



Draft Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2021

CERC notified the draft for Deviation Settlement Mechanism (DSM) on 7th September, 2021. The Key highlights of this draft Regulation are given below:

Objective: These Regulations aims to ensure grid stability and security

Scope: Its applicability extends to all grid connected regional & other entities engaged in inter-state purchase and sale of electricity.

New definitions added in the draft Regulation:

- General Seller: Seller who provide non-solar and non-wind resource based power
- WS Seller: Seller who provide solar and wind resource based power
- Run-of-River (RoR) Generating Station: Hydro generating station which does not have upstream pondage

Computation of Deviation (in MWh & %) in a time block:

1. For General Sellers:

$$\text{Deviation (MWh)} = [(\text{Actual injection}) - (\text{Scheduled generation})]$$

$$\text{Deviation (\%)} = 100 \times [\text{Deviation}] / [\text{Scheduled generation}]$$

2. For WS Sellers:

$$\text{Deviation (MWh)} = [(\text{Actual Injection}) - (\text{Scheduled generation})]$$

$$\text{Deviation (\%)} = 100 \times [\text{Deviation}] / [\text{Available Capacity}]$$

3. For Buyers:

$$\text{Deviation (MWh)} = [(\text{Actual drawl}) - (\text{Scheduled drawl})]$$

$$\text{Deviation (\%)} = 100 \times [\text{Deviation}] / [\text{Scheduled drawl}]$$

Normal Rate of Charges for Deviations: It is the Weighted Average (Wt. Avg.) Ancillary Service Charge (paise/kWh), and is calculated on the basis of total quantum of Ancillary Services deployed and the total charges payable to the Ancillary Service providers for all the Regions for that time block.

Provided that for one year tenure when these regulations will come into effect, the normal rate of charges for deviation for a time block will be equal to the maximum of (the Wt. Avg. Area Clearing Price (ACP) of the DAM or RTM segments of all the Power Exchanges; or the Wt. Avg. Ancillary Service Charge of all the regions) for that time block. If there is any non-availability of ACP for any time block on a given day, ACP for the corresponding time block of the last available day will be considered.

The draft Regulation can be accessed [here](#)

EAL Opinion

1. **Timeliness and Need for Amending Deviation Settlement Mechanism (DSM) Regulation:** Deviation Settlement Mechanism (DSM) (and the erstwhile Unscheduled Interchange (UI)) were introduced amidst uncertainty associated with electricity demand and supply. Rising share of Renewable Energy (RE) has further exacerbated overall uncertainty to ensure demand supply balance in the power system.

Evolving market structure, especially with the implementation of the Real Time Market (RTM), and proposed market for Ancillary Services (AS) provide an opportunity for the DSM price signals to be more closely associated with value of deviations close to the real time. However, a number of issues identified herein need to be addressed to ensure that the implemented scheme is able to efficiently address the issues in the evolving scenario.

2. **Definition of RE Rich State:** A RE rich state is defined as a state with 1000 MW or above installed capacity of variable renewable energy (VRE) (i.e. Solar and Wind) within the control area of the state. The variability and uncertainty associated with the schedule of a state depends on the 'contracts that it handles for consumption within the state. The **RE rich state** should thus be defined with reference to the **contracted capacity of VRE by all entities connected to the 'control area of the state'** (i.e. including long-term open access for VRE by consumers).
3. **Additional Deviation Limit and DSM Applicability for RE amidst Growing RE Share:** Given the growing VRE capacity across states, more states would soon be added to the list of RE-rich state. In a few years, most of the larger states may qualify as RE rich state. Relevance of additional deviation limit would then no longer exist, and would need to be re-evaluated.
4. **Additional Limit for RE Rich State:** RE rich states, defined as states with 1000 MW or above installed capacity for Solar and Wind energy, are allowed 250 MW deviation limit against 150 MW limit for other states. The additional deviation limit should be linked to the 'impact' that higher capacity of variable RE (wind & solar) brings to RE rich states as compared to other states. Some states with, say 900 MW VRE capacity, may be subjected to higher uncertainty due to the resource profile and, mix of solar and wind energy.

Further, higher deviation limit would continue to dissuade investment in demand side management and economical energy storage (pumped hydro, BESS (when economical) etc). The former needs much more attention due to its lower cost as compared to other options.

5. **Need to Finalise Ancillary Services Regulation:** The draft regulation proposes deviation charges to be linked to, among others, to the discovered price for ancillary service products. the ancillary services' regulation, which is yet to be finalised, would have implications for the design and implementation of the amended DSM. It is suggested to finalise the Ancillary Services regulation to bring a clarity to its role and efficiency. This would also address regulatory uncertainty by providing adequate information to the stakeholders to evaluate its impact on DSM and hence the deviation charges that may need to pay.
6. **Standardised Definitions (Regulation 3.1 (m & aa)):** For ease of understanding and implementation, choice of new terms to define existing ones should be avoided. New definitions should be logical extension of the ones in practice as far as possible. Few cases are identified herein.

