and the distribution licensee shall, either on its own or through any other agency, invite tariff based competitive bids from generators/developers for procurement of power/BESS services from such generators/ developers. The distribution licensee shall enter into a PPA with the generators/developers

bidding lowest tariff.

Provided that implementation of Canal Bank, Canal Top and ***Ground mounted Solar Power Plants*** *by the eligible government organisation through any developer shall be done by way of tariff based competitive bidding process. In such cases PPA for sale of power from these plants shall be signed with distribution licensee with the eligible Government organisation who shall get a margin of 4% of the tariff quoted by L-1 bidder towards their resources employed, however, the tariff plus a margin of 4% shall not exceed the generic tariff determined by the Commission for the year of commissioning.*

Provided that in case of an Intermediary Agency, for implementation of Battery Energy Storage System for the discom, the trading margin shall be 5 paise per unit. The L-1 tariff plus a margin of 5 paise shall not exceed the generic tariff determined by the Commission for the year of commissioning.

Provided further that in no case PPA for purchase of power by the distribution licensee shall be executed at a tariff exceeding the ceiling tariff as specified by the Commission in accordance with the regulations.

(4) *The generating stations covered under these Regulations shall be deemed to be the generating station of a generating company and all functions, obligations & duties assigned to such generating company under the Electricity Act, 2003 shall apply to these generating stations."*

2. Insertion of definition of 'Battery Energy Storage System' after sub-regulation (1)(iii) of Regulation 3 of Principal Regulations, 2023:

"(iii)(a) ***"Battery Energy Storage System"*** *or* ***"BESS"*** *means the system that shall utilize methods and the technologies such as electrochemical batteries (Lead Acid, Li-ion, solid state batteries, flow batteries, Nickel-cadmium etc.), providing a facility that can store chemical energy and deliver the stored energy in the form of electricity, including but not limited to ancillary facilities (grid support)."*

<u>Comments received:</u>

2.1 UPCL

UPCL submitted that a catch-all phrase such as "or any future battery storage technology meeting equivalent performance/ safety standards" may be added in the last of the definition to avoid locking out new technologies. Further, UPCL also requested to clarify whether hybrid plus storage system (eg. Solar +BESS integrated)

falls under the same rules or need special handling.

Commission's view and decision

With regard to the comment of UPCL, it is clarified that the proposed definition of Battery Energy Storage System is intended to be inclusive rather than exhaustive. The technologies specified represent currently established electrochemical storage systems; however, the definition does not prohibit consideration of emerging battery technologies as and when such technologies attain recognized performance parameters, safety standards, and regulatory acceptance. Accordingly, the comment of UPCL is not accepted.

Further, with regard to the clarification on the applicability of these rules to hybrid plants integrated with storage, it is pertinent to mention that under this amendment, the norms have been specified only for stand-alone Battery Energy Storage Systems (BESS), wherein the energy stored in the BESS shall be utilised by the distribution licensee or the State Load Despatch Centre (SLDC), as per the system requirements.

Accordingly, based on the above discussion, the proposed definition of "Battery Energy Storage System" after sub-regulation (1)(iii) of Regulation 3 of the Principal Regulations, 2023 shall be considered as final.

3. Insertion of definition of *'Charge Ramp Rate'* and *'Cycle Efficiency of Energy Storage System'* after sub-regulation (1)(xiii) of Regulation 3 of Principal Regulations, 2023:

"(xiii)(a) ***"Charge Ramp Rate"*** *means how quickly electric storage resources can transition from zero state to charge to full state of charge.*

(xiii)(b) ***"Cycle/Round Trip Efficiency of Energy Storage System"*** *means, the ratio of discharge capacity of Battery Energy Storage System to charge capacity of Battery Energy Storage System in a single cycle, regardless of the self- discharge loss of the Battery Energy Storage System".*

Comments received:

3.1 **UPCL**

UPCL requested the Commission to specify minimum and maximum value (or acceptable range) or required normative reference eg. (IEEE/IEC standards). UPCL also submitted that provision for the BESS developers to state ramp rates in bid submissions, penalties or obligations if the system fails to meet stated ramp rate during operation may be incorporated.

Commission's view and decision

With regard to the comments of UPCL, it is pertinent to mention that the Ministry of Power, GoI has issued Guidelines for "*Procurement and Utilization of Battery Energy Storage Systems as part of* Generation*, Transmission and Distribution assets, along with Ancillary Services"* on 10.03.2022. Clause 1.1 of Section III i.e. Bidding Process and Award of Projects, of the above guidelines specifies as follows:

"1.1. Bid Documentation:

a. The Procurer shall prepare the bid documents in accordance with these Guidelines, except as provided in sub clause b below.

b. The Procurer shall seek prior approval of the Appropriate Government for deviation, if any, in the draft RfS, draft BESPA, draft BESSA (if applicable) from these Guidelines, in accordance with the process described in Clause A, Section V of these Guidelines.

c. In case of an ongoing bidding under process prior to notification of these Guidelines, the provisions of the specific tender document shall prevail."

Further, UPCL has to frame a detailed procedure for optimal utilisation of BESS as given in Regulation 39.A(5), hence, the minimum and maximum value of charge/ discharge ramp rate shall be laid down in the same. Accordingly, there is no need to specify the same in the regulations.

