Ref: GAP01/2024-25/202406 **Date:** 03rd June 2024

To,

The Secretary
Central Electricity Regulatory Commission (CERC)
World Trade Centre,
6th, 7th and 8th floor,
Tower -B, Nauroji Nagar,
New Delhi-110029

Subject: Comments on Draft Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2024

Ref: No L-1/260/2021/CERC Dated 30.04.24

Dear Sir,
At the outset, we extend our gratitude to Hon'ble Commission for inviting comments/suggestions on the on Draft Central Electricity Regulatory Commission Central Electricity Regulatory Commission **((Deviation Settlement Mechanism and Related Matters) Regulations, 2024.**

Clause 8: Charges of Deviation: (5) Charges for deviation Charges for Deviation, in respect of a Standalone Energy Storage System (ESS), shall be at par with the charges for Deviation for a general seller other than an RoR generating station or a generating station based on municipal solid waste or WS seller as specified in Clause (1) of this Regulation

The current DSM framework categorizes standalone ESS as General Seller other than RoR generating station and deviations are based on scheduled volumes for General Sellers, while Wind and Solar (WS) Sellers use allocated capacity. This approach creates challenges for PHSPs with fixed-speed turbines.

- **General Seller (Coal, Water):** This seller has control over the fuel type (coal, water) and sets its own delivery schedule. Deviation percentage with respect to scheduled volume is doable.
- **PHSP Developer:** The Procurer dictates the PHSP's (Pumped Hydro Storage Plant) operation schedule, including charging and discharging. The Procurer might not provide a consistent charging schedule aligned with the PHSP's unit size, and dispatch (releasing stored energy) happens based on filling gaps in variable demand met by intermittent (RE) sources.

This dynamic control by the Procurer over charging and discharging schedules makes it difficult for the PHSP developer to predict operations, similar to how wind and solar power generation are unpredictable for a Wind and Solar (WS) seller. Appreciating reservation of WS Seller having no control on generation source under the DSM regulation, we request that PHSPs should be categorized like WS sellers and linked to their available capacity rather than depending on scheduled volumes.

Issue during charging/pumping mode and a proposed solution:

Problem: Intermittency vs. Fixed Speed: Fixed-speed PHSP turbines are unable to operate at partial loads, meaning the **machine will run at 100% capacity during the pumping mode**. If a 320 MW turbine is scheduled for 20 MW, it can't physically operate at that level. It's either pumping at full capacity (~320 MW or pumping capacity of the turbine) or not at all (0 MW).

- **Mismatch and Penalties:** The current DSM, with deviation linked to scheduled volume, penalizes PHSPs heavily in such situations. A scheduled volume of 20 MW with actual volume of 0 MW results in a 100% deviation, triggering penalties.
- **Unique Challenges of PHSP in DSM:** Unlike traditional power plants like large hydro or thermal, PHSPs act as both sellers (generating electricity) and buyers (consuming power for pumping). This dual role creates complexities within the current DSM framework.

Proposed Solution:

- **Base DSM on Project Capacity:** For PHSPs, deviation calculation should be based on the project's total capacity (e.g., 320 MW) instead of the scheduled volume. This reflects the physical limitations of fixed-speed turbines. For a scheduled volume of 20 MW with actual volume of 0 MW results in a 6.25% deviation {(20-0)/320}. Will be covered as WS Seller category.
- **Frequency Deviations Shouldn't Penalize PHSPs:** The current Deviation Settlement Mechanism (DSM) imposes penalties based on frequency deviations. However, this approach unfairly penalizes PHSPs for reasons beyond their control.

  - **Intermittent Charging Source:** Unlike traditional power plants, PHSPs rely on renewable sources like solar and wind for charging. These sources are inherently variable, with their output fluctuating significantly within short time blocks (often 15 minutes) scheduled volumes as well.
  - **Fixed-Speed Turbines:** PHSPs utilize fixed-speed turbines. These turbines operate at a constant load during pumping mode at 100% of its rating capacity, lacking the ability to match the variable nature of the charging source.

Given these limitations, imposing frequency-linked penalties on PHSPs is unfair. Here are two potential alternative categorization options within the DSM framework:

- **Wind and Solar (WS) Seller Category:** Alternatively, PHSPs could be categorized under the WS Seller category. This reflects the inherent variability in their operation due to the dependence on intermittent renewable sources and its limitation with fixed speed turbines during charging mode.

