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Date: 03.06.2024

To,

The Secretary
Central Electricity Regulatory Commission
3rd & 4th Floor, Chanderlok Building,
36, Janpath, New Delhi-110001

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

Dear Sir,

We sincerely appreciate the Central Electricity Regulatory Commission's effort in promoting renewable energy in the country. We are grateful for your continued guidance, and assurance you have offered, in helping the renewable sector progress by enabling a robust and healthy environment to thrive in the country. We would like to thank you for the opportunity to raise our key concerns & suggestions on the "Draft Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2024."

We have enclosed our comments / suggestions on the Draft Regulations for kind consideration of the Hon'ble Commission.

Yours sincerely,

For O2 Power Private Limited

Dharmendra Gupta

Authorized Signatory

Comments/suggestions on Draft CERC (Deviation Settlement Mechanism and Related Matters) Regulations, 2024.

1. **Financial Strain on Existing Renewable Projects Due to Stricter DSM Regulations:**

The recent modifications to the Deviation Settlement Mechanism (DSM) Regulations, updated in December 2022 and further refined by order no 01/SM/2023 on February 6th, 2023, have imposed stricter DSM bands for all energy sources, including wind and solar. These changes have led to a significant increase in DSM penalties for already commissioned projects. This tightening of DSM regulations particularly impacts wind and solar energy sources due to their inherent variability, potentially discouraging investment in these renewables or necessitating additional measures to ensure compliance.

The increased financial burden on energy producers, especially those operating on thin margins, and the need for enhanced forecasting and storage solutions highlight the operational challenges posed by these regulations. While aimed at improving grid stability and reliability, the frequent and substantial regulatory changes may introduce uncertainty, affecting long-term investment planning and the overall growth of the renewable energy sector.

The changes in DSM bands have already led to a substantial decline in project profitability, with a significant decrease in the Internal Rate of Return (IRR) of the project. While new projects can incorporate such modifications in their tariff bids, existing projects with fixed tariffs face a worsening profitability due to further tightening of DSM bands. This disparity creates a challenging financial environment for already commissioned projects, which were not initially subjected to these stringent regulations and cannot adjust their pricing to mitigate the increased penalties. Consequently, the financial viability of these projects is adversely affected, potentially leading to broader implications for investment and sustainability in the renewable energy sector.

In view of the above, we propose the following options to protect the interests of existing wind and solar power plants:

I. **Revised DSM Regulations Must Be Applied Prospectively with Clear Implementation Dates to Ensure Smooth Transition for Existing Generators. OR**

II. **Recognize the revised DSM as a "Change in Law" event, so that existing wind and solar power plants can claim compensation for the extra financial impact incurred due to the implementation of new regulations. This involves calculating the per unit extra cost resulting from the new DSM charges and establishing a transparent claim process. Moreover, developers may opt to install additional Energy Storage Systems (ESS) in their projects to mitigate DSM penalties and bolster grid stability.**

2. **Proposed Aggregation Shift: RLDC-Level Aggregation for QCAs Instead of Substation-Level Pooling**

We suggest a shift in aggregation methodology, moving from pooling station to RLDC-level aggregation for Qualified Coordinating Agency (QCA). As per draft regulation, aggregation would occur at the pooling station level, where energy forecasts and deviations are consolidated. However, the alternative suggested approach to allow for aggregation at the Regional Load Dispatch Centre (RLDC) level, providing greater flexibility and efficiency in managing forecasts and deviations.

At the RLDC level, QCA would have the opportunity to aggregate their forecasts and deviations across multiple substations within the region they operate. This would streamline the process, reducing the administrative burden associated with managing multiple substation-level aggregations. Additionally, RLDC-level aggregation offers a more comprehensive view of energy forecasts and deviations, facilitating better coordination and decision-making at a broader operational level.

By allowing aggregation at the RLDC level, stakeholders can benefit from improved accuracy in forecasting and more effective management of deviations. This approach also supports the integration of renewable energy sources by enabling better utilization of resources and optimizing grid stability. Furthermore, RLDC-level aggregation enhances transparency and accountability in the energy market, as it provides a centralized platform for monitoring and auditing forecasting and deviation data.