Hence, based on the above discussion, the definition specified in draft Second amendment regulations, shall be considered as final.

4. Amendment in sub-regulation (1)(xvi) of Regulations 3, i.e. *'Definitions'* of Principal Regulations, 2023:

"(xvi) "Date of commercial operation or Commissioning (CoD)" *in relation to a unit means the date declared by the generator on achieving maximum continuous rating through a successful trial run and in relation to the generating station, the date of commercial operation means the date of commercial operation of the last unit or block of generating station and expression 'commissioning' shall be construed accordingly.*

Provided that in case of Small Hydro Plants the date of commissioning shall not be linked to achieving maximum continuous rating, nevertheless the generator will have to demonstrate the same within three years of commissioning.

The date of commissioning of Solar PV plant shall be considered as the date of first injection of power

into the licensee's grid after completion of the project in all respect subsequent to compliance of initial three prerequisites, i.e.

(i) Installation of energy meter by the distribution licensee. The Distribution licensee shall install the meter within 7 days from the receipt of complete application;

(ii) Issuance of Clearance Certificate by the Electrical Inspector.

Provided that minimum 75% Performance Ratio based on the rated installed capacity in kW or MW is demonstrated within ten (10) days from the date of first injection of power into licensee's grid on compliance of aforesaid three pre-requisites.

Provided that Distribution licensee shall install the meter within 7 days from the receipt of application.

For a Battery Energy Storage System COD shall mean the date declared by the project developer or the implementing agency, after successful commissioning and performance testing of the system, on which the BESS is capable of providing the contracted capacity as per the agreed technical parameters and subject to the following conditions:

(i) The system has been successfully commissioned and tested in accordance with applicable technical standards (such as CEA Grid Standard Regulations, IEEE/IEC standards, or utility-specific commissioning protocols) and issuance of Clearance Certificate by the Electrical Inspector;

(ii) Completion of all contractual obligations related to interconnection, grid synchronization, and metering. The Distribution licensee shall install the meter within 7 days from the receipt of complete application.

(iii) Demonstration of system performance for minimum duration as per the technical specification laid down by the distribution licensee. (e.g., charging-discharging cycle, response time, etc.)."

Comments received:

4.1 **UREDA**

UREDA submitted that as per Solar Policy 2023, UREDA shall be the nodal agency for the development of Solar PV under Type-I and Type -IV category i.e. *inviting proposals for selection of solar power plants through tariff based competitive bidding process to meet the RPO targets*. Further, as per Solar Policy, 2023 submission of project completion reports duly verified by UREDA or its representative shall be mandatory. Such verification reports helps UREDA to maintain, update and report the status of RPO compliance. In

addition, UREDA is also State Nodal Agency of MNRE, GoI dedicatedly working for development of RE projects in the State of Uttarakhand with long time experience and expertise. Solar Policy, 2023 has been formulated with the vision to contribute to the national level target of RE and net zero concept by year 2070. Therefore, proposed amendment is not in line with Solar Policy, 2023.

4.2 **UPCL**

UPCL proposed that certificate in regard to achievement of 75% Performance ratio be provided by the licensee to the solar power plant developer.

4.3 **UJVN Ltd.**

(i) UJVN Ltd. requested the Commission to reconsider the 10 days limit for demonstration of Performance Ratio due to following reasons:

(a) Performance Ratio demonstration requires adequate and stable solar irradiation. In a short spam of 10 days, cloudy conditions, rainfall, or low irradiance can materially reduce recorded Performance Ratio value.

(b) Meter installation, Electrical Inspector Clearance, SLDC scheduling and unforeseen grid outages often extend beyond 10 days. Such factors are beyond control of the developers.

(c) Failure to demonstrate 75% Performance Ratio within 10 days could delay the declaration of CoD, attract penalties and create avoidable dispute between developers and the licensee.

(ii) UJVN Ltd. also submitted that *"receipt of application"* should be replaced with *"receipt of complete application"*. Further, the 'Complete Application' should be clearly defined in the regulations. Without precise definition, there could be dispute or delays during commissioning regarding whether the application submitted by the developer qualifies as complete for meter installation and commencement of power injection.

(iii) UJVN Ltd. submitted that technical specifications in the biddings documents are being prepared in line with the extent guidelines available. Demonstration of system performance for minimum duration should be as per the technical specification laid down by the respective implementation agency, therefore,

demonstration of system Performance Ratio should be framed by independent agency.

4.4 **Akshay Urja Association**

Akshay Urja Association requested the Commission that existing 90 days window be retained. Solar generation output is inherently dependent on weather variability factors such as extended rainy or foggy periods which may prevent accurate performance assessment within a 10 days window which make such period impractical. Projects commissioned during such periods may otherwise face compliance challenges.

Commission's view and decision

4.5 With regard to the comments of UPCL that Certificate in regard to achievement of 75% Performance Ratio shall be provided by the licensee, the Commission accepts the proposal of UPCL.