Charging	Schedule	Turbine Pump	Short charge
Case 1	80	120	to manage deviation of 40 MW
Case 2	100	120	to manage deviation of 20 MW
Case 3	1680	240*6 & 120*2	
Case 4	100	120	to manage deviation of 20 MW
Case 5	290	240 & 120	to manage deviation of 70 MW
Case 6	400	240 & 120	to manage deviation of 40 MW

Large consumers, like ourselves, require a minimum band of at least 10% without any limit of 100 MW cap as WS seller to accommodate the dynamic nature of PSP charging discharging operations and serving multiple utilities. Due to fixed speed turbine, constant schedule is required from the generation source during pumping which cannot be the case for an intermitted RE. Hence, will be balance by short charge. The inherent lag in transitioning turbines between pumping and generation modes further complicates balancing against the intermittent schedule of renewable energy sources. This can lead to uncontrollable deviations despite potential energy losses from balancing efforts.

Generation Mode

PHSP operates like a large hydro project with variable speed capability during generation mode. However, has limitation of operating upto 50% of the unit rating size. Since PHSP will operate to meet peaking requirement, RTC dispatchable RE supplying power when RE has lean generation. Supply dispatch may vary depending on demand of the end customer. Also, PHSP has to response from charging mode to discharging mode in a consecutive time interval depending on Procurers requirement, deviation band like WS Seller should be allowed with no linkage with frequency-based penalty.

Overall, since PHSP will operate to integrate intermittent renewable energy with new projects coming up, we request that PHSP be categorized under the WS seller category. This categorization should be reviewed after the successful operation and integration of contracts into the power system, following at least one year from the commercial operation date (COD) of these projects.

Charges for Deviation in respect of an ESS co-located with WS Sellers(s) connected at the same interconnection point, shall be as follows:

PHSP co-located with WS Seller(s) shall have similar limitations as discussed above with RE capacity installed ahead of the meter. Hence, request to keep the integrated system also under the category of WS Seller with at least 10% deviation band.

Key Asks:

- **Categorization as Wind & Solar (WS) Seller During Charging & Discharging mode**
- **Linkage with Available Capacity Like WS Seller**
- **No Frequency Penalties as WS Seller**

Revised/Amended clause in draft CERC ((Deviation Settlement Mechanism and Related Matters) Regulations, 2024 as as follows:

Clause 8: Charge for Deviation

(4) Charges for Deviation, in respect of a WS Seller being a generating station based on wind or solar or hybrid of wind–solar resources, including such generating stations aggregated at a pooling station through QCA shall be without any linkage to grid frequency, as under:

Deviation by way of over injection (Receivable by the Seller)	**Deviation by way of under injection (Payable by the Seller)**
(i) for VLwS (1) @ contract rate; (ii) for VLwS (2) @ 90% of contract rate (iii) for VLwS (3) @ NIL	v) for VLwS (1) @ contract rate; (vi) for VLwS (2) @ 110% of contract rate; (vii) for VLS3 @ 150% of contract rate;
WS Seller	**Volume Limit**
A generating station based on solar or a hybrid of wind –solar resources or a aggregation at a pooling station	VLwS (1) = Deviation up to 10% DWS
	VLwS (2) = Deviation beyond 10% DWS and up to 15% DWS
	VLwS (3) = Deviation beyond 15%

A generating station based on wind resource	VLwS (1) = Deviation up to 15% DWS
	VLwS (2) = Deviation beyond 15% and up to 20% DWS
	VLwS (3) = Deviation beyond 20%

(5) Charges for Deviation, in respect of a **Standalone Energy Storage System (ESS), shall be at par with the charges for Deviation for WS Seller being a generating station based on solar or hybrid of wind-solar resource in accordance with clause (4) of this regulation. In the charging mode charges for deviation will be same where Over Injection shall be considered as Under Drawal and Under Injection as Overdrawal.**

(6) Charges for Deviation, in respect of an ESS co-located with WS Seller(s) connected at the same interconnection point, shall be as follows:

i Such seller may provide a **cumulative or a separate schedule** for WS and ESS components through the Lead generator or QCA at the interconnection point;
ii Deviation corresponding to WS component shall be charged at the same rates as applicable for WS Seller being a generating station based on solar or hybrid of wind-solar resource in accordance with clause (4) of this regulation and
iii Deviation corresponding to the ESS component shall be charged at the same rates as applicable for a standalone ESS in accordance with clause (5) of this regulation

WS Seller	**Deviation by**	**CERC Draft Reg.2024**	
WS Seller -ESS (Standalone Energy Storage System)	**Over Injection/Under Drawal (Receivable by the Seller)**	**Bands / VL**	**DSM for deviated units**
		0-10%	100% of RR
		10-15%	90% of RR
		>15%	50% of RR
	Under Injection/Over Drawal (Payable by the Seller)	0-10%	100% of RR
		10-15%	110% of RR
		>15%	150% of RR

We humbly request the hon'ble Commission to favourably consider our comments/suggestion in larger interest of Stakeholders.

Yours sincerely,
For, Greenko AP01 Private Limited

Authorized Signatory