Overall, the proposal to shift aggregation to the RLDC level offers numerous advantages, including increased efficiency, enhanced coordination, and improved grid management. If this is not possible then the larger RE complex may be divided into 3 to 4 zones and then aggregation may be allowed at zone level. By adopting this approach, stakeholders can better address the challenges associated with forecasting and deviations, ultimately leading to a more reliable and resilient energy system.

3. **<u>Deviation in respect of a WS Seller, based on wind or solar or hybrid of wind–solar resources:</u>**

- **Existing provision - Clause 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 VLw_S(1) @ contract rate; (ii) for VLw_S(2) @ 90% of contract rate (iii) for VLw_S(3) @ 50% of contract rate, (iv) beyond VLw_S(3) @ Zero;	v) for VLw_S(1) @ contract rate; (vi) for VLw_S(2) @ 110% of contract rate; (vii) for VL$_{S3}$ @ 150% of contract rate; (viii) beyond VLw_S(3) @ 200% of contract rate.

Note: Volume Limits for WS Seller :

WS Seller	**Volume Limit**
A generating station based on solar or a hybrid of wind –solar resources or aggregation at a pooling station	VLwS (1) = Deviation up to 5% DWS VLwS (2) = Deviation beyond 5% DWS and up to 10% DWS VLwS (3) = Deviation beyond 10% Dws and up to 20% DWS
A generating station based on wind resource	VLw_S(1) = Deviation up to 10% DWS VLwS (2) = Deviation beyond 10% DWS and up to 15% DWS VLwS (3) = Deviation beyond 15% D*ws* and up to 25% D$_{WS}$

- **Suggestions / Comments: Clause (4) -** The proposed reduction in the initial DSM bands raises concerns regarding its feasibility given the current state of forecasting and scheduling. While there have been improvements since the 2014 DSM Regulations, particularly in reducing errors in deviation ranges beyond 20%, achieving higher accuracy within the ±10% range for solar and hybrid, and ±15% for wind, presents significant challenges. Analysis of existing project data indicates that more than 85% of the time, errors remain within these ranges. Achieving further accuracy within these bounds would necessitate substantial technological advancements in forecasting tools and access to highly precise weather data.

  Therefore, it is advisable to refrain from further tightening the DSM bands, especially for existing projects, until the necessary technological breakthroughs and access to accurate weather data are available. A potential solution lies in calculating the DSM on a regional basis rather than at pooling stations. This approach offers several advantages, including enhanced grid stability by smoothing out variations in power generation and consumption across a regional area. By reducing net deviations, penalty costs can be minimized, while forecasting accuracy can be improved, facilitating the better integration of renewable energy sources.

  In view of that, we request to exercise caution in further tightening DSM bands until technological capabilities align with the requirements. Additionally, transitioning to regional DSM calculations can offer benefits in terms of grid stability and forecasting accuracy, thereby supporting the renewable energy transition effectively. Following is the proposed DSM band:

WS Seller	Volume Limit
A generating station based on solar or a hybrid of wind –solar resources or aggregation at a pooling station	VLwS (1) = Deviation up to 5% DWS VLwS (2) = Deviation beyond 5% DWS and up to 10% DWS VLwS (3) = Deviation beyond 10% Dws and up to 20% DWS
A generating station based on wind resource	VL$_{WS}$(1) = Deviation up to 10% DWS VLwS (2) = Deviation beyond 10% DWS and up to 15% DWS VLwS (3) = Deviation beyond 15% D*ws* and up to 25% D$_{WS}$

Note: Volume Limits for WS Seller :

WS Seller	Volume Limit
A generating station based on solar or a hybrid of wind –solar resources or aggregation at a pooling station	• VL$_{WS}$ (1) = Deviation up to ~~5%~~ 10% D$_{WS}$ • VL$_{WS}$ (2) = Deviation beyond ~~5%~~ 10% D$_{WS}$ and up to ~~10%~~ 15% D$_{WS}$ • VL$_{WS}$ (3) = Deviation beyond ~~10%~~ 15% D$_{WS}$ and up to 20% D$_{WS}$
A generating station based on wind resource	• VL$_{WS}$ (1) = Deviation up to ~~10%~~ 15% D$_{WS}$ • VL$_{WS}$ (2) = Deviation beyond ~~10%~~ 15% D$_{WS}$ and up to ~~15%~~ 20% D$_{WS}$ • VL$_{WS}$ (3) = Deviation beyond ~~15%~~ 20% D$_{WS}$ and up to 25% D$_{WS}$