4.6 With regard to the comments of Akshya Urja Association and UJVN Ltd. that 90 days window be retained as the solar generation output is inherently dependent on weather viability factors such as extended rainy or foggy period, it is pertinent to mention that Performance Ratio (PR) is the ratio of (measured output in kW * 1000 W/m2) to (Installed capcity in kW * Measured radiation intensity in W/m2). In other words PR = (Actual Energy Output / Theoretical Energy Output) x 100%. The theoretical energy output is calculated by multiplying the solar irradiation, the total active panel area, and the module efficiency. Hence, the solar irradiation on the day of demonstration shall govern the PR and is not related to the weather phenomenon. Further, in case any developer fails to demonstrate 75% Performance Ratio within 10 days from the first day of injection, it may reapply for the same. UVNL Ltd. has mentioned that delay could attract penalties and create avoidable dispute between the developers and the licensee, however, UJVN Ltd. failed to demonstrate how reduction in days for demonstration of Performance Ratio will attract penalties and dispute among parties. Accordingly, the request of the stakeholders is rejected.

4.7 With regard to UJVN Ltd.'s comment seeking a clear definition of a 'complete application,' it is clarified that, as a general principle, an application is deemed

complete when it is duly filled in and accompanied by all requisite documents, wherever applicable. The Commission does not consider it appropriate or necessary to define the term 'complete application' within the Regulations, as such procedural details can be adequately addressed by prescribing standard documentation requirements by the concerned licensee.

With regard to the proposal of UJVN Ltd. that demonstration of system performance norms should be framed by independent agency, it is clarified that technical specifications relating to performance of technical parameters such as minimum duration of charging-discharging cycle, response time etc. much align with the distribution licensee's grid conditions and grid management practices. These specifications vary from licensee to licensee and State to State depending on the load profile and technical requirements. Therefore, prescribing these norms through an external or independent agency may not reflect the specific operational realities of the concerned licensee and could lead to practical implementation challenges.

Accordingly, based on the above discussion, the Commission hereby modifies the definition of *"Date of commercial operation or Commissioning (CoD)"* which shall now be read as follows:

"(xvi) "Date of commercial operation or Commissioning (CoD)" *in relation to a unit means the date declared by the generator on achieving maximum continuous rating through a successful trial run and in relation to the generating station, the date of commercial operation means the date of commercial operation of the last unit or block of generating station and expression 'commissioning' shall be construed accordingly.*

Provided that in case of Small Hydro Plants the date of commissioning shall not be linked to achieving maximum continuous rating, nevertheless the generator will have to demonstrate the same within three years of commissioning.

The date of commissioning of Solar PV plant shall be considered as the date of first injection of power into the licensee's grid after completion of the project in all respect subsequent to compliance of initial two prerequisites, i.e.

(i) Installation of energy meter by the distribution licensee. The Distribution licensee shall install the meter within 7 days from the receipt of application, complete in all respect;

(ii) Issuance of Clearance Certificate by the Electrical Inspector.

Provided that minimum 75% Performance Ratio based on the rated installed capacity in kW or MW is demonstrated within ten (10) days from the date of first injection of power into licensee's grid on ***compliance of aforesaid two pre-requisites.*** *The certificate to the effect to be issued by distribution licensee.*

For a Battery Energy Storage System COD shall mean the date declared by the project developer or the implementing agency, after successful commissioning and performance testing of the system, on which the BESS is capable of providing the contracted capacity as per the agreed technical parameters and subject to the following conditions:

(i) The system has been successfully commissioned and tested in accordance with applicable technical standards (such as CEA Grid Standard Regulations, IEEE/IEC standards, or utility-specific commissioning protocols) and issuance of Clearance Certificate by the Electrical Inspector;

(ii) Completion of all contractual obligations related to interconnection, grid synchronization, and metering. The Distribution licensee shall install the meter within 7 days from the receipt of application, complete in all respect.

(iii) Demonstration of system performance for minimum duration as per the technical specification laid down by the distribution licensee. (e.g., charging-discharging cycle, response time, etc.)."

5. Insertion of definition of 'Discharge Ramp Rate' after sub-regulation (1)(xix) of Regulation 3 of Principal Regulations, 2023:

"(xix)(a) "Discharge Ramp Rate" means how quickly electric storage resources can transition from no output to full output, similar to the Ramp-up rate of conventional generators."

Comments received:

No comments have been received from any stakeholder.

Commission's view and decision

As none of the stakeholder commented on the definition of "Discharge Ramp Rate", the definition as proposed in the amendment be considered as final.

6. Insertion of useful life of BESS after sub-regulation (1)(lxv)(vii) of Regulation 3 of Principal Regulations, 2023:

"(viii) Battery Energy Storage System- 12 years with an option for five years extension. However,

for the extended period, the tariff shall be 50% of the original tariff."

Comments received:

6.1 **UPCL**

UPCL submitted that the proposed regulation may not reflect actual life/ degradation profile of different battery technologies. The Commission may allow a range or allow bidders to justify a different useful life in their bids or define "technology classes" e.g. Lithium-ion, Solid State etc., with different life assumptions.

Commission's view and decision

With regard to the comments of UPCL that different battery technologies may have different life span, the Commission decides to modify the proposed provision w.r.t. BESS life and accordingly, the above provision shall be read as follows:

"(viii) Battery Energy Storage System- 12 years with an option for five years extension. However, for the extended period, the tariff shall be 50% of the original tariff.

However, if due to technological intervention/innovation or due to any other cause, there is an impact or change in useful life of BESS or useful life/extended period is required to be determined, the Commission may determine the same."