4. <u>DSM Band Allocation for Wind-Solar Hybrid Projects:</u>

- **<u>Existing provision - Clause 4:</u>** 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)
(v) for VL$_{WS}$(1) @ contract rate; (vi)for VL$_{WS}$(2) @ 90% of contract rate (vii) for VL$_{WS}$(3) @ 50% of contract rate, (viii) beyond VL$_{WS}$(3) @ Zero;	v) for VL$_{WS}$(1) @ contract rate; (ix) for VL$_{WS}$(2) @ 110% of contract rate; (x) for VL$_{S3}$ @ 150% of contract rate; (xi) beyond VL$_{WS}$(3) @ 200% of contract rate.

Note: Volume Limits for WS Seller :

WS Seller	Volume Limit
A generating station based on **solar or a hybrid of wind –solar** resources or aggregation at a pooling station	VLwS (1) = Deviation up to 5% DWS VLwS (2) = Deviation beyond 5% DWS and up to 10% DWS VLwS (3) = Deviation beyond 10% Dws and up to 20% DWS

- **Suggestions / Comments: Clause (4):** In the draft regulation, it's specified that the DSM band for Wind-Solar (hybrid projects) aligns with that of Solar Power Projects. However, it's possible that wind capacity may exceed solar capacity at the aggregation level within hybrid projects. To address this potential discrepancy, it's crucial to incorporate flexibility in aggregation methods as under:

    I. One approach could involve implementing a proportional allocation method, where the DSM band is calculated based on the relative capacities of wind and solar components. Customized DSM bands could be established specifically for hybrid projects, reflecting the combination of wind and solar capacities. By adopting flexible, regulatory authorities can ensure that DSM regulations for hybrid projects accurately reflect their unique characteristics, promoting fairness and efficiency in the regulation of renewable energy projects.

    OR

    II. In determining the appropriate DSM band for combined Wind-Solar power projects, it's imperative to account for the relative capacities of each energy source, especially considering that wind generation typically exceeds solar generation on an annual basis by approximately 1.5 times. A more equitable approach would involve basing the DSM band on the higher quantum of installed capacity between wind and solar. In cases where wind capacity significantly exceeds that of solar, using the wind capacity as the basis for determining the DSM band ensures a more accurate reflection of potential deviations and mitigates the risk of penalizing the project unfairly.

    As an example, let's consider a scenario where the installed wind capacity is 150 MW, and the installed solar capacity is also 150 MW. To determine the appropriate DSM bands for each energy source, we need to consider their relative capacities.

    For wind, considering that wind generation typically exceeds solar generation by approximately 1.5 times, we calculate the equivalent solar capacity by multiplying the installed wind capacity by 3/2:

    - **Wind capacity = 150 MW x 3/2 = 225 MW**
    - **For Solar, the installed capacity remains at 150 MW.**

    In this scenario, the applicable DSM band should be based on the higher of the two values, which is 150 MW from wind. As wind has a considerable capacity of 225 MW compared to Solar's 150 MW, the DSM band should reflect the highest capacity to ensure accurate and fair regulation.

    In view of the above, we request that the DSM band for the Wind-Solar hybrid project would be determined based on the installed / considerable capacity. This approach ensures that the DSM regulations appropriately account for the higher capacity between wind and solar, reflecting the true potential for deviations in power generation.