7. Insertion of the provision after sub-regulation 2(j) of Regulation 4, i.e. 'Eligibility Criteria for qualifying as Generating Station based on Non-Conventional/Renewable Energy Source' of Principal Regulations, 2023:

"(k) Battery Energy Storage System – The project shall qualify to be termed as a Battery Energy Storage System as defined under Regulation 3(1)(iii)(a))"

Comments received:

7.1 **UPCL**

UPCL submitted that as to whether, BESS must always be tied up to a renewable generator or can be stand alone. Further, capacity limit, minimum size and whether distributed/ behind the meter BESS is to be included or excluded under these Regulations should also be specified.

Commission's view and decision

With regard to the query of UPCL that whether BESS must always be tied to a renewable

energy generator or may function as a standalone system, it is clarified that under the proposed Regulation 3(1)(iii)(a), a Battery Energy Storage System shall be treated as a standalone asset when deployed for commercial purposes solely to provide services to the distribution licensee. The Commission may, if required, specify separate rules or regulations for hybrid systems wherein BESS is integrated with renewable energy plants. Further, the Commission may consider, where necessary, suitable amendments in the future regarding behind-the-meter or distributed BESS; however, at this stage, such distributed including behind-the-meter systems shall not be governed by these Regulations.

Further, with regard to the minimum size of BESS projects, it is noted that the Ministry of Power, Government of India, through its 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, has already stipulated a minimum BESS size of 1 MW for intra-State projects. In view of this, the Commission does not consider it appropriate to incorporate such capacity requirements within these Regulations, as any future revision by MoP, GoI would necessitate an amendment to the Regulations. Hence, the Commission finds it prudent to align with the national guidelines without duplicating the capacity specifications in the present Regulations.

Accordingly, based on the above discussion, the proposed amendment shall be considered as final.

8. Amendment in first proviso of sub-regulation (2) of Regulation 11 'Tariffs' of Principal Regulations, 2023:

"Provided that the option of seeking project specific tariff shall not be available to the following:

(i) Any type of solar power plant;

(ii) Wind Energy Power Plants;

(iii) Battery Energy Storage System; and

(iv) *Other RE based power projects having installed capacity upto 1 MW."*

Comments received:

8.1 **UPCL**

UPCL submitted that project specific option should not be fully prohibited. Large

BESS projects should be allowed under Project Specific Tariff. Without project specific flexibility, bids may be unattractive or overly conservative, discouraging investors' interest.

Commission's view and decision

With regard to the comments of UPCL for project specific tariff, it is pertinent to mention that MoP, GoI has issued 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 under the provision of Section 63 of the Electricity Act, 2003 through tariff based competitive bidding. Accordingly, the Commission does not find it prudent to allow project specific tariff for BESS.

Accordingly, based on the above discussion, the proposed amendment shall be considered as final.

9. Insertion of the second proviso after first proviso of Regulation 12 (1) i.e. 'Control Period or Review Period' of Principal Regulations, 2023:

"Notwithstanding anything to the contrary, the Commission, as and when required and to the extent deemed sufficient by it, may also determine separate benchmark capital cost and levelized tariff for the renewable energy based power projects based on the schemes of Central/State Government."

Comments received

9.1 **UJVN Ltd.**

UJVN Ltd. submitted that it is important to clarify ceiling for capacity. MoP has already provided VGF of Rs. 18 lakh/MW for 500 MW BESS, and clarity on how the ceiling would be adjusted in light of this VGF, is essential. BESS tender framework is based on firm capacity (Rs./MW/month) rather than per unit, a defined ceiling provides certainty for bidders, safeguards consumers from excessive tariffs and ensure smoother regulatory approval. Therefore, UJVN Ltd. requests the Commission to incorporate (Rs./month/MW) ceiling rate along with the methodology for adjusting it in case of Viability Gap Funding (VGF) support.

9.2 **UPCL**

UPCL submitted that the Commission may review the data of BESS with every 2 or 3 years gap based on actual bid outcome/ cost trends and normative capital cost and

other parameters must be supported by market survey.

Commission's view and decision

9.3 With regard to the comments of UJVN Ltd., it is pertinent to mention that unlike conventional generating station that provide firm capacity in MW, a BESS provides energy based service eg. Peak shifting, load management, system balancing etc. All these services depend on actual energy discharge and not on mere installed capacity. Under the mechanism proposed by UJVN Ltd., the charges will be paid to the BESS developer even if the BESS is not used irrespective of how efficiently the BESS meets the system requirement. Accordingly, the Commission does not find it prudent to allow ceiling rate as Rs./month/MW for BESS.

Further, with regard to the treatment of Viability Gap Funding (VGF), it is pertinent to note that VGF constitutes a form of financial support akin to a subsidy. Accordingly, it shall be treated in the same manner as other grants or subsidies while determining the generic tariff under these Regulations.

9.4 With regard to request made by UPCL for review of financial parameters of BESS in 2 or 3 years based on actual bid outcome/ cost trend, the Commission agrees with the comment of the stakeholder.

Accordingly, based on the above discussion, the Commission modifies the regulation 12 and the same shall be read as follows:

"(1) The Control Period or Review Period under these Regulations shall be of five years, of which the first year shall be the financial year 2023-24.