Sr. No.	Existing Clause	Revised Clause / New Clause	Rationale
5.	**(7) Charges for Deviation, in respect of a Buyer, shall be receivable or payable as under.** Deviation by way of under drawal (Receivable by the Buyer) **1. For VLB (1) and *f* within *f* band** i) @ 85% of NR NR when f =50.00 Hz; ii) When 50.00 Hz < f ≤50.05 Hz , for every increase in f by 0.01 Hz, charges for deviation for such buyer shall be decreased by 7% of NR so that charges for deviation become 50% of NR when f = 50.05Hz; **Buyer other than (the buyer with a schedule less than 400 MW and the RE-rich State**) VL_B (1) = Deviation up to [10% D_{BUY} or 100 MW, whichever is less] VL_B (2) = Deviation [beyond 10% D_{BUY} or 100 MW, *whichever is lower*] and up to [15% D_{BUY} or 200 MW, *whichever is lower*] VL_B (3) = Deviation beyond [15% D_{BUY} or 200 MW, whichever is less]	**7) Charges for Deviation, in respect of a Buyer, shall be receivable or payable as under.** ~~Deviation by way of under drawal (Receivable by the Buyer)~~ ~~**2. For VLB (1) and *f* within *f* band**~~ ~~iii) @ 85% of NR NR when f =50.00 Hz;~~ ~~iv) When 50.00 Hz < f ≤50.05 Hz , for every increase in f by 0.01 Hz, charges for deviation for such buyer shall be decreased by 7% of NR so that charges for deviation become 50% of NR when f = 50.05Hz;~~ ~~**Buyer other than (the buyer with a schedule less than 400 MW and the RE-rich State**)~~ ~~VL_B (1) = Deviation up to [10% D_{BUY} or 100 MW, whichever is less]~~ ~~VL_B (2) = Deviation [beyond 10% D_{BUY} or 100 MW, *whichever is lower*] and up to [15% D_{BUY} or 200 MW, *whichever is lower*]~~ ~~VL_B (3) = Deviation beyond [15% D_{BUY} or 200 MW, whichever is less]~~ **Provided that for drawl of power the applicable deviation charges shall be at par with Solar OR Wind generator.**	In the draft, the current Deviation Settlement Mechanism (DSM) for buyers, it is typically linked to the grid frequency, ensuring uniformity and non-discrimination. However, for buyers procuring renewable energy (RE) power under GNA-RE mechanisms, a distinct approach might be necessary to account for the unique characteristics of renewable energy sources like wind and solar. Given the variability and intermittency associated with renewable energy, a separate DSM category for buyers sourcing RE power should be established. This category should be de-linked from the traditional grid frequency-based DSM and consider the deviation bands specific to solar or wind power projects
6.	**8. Charges for Deviation** … (4) Charges for Deviation, in respect of a WS Seller … (c) depooling of deviation charges for WS seller(s) connected to the pooling station shall be as per the methodology mutually agreed upon between the QCA and such individual WS seller(s).	**8. Charges for Deviation** … (4) Charges for Deviation, in respect of a WS Seller … (c) depooling of deviation charges for WS seller(s) connected to the pooling station shall be as per the methodology approved by the Commission ~~mutually~~	It's crucial to address potential challenges in the de-pooling mechanism for deviation charges to avoid delays and potential litigations in the future. A uniform and standardized methodology issued by regulatory authorities such as CERC or Grid-India can streamline the aggregation process and ensure consistency across the board. By establishing clear guidelines and protocols for de-pooling deviation charges, stakeholders can avoid ambiguities and disagreements that may arise from individual agreements. A standardized approach not only

Sr. No.	Existing Clause	Revised Clause / New Clause	Rationale
		~~agreed upon between the QCA and such individual WS seller(s)~~. NLDC shall submit the methodology within 4 weeks notification of these regulations for approval of the Commission.	simplifies the process but also promotes transparency and fairness in the settlement of deviation charges. Moreover, a uniform methodology issued by regulatory bodies provides a reliable framework for all parties involved, reducing the likelihood of disputes and litigations. This proactive approach fosters trust and cooperation among stakeholders and promotes a more efficient and stable energy market. Therefore, it's essential for regulatory authorities to take the lead in setting forth a uniform de-pooling mechanism for deviation charges, ensuring consistency and clarity in the aggregation process and minimizing the potential for future conflicts.
7.	**8. Charges for Deviation** … (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 shall provide 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.	**8. Charges for Deviation** … (6) Charges for Deviation, in respect of an ESS co-located with WS Seller(s) connected at the same interconnection point, shall be at par with the WS seller to which it is co-located ~~as follows:~~ ~~i) Such seller shall provide 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.~~	For Co-located Energy Storage with Wind-Solar, there can be 3 types of treatment without creating separate category (General seller, W-S seller, separate General and W-S seller) 1. Treat it as general seller on par with Conventional plants. a. Energy Storage is limited resource, and it has been commercially designed for performing specific application. It cannot make the Wind-Solar as predictable or firm as conventional plant. **Hence this is not fair method, disadvantageous such RE + Storage plants.** 2. Treat it as two separate installations. Wind-Solar as W-S seller and Energy storage as General seller. a. Currently proposed method in the draft regulations. Although co-located, it treats energy storage as separate plant. **There is no incentive to absorb local deviations**. **2. Treat it as RE Wind-Solar-hybrid plant (W-S seller)** a. While Energy storage is flexible resource, its primary application is based on PPA of the RE plant. While it cannot fully make the Wind-Solar predictable or firm, it can help in providing support to reduce the deviations. b. If total output is treated as W-S seller, then energy storage can be used as secondary application to support reduction in the deviations, thereby reducing the overall deviations in the grid.