Provided that the benchmark capital cost of Solar PV, Canal Bank & Canal Top Solar PV, Solar Thermal, Municipal Solid Waste based power plants, Refuse Derived Fuel based power projects, ***Battery Energy Storge System*** *and Grid interactive Roof Top and Small Solar PV projects may be reviewed annually by the Commission.*

Provided further than the tariff determined as per these Regulations for the RE projects commissioned during the Control Period, shall continue to be applicable for the entire Tariff Period.

Notwithstanding anything to the contrary, the Commission, as and when required and to the extent deemed sufficient by it, may also determine separate benchmark capital cost and levelized tariff for the renewable energy based power projects based on the schemes of

Central/State Government."

10. Amendment in sub-regulation (c) of Regulation 18 i.e. *'Depreciation'* of Principal Regulations, 2023:

"(c) The depreciation rate for the first 15 years of the Tariff Period shall be 4.67% per annum and the remaining depreciation shall be spread over the remaining useful life of the project from 16th year onwards considering salvage value of the project as 10% of the project cost.

Provided that rate of 7.50% per annum shall be considered for the Useful life of the Battery Energy Storage System after adjusting salvage value of the project as 10% of the project cost."

Comments received:

10.1 **UPCL**

UPCL submitted that 10% of salvage value and 7.50% rate of depreciation may not align with real resale/recycle value, especially given battery degradation. Further, BESS developers should submit the detailed salvage/replacement/battery recycling plan and salvage value be evaluated on case to case basis rather than applying uniform percentage.

10.2 **UJVN Ltd.**

UJVN Ltd. submitted that "adjusting salvage value" should be replaced with "considering salvage value".

Commission's view and decision

10.3 With regard to UPCL's comment that it should be mandated for the BESS developer to submit detailed salvage, replacement and battery-recycling plans, the Commission observes that such requirements pertain to the bidding and procurement process. These conditions, if considered necessary, may appropriately be incorporated by the distribution licensee or any other authorised agency in the Request for Proposal (RfP) documents. Therefore, the Commission does not find it prudent to incorporate such provisions in the regulations. Further, with regard to salvage value and depreciation, the Commission has examined the BESS guidelines/ regulations issued by other States and observed that most of the States have adopted a salvage value of 10%. In the absence of robust data at this stage, the Commission considers it appropriate to adopt a salvage value of 10% for the present. This parameter shall be reviewed by the

Commission in future as and when sufficient operational data becomes available.

10.4 The Commission agrees with the comment of UJVN Ltd. to replace "adjusting salvage value" with "considering salvage value".

Accordingly, based on the above discussion, the Commission hereby modifies above provision of the Principal Regulations, 2023 which shall now be read as follows:

"(c) The depreciation rate for the first 15 years of the Tariff Period shall be 4.67% per annum and the remaining depreciation shall be spread over the remaining useful life of the project from 16th year onwards considering salvage value of the project as 10% of the project cost.

Provided that rate of 7.50% per annum shall be considered for the Useful life of the Battery Energy Storage System after ***considering*** *salvage value of the project as 10% of the project cost."*

11. Amendment in sub-regulation (1) of Regulation 20 i.e. *'Interest on Working Capital'* of Principal Regulations, 2023:

"(1) The Working Capital requirement in respect of Wind energy projects, Small hydro power, Solar PV, Canal Bank and Canal Top Solar PV, BESS, Solar thermal and GRPV/GSPV power projects shall be computed in accordance with the following:"

Comments received:

11.1 **UPCL**

UPCL requested the Commission to clarify the component- cost of spares, O&M, insurance etc. specific to BESS. It also requested to clarify what percentage of O&M expenses or capital cost is considered as working capital cost (eg. One month's O&M, or part of capital tied up) for BESS.

Commission's view and decision

With regard to the comment of UPCL, it is pertinent to mention that the norms specified for O&M expenses for BESS are inclusive of cost of spares, maintenance spare, insurance etc. Further, the Commission under proposed Regulation 39A of the Principal Regulations, 2023 has already specified that 1.25% of the capital cost shall be considered as O&M expenses for the first year. Further, the norms of working capital are also specified in Regulation 20(1) of the Principal Regulations.

Accordingly, based on the above discussion, the above provision of the Principal Regulations, 2023 shall be read as follows:

"(1) The Working Capital requirement in respect of Wind energy projects, Small hydro power, Solar PV, Canal Bank and Canal Top Solar PV, BESS, Solar thermal and GRPV/GSPV power projects shall be computed in accordance with the following:"

12. Amendment in Table under Regulation 35 of Principal Regulations, 2023:

"

Type Solar PV Plant	*Capital Cost* *(Rs. Lakh/ MW)*	*O&M Expenses for year of commissioning* *(Rs. Lakh/MW)*	*Capacity utilization Factor*
Canal Bank Solar PV Plant	*322.00*	*16.24*	*19%*
Canal Top Solar PV Plant	*343.00*		

"

Comments received:

12.1 **UJVN Ltd.**

UJVN Ltd. submitted that Canal Top are not perfectly aligned with designated direction for achieving the maximum exposure to sun light due to structural constraints. Hence, the CUF for Canal top SPVs should be lower as compared to Canal Bank SPV with its value not more than 15%.

Commission's view and decision

With regard to comment of UJVN Ltd., it is pertinent to mention that UJVN Ltd. has not submitted generation data or any other document in support of the claim. Accordingly, the Commission does not find it prudent to change the CUF without any proper analysis.

Accordingly, based on the above discussion, the proposed amendment shall be considered as final which is as follows:

"

Type Solar PV Plant	*Capital Cost* *(Rs. Lakh/ MW)*	*O&M Expenses for year of commissioning* *(Rs. Lakh/MW)*	*Capacity utilization Factor*
Canal Bank Solar PV Plant	*322.00*	*16.24*	*19%*
Canal Top Solar PV Plant	*343.00*		

"

13. Insertion of Regulation 39.A i.e. "Battery Energy Storage System" parameters after Regulation 39 of Principal Regulations, 2023:

"39.A Battery Energy Storage System

1. The technology specific parameters for determination of generic tariff for Battery Energy

Storage System commissioned or to be commissioned on or after 01.04.2025 shall be as below:

Capital Cost (Rs. Lakh/MWh)	***O&M expenses for year of commissioning***	***Normative Availability in a year***	***Degradation***
Rs. 250	*1.25% of Capital cost for the first year and escalation of 5.25% per annum for the tariff period.*	*95%*	*2.5% p.a. for tariff period.*

2. *Annual Availability of BESS means the system availabilities all time blocks during the year in which Beneficiary has scheduled power for charging/discharging the BESS and the same will be calculated as below:*

Availability in a time block = [Actual Injection or Drawal MUi (A)/Scheduled Injection or Drawal MUi (B)] X100

i i refers to the ith time-block (15 minutes) in the year where MUi (B)≠ 0.

ii MUi(A)= Agreed Despatch Schedule between Licensee or Beneficiary and BESSD which shall be finally sent to MSLDC for Charging/Discharging in the ith time block, in MUs

iii MUi(B)= Despatch Schedule provided by Distribution Licensee or Beneficiary to BESS for Charging/Discharging in the ith time block, in MUs."

3. *Normative Depth of Discharge shall be 85%.*
4. *There will be preferably 2 number of cycles for complete charge and discharge cycles per day.*
5. *For optimal utilisation of BESS with respect to the cost and operational aspects of the BESS such as Cost of charging power, scheduling, discharge & discharge, location etc., distribution licensee in consultation with SDLC shall prepare a detail procedure and submit the same before the Commission for approval within 3 months of notification of these regulation."*

Comments received:

13.1 **UPCL**

UPCL suggested to provide example calculation of edge cases (eg. When schedule injection is zero, how availability will be treated). UPCL also requested to consider allowance for outage for scheduled maintenance and forced outage and ensure that BESS developers are not unduly penalised for these outages.

13.2 **UJVN Ltd.**

UJVN Ltd. submitted that proposed escalation rate of 5.25% per annum for O&M expenses appears not matching with the standard escalation rate of 5.72% per annum

typically applied by the Commission for RE projects. O&M expenses are subject to inflation and other economic factors, aligning the escalation rate with standard 5.72% ensures consistency, financial stability and fairness in tariff determination. Further, regulations should be applicable from the date of publication/notification of the regulation and not retrospectively from 01.04.2025. UJVN Ltd. also requested the Commission to clarify whether MSLDC stands for State Load Despatch Centre. Further, it also submitted that no ceiling rate for capacity charges has been fixed by the Commission, therefore, it requested to insert table for BESS for levelized rate of capacity charges (Rs./MW/month).

Commission's view and decision

13.3 With regard to UPCL's comment on allowing outage for maintenance and forced outages, it is noted that the normative availability has already been fixed at 95%, with the remaining 5% implicitly earmarked to accommodate scheduled maintenance as well as unforeseen outages.

With regard to UPCL's suggestion to provide illustrative calculations for edge cases (e.g., when scheduled injection is zero and how availability would then be treated), it is clarified that the ceiling tariff (Rs./kWh) has been determined on the basis of a normative availability of 95%. Under the proposed framework, the BESS developer's monthly revenue is directly linked to the actual energy delivered during the month. Accordingly, in months where no discharge is scheduled or delivered, the payment will naturally reflect the corresponding units supplied. Hence, separate illustrative examples are not required.

13.4 With regard to UJVN Ltd.'s submission that the proposed escalation rate of 5.25% for BESS O&M expenses is not aligned with the escalation rate of 5.72% applicable to other RE-based projects, the Commission agrees with the stakeholder's observation. Accordingly, the Commission decides to revise the escalation rate for O&M expenses for BESS from 5.25% to 5.72%.

Further, the Commission agrees with the stakeholder's view that the Regulations should become applicable from the date of their notification and not retrospectively. Necessary modifications have, therefore, been incorporated in the amended Regulations. It is further clarified that MSLDC is a typographical error and

the same shall be replaced with SLDC.

Further, the Commission has specified the ceiling tariff for BESS in the subsequent paragraphs. With regard to the suggestion on determining ceiling rate for capacity charges in Rs./MW/month, the Commission has already addressed this issue while examining the comments received on the proposed amendment to Regulation 12 of the Principal Regulations, 2023.