Sr. No.	Existing Clause	Revised Clause / New Clause	Rationale
			In view of above, Charges for deviation, concerning an Energy Storage System (ESS) co-located with Wind-Solar (WS) sellers connected at the same interconnection point, shall be aligned with the charges applicable to the WS seller(s) with which it is co-located. This parity ensures equitable treatment and avoids discrepancies in deviation charges, considering the shared infrastructure and interconnected nature of the ESS and WS sellers.
8.	3. Definitions and Interpretation (j) 'Contract rate' means the tariff for sale or purchase of power, as determined under Section 62 or adopted under Section 63 or approved under Section 86(1)(b) of the Act by the Appropriate Commission or the price as discovered in the Power Exchange, as the case may be; and in the absence of a tariff or price as above, contract rate shall mean the weighted average ACP of the Day Ahead Market segments of all Power Exchanges for the respective time block**.**	3. Definitions and Interpretation (j) 'Contract rate' means the tariff for sale or purchase of power, as determined under Section 62 or adopted under Section 63 or approved under Section 86(1)(b) of the Act by the Appropriate Commission or the price as discovered in the Power Exchange, or tariff agreed between the bilateral parties as the case may be; and in the absence of a tariff or price as above, contract rate shall mean the weighted average ACP of the Day Ahead Market segments of all Power Exchanges for the respective time block;	It is to be noted that now a days, after implementation of GEOA & GNA-RE provision, significant capacity is being planned under captive or third-party routes, where tariff determination does not adhere to the regulations outlined in Section 62 or 63. Instead, tariffs are mutually agreed upon between the parties involved. It is essential that such mutually agreed tariffs needs to be considered as contract rates for the purpose of computing Deviation Settlement Mechanism (DSM) penalties. Failure to do so would result in RE projects under Open Access being penalized with DSM charges based on exchange tariffs, while similar projects regulated under Section 62 or 63 are subjected to DSM charges calculated on contract rates. To ensure fairness and consistency across the board, it's essential that DSM penalties should be computed based on the mutually agreed tariffs for projects. This approach aligns with the principle of treating like projects alike, regardless of the tariff determination mechanism, and avoids any potential discrepancies or unfair treatment in the application of DSM charges.
9.	**Additional Comment: Provision for revision for W-S Project in Power Exchanges** As we know, a substantial portion of RE projects are coming to sell power on the exchange, reflecting the evolving dynamics of the energy market and the growing importance of merchant capacity in the RE sector. However, it's crucial to recognize that there exists a disparity in scheduling flexibility between selling through the exchange and via Power Purchase Agreements (PPAs). Projects selling power under PPA face greater scheduling flexibility compared to those with sale of power in exchange. This flexibility allows PPA-based projects to adjust their schedules more dynamically in response to market conditions and other factors. In contrast, projects with Power Exchanges have fixed schedules and contractual obligations that limit their ability to adapt to changes in the market environment. Maintaining the same DSM bands for exchange sales without the flexibility to revise schedules may pose challenges for RE projects, particularly those operating in merchant capacity. This rigidity could impede the development of a robust RE exchange market in the country. Allowing RE power producers to revise their schedules 7/8 time-blocks ahead of actual delivery is crucial for flexibility and efficiency in the renewable energy market. **In view of that we request to allow RE power producers revision of schedules in advance (7/8 time-blocks ahead of actual delivery) for sale of power in Power Exchange, which can promote a more dynamic and responsive RE in Exchange market.**		