Accordingly, based on the above discussion, the Commission hereby modifies the above regulation which shall now be read as follows:

"***39.A Battery Energy Storage System***

1. *The technology specific parameters for determination of generic tariff for Battery Energy Storage System to be commissioned after the date of notification of these regulations, shall be as below:*

Capital Cost (Rs. Lakh/MWh)	***O&M expenses for year of commissioning***	***Normative Availability in a year***	***Degradation***
Rs. 250	*1.25% of Capital cost for the first year and escalation of 5.72% per annum for the tariff period.*	*95%*	*2.5% p.a. for tariff period.*

2. *Annual Availability of BESS means the system availabilities all time blocks during the year in which Beneficiary has scheduled power for charging/discharging the BESS and the same will be calculated as below:*

   Availability in a time block = [Actual Injection or Drawal MUi (A)/Scheduled Injection or Drawal MUi (B)] X100

   i *i refers to the ith time-block (15 minutes) in the year where MUi (B)≠ 0.*

   ii *MUi(A)= Agreed Despatch Schedule between Licensee or Beneficiary and BESSD which shall be finally sent to SLDC for Charging/Discharging in the ith time block, in MUs*

   iii *MUi(B)= Despatch Schedule provided by Distribution Licensee or Beneficiary to BESS for Charging/Discharging in the ith time block, in MUs."*

3. *Normative Depth of Discharge shall be 85%.*
4. *There will be preferably 2 number of cycles for complete charge and discharge cycles per day.*
5. *For optimal utilisation of BESS with respect to the cost and operational aspects of the BESS*

such as Cost of charging power, scheduling, charge & discharge, location etc., distribution licensee in consultation with SDLC shall prepare a detail procedure and submit the same before the Commission for approval within 3 months of notification of these regulation."

14. Insertion of following proviso under Regulation 53, i.e. *'Power to Remove Difficulties'* of the Principal Regulations, 2023:

"Provided that for BESS projects, for the purpose of adaption and removal of any discrepancy, difficulty in implementation or requiring any clarification due to or giving effect to the Government policies issued from time to time, technological changes in the BESS technologies or any such related reasons, the Commission may also by Order provide for the same."

Comments received:

No comments have been received from any stakeholder.

Commission's view and decision

As none of the stakeholder commented on the proposed proviso under Regulation 53 of the Principal Regulations, 2023, the proposed draft proviso shall be considered as final.

15. Amendment in Table-7 i.e. 'Levelised rate of Fixed Charges (RFC) for Canal Bank Solar *PV and Canal Top Solar PV Power Projects:'* of Annexure-I of Principal Regulations, 2023:

"

Particular	*Canal bank Solar PV Power Plants*	*Canal top Solar PV Power Plants*
	(Rs./kWh)	
Gross Tariff	*4.50*	*4.68*
Less: Acc. Dep. Benefit	*0.19*	*0.20*
Net Tariff	*4.31*	*4.48*

"

Comments received:

No comments have been received from any stakeholder.

Commission's view and decision

As none of the stakeholder commented on the proposed Table of the Principal Regulations, 2023, the proposed table shall be considered as final.

16. Insertion of Table after *Table 11. Levelised rate of Fixed Charges(RFC) in Rs./kWh for Biomass Rankine Cycle Based Projects"* under Annexure-I of Principal Regulations, 2023 based on the financial/technical norms fixed for BESS projects under second

amendment to be read as:

"

Levellised rate of Fixed Charges(RFC) in Rs./kWh for BESS Projects

Particular	***BESS***
	(Rs./kWh)
Gross Tariff	*5.78*
Less: Acc. Dep. Benefit	*0.00*
Net Tariff	*5.78*

"

17. Other Comments

17.1 UPCL submitted that a Regulation may be added allowing the Commission to determine separate benchmark capital cost and levelized tariff for RE projects based on Central/State schemes without any control period with a specifically review triggers (e.g. If market capital cost falls by x%, or actual bid data shows wide divergence), with a timeline for mid-term review.

Commission's view

The Commission has already addressed this issue while examining the comments received on the proposed amendment to Regulation 12 of the Principal Regulations, 2023.

17.2 UPCL submitted that Regulation should define when and how BESS will schedule (charge/discharge cycle, role of SLDC, priority, bidding schedule). BESS dispatch be co-optimized with renewable generation in merit Order and treat BESS in day ahead/ real time schedule. The Regulation should also include rules for partial charge/ discharge, state of charge limits, depth of discharge and over/under delivery penalties. UPCL also submitted that regulations requires demonstration of system performance, but lacks detailed test/ acceptance criteria. Commission may specify test cycles at full load, partial load, ramp up/down, degradation validation, round trio efficiency, and warranty obligation. The Commission may also specify consequential remedies if BESS fails to meet guaranteed parameters.

Commission's view

As per Regulation 39.A (5), the distribution licensee in consultation with SLDC has to prepare the detail procedure and seek approval of the Commission within three month from the notification of the regulations, with respect to scheduling, charge &

discharge, system performance, location etc. Accordingly, distribution licensee shall submit the draft procedure for approval of the Commission within the specified time.

17.3 UPCL submitted that BESS system will require periodic maintenance/cell replacement. Regulations should permit scheduled outage window without penalizing availability metrics. Define number of maintenance days, permissible downtime, reporting procedures and make-out allowances in availability calculations.

Commission's view

With regard to periodic maintenance and cell replacement, it is noted that the normative plant availability factor has been fixed at 95%, with the remaining 5% implicitly accounting for routine maintenance, cell replacement and other necessary downtime, thereby implying a maintenance window of about 18 days in a year. Since scheduled maintenance requirements may vary across developers and technologies, it would be appropriate for the distribution licensee and the BESS developer to mutually agree on maintenance windows, permissible outages, and associated penalties or adjustments as part of the contractual arrangements.

17.4 UPCL requested for clarification whether utility's surplus land/ substation land can be used. Further, it also submitted that Centre has launched a VGF Scheme for BESS. Therefore, the regulation should explicitly state how state projects will coordinate with central funding including provisions for matching and ensure that BESS procured under VGF are not disadvantaged in tariff/regulatory treatment.

Commission's view

With regard to UPCL's query on the use of utility-owned surplus land or substation land for BESS projects, it is clarified that the present Regulations do not restrict the distribution licensee or any other government entity from utilizing their available land for development of BESS projects. Further, MoP, GoI has issued Operational Guidelines for Scheme for Viability Gap Funding for development of Battery Energy Storage Systems based on which state projects will coordinate for central funding.

17.5 UPCL submitted that it needs to be clarified that waivers of certain charges such as ISTS charges, transmission/wheeling charges, when applicable, will be passed on to the BESS developer or kept by the licensee. Further, the Regulations should include

bonus incentives for over-performance or deviation constrains and a dispute resolution protocol for performance disagreement. Further, Force Majeure clause, rights of renegotiation, tariff reopeners in case of major exogenous shift should be included and dispute resolution path should be defined.

Commission's view

With regard to UPCL's submission seeking clarification on the treatment of waivers such as ISTS charges and transmission/wheeling waivers, it is clarified that the ceiling tariff determined by the Commission is an ex-bus tariff at the interconnection point for sale to UPCL/distribution licensee. Accordingly, any waiver or charges relating to ISTS, transmission or wheeling are not applicable to the BESS developer. Further, as regards UPCL's suggestion to provide bonus incentives for over-performance, deviation constraints, and an explicit dispute-resolution protocol, Force Majeure clause, rights of renegotiation, the Commission is of the view that these matters pertain to Battery Energy Storage Sales Agreement rather than regulatory stipulations. Accordingly, the same shall be examined by the Commission at the time of approval of BESSA.

17.6 UPCL submitted that the Regulation should include an "experimental/pilot" category that relaxes some parameters such as tariff caps, performance guarantee, to encourage learning, subject to cap and Commission's approval.

Commission's view

With regard to UPCL's above submission, the Commission is of the view that Regulations apply generally and leaves no scope for experimentation. In case UPCL intends to carry out a pilot project it is free to do so under the ambit of the Regulations.

17.7 UPCL requested to provide a clause that hybrid system can bifurcate storage component as per these rules or subsume the storage cost under the hybrid project PPA with transparent accounting.

Commission's view

With regard to UPCL's submission, it is to be noted that these Regulations exclusively govern standalone, grid-connected BESS projects supplying services to the distribution licensee on a commercial basis. Hybrid systems—where storage is integrated with a

generating station—entail a different technical, operational and commercial framework, including combined tariff structures, scheduling arrangements and energy-accounting methodologies. These aspects require a separate regulatory treatment. Accordingly, if required, the Commission may issue separate provisions or amendments in future specifically addressing hybrid RE plus storage systems. Therefore, the suggestion of UPCL is not accepted at this stage.

17.8 UREDA submitted that on the basis of various representations received from Stakeholders, UREDA requests that the ceiling capacity of 1 MW be removed and maximum installed capacity of GRPV/GSPV at the premises of eligible consumer shall be allowed upto consumer's sanctioned connected load. This may contribute for the saturation of all government buildings with solar as instructed by MNRE, GoI under PMSG Scheme. Further, commercial /industrial consumers who are very enthusiastic to contribute and generate green energy shall be capable to install solar upto their connected load which will help in achievement of solar policy target in the related category.

Commission's view

With regard to UREDA's submission it is to be noted that eligible consumers includes industries also and allowing net metering up to the sanctioned load for industrial consumers may significantly affect UPCL's ability to forecast and manage demand. Industrial load profiles are typically large, dynamic, and sensitive to seasonal and operational variations. If such consumers are permitted to install rooftop solar systems up to their full sanctioned load, their net draw from the grid could fluctuate unpredictably based on instantaneous solar generation and can jeopardise the distribution/transmission licensee's network/equipments. Further, to contribute and generate green energy, the industries may install captive power plant which has no capacity restriction.

By the order of the Commission

(Deepak Pandey)
Secretary (I/c)

Annexure-1

List of Stakeholders

Sr. No.	Name	Designation	Organisation	Address
1.	Sh. Jaswant Singh	Chief Engineer (Commercial)	Uttarakhand Power Corporation Ltd.	Victoria Cross Vijeta Gabar Singh Bhawan, Kanwali Road, Dehradun
2.	Sh. Manish Kathaith	Secretary	Akshay Urja Association	1/47, Vasant Vihar, Chakrata Road, Dehradun – 248006
3.	Sh. S.C. Baluni	Director (Projects)	UJVN Ltd.	"Ujjwal", Maharani Bagh, GMS Road, Dehradun -248006
4.	Dr. Meharban Singh Bisht	Director	Uttarakhand Renewable Energy Development Agency (UREDA)	Urja Park Campus, Industrial Area, Patel Nagar, Dehradun