The draft Regulation defines General Seller as “a seller in case of a power project based on other than wind or solar resources” and WS Seller as “a seller in case of a power project based on wind or solar energy”. It is suggested to modify the above definitions of General Seller and WS Seller. The General Seller may be renamed as ‘Despatchable seller’ in case of a power project based on the conventional power like thermal power and a ‘constrained Despatchable seller’ like Run-of-River (RoR) generating stations. The WS Seller may be renamed as ‘Non-Despatchable seller’ in case of a power project based on wind or solar energy.

7. **Normal Rate of Charges for Deviation (Regulation 7.1):** In determination of Normal Rate of Charges (NROC) for deviation, following aspects should be considered,
- The key **difference between energy market (on PXs) and ancillary market** is that the market outcome of the former is dependent on competing buyers and sellers, whereas in the latter case, the decision for quantity of procurement is undertaken by the system operator, while ‘price discovery’ (in its current form) is primarily dictated by the ‘regulated’ tariffs. The economic efficiency of the quantum as well as price discovery for ancillary services (AS) is still evolving. The market for AS in India is neither liquid nor mature enough, and does not currently reflect the value of required services.
 - Day Ahead Market (DAM) does not capture the uncertainties close to the real time and does not provide correct value of resources for the NROC. It is suggested that the weighted average price of RTM and the AS should be used in the interim with weights for AS to be increased gradually with maturity and efficiency of the AS market.
 - As per the draft regulation, the deviation charges are to be related to ‘all’ types of AS (including SRAS & TRAS as per draft AS document¹). The AS associated with products close to real time should primarily be used. Therefore, NROC should be maximum of discovered price in RTM and Secondary Ancillary Services (as the case may be).
8. **Applicable Market Price in Case of Market Splitting (Regulation 7.1):** Energy market price (e.g. RTM) may differ across market areas in the case of market splitting. While instances of market splitting are currently limited but can’t be ruled out in the future. Hence, ‘weighted average price’ across all market areas/regions may be used in the methodology specified for calculating NROC. In case of significant impact of market splitting, NROC may be differentiated across regions in the future.
9. **Deployment of Up- And Down-Regulation AS:** Up-regulation and down-regulation AS may be deployed simultaneously across different the regions, particularly in case of transmission constraints. The methodology for calculation of ‘Weighted Average Ancillary Service Charge’ should provide for the same (as additional explanation).

The provision of computing overall Wt. Avg. AS Charge may not be applicable for multiple regions, so, it is suggested that the DSM charges should be charged as per the region-wise regulated/deployed AS. Then the applicability of the DSM charges for that block should be related to the highest of (Wt. Avg. ACP of RTM or up/down regulation Ancillary Services) for that particular region.

10. **Basis for Redrawing Deviation Limits (Regulation 8):** The draft Regulation provides different deviation limits for buyers and sellers. It is suggested to share the information/analysis related to the distribution of such deviation limits around 12%, 15% etc. for RE projects, so that one can make a judgement about the appropriate limit and the applicable NROC.

¹ These are proposed to be floated as SRAS and TRAS as per the draft Central Electricity Regulatory Commission (Ancillary Services) Regulations, 2021

11. **Deviation Limit and Charges for Hybrid Projects:** Treatment of DSM limit and applicable NROC should be clarified in the case of hybrid projects (e.g. Solar-Wind + MSW) with a single interconnection/metering point.
12. **Charges for Deviation for General Seller (MSW) (Regulation 8.1):** According to the draft regulation, charges for deviation for General seller - Municipal Solid Waste (MSW) in case of under injection is zero (for deviation up to 20%). It is suggested to ensure uniformity of charges between despatchable and non-despatchable RE based plants respectively. Thus, charges for deviation for MSW based General seller in case of under injection should not be zero so as to provide correct regulatory signal to all the system participants.
13. **Methodology for Calculation of Deviation for Renewable Energy Projects:** To ensure that RE projects play a vital and growing role in the Indian power sector, such plants should gradually be subjected to analogous metrics for deviation measurement. The current methodology for calculation of deviation with the available capacity in the denominator should now be replaced with the schedule.

The overall regulatory framework may instead allow for sufficient deviation limit so as to reduce sudden impact of change in the methodology. Adoption of correct formula for calculation of deviation is recommended.

14. **Incentive for Over Scheduling and Payment for RE Energy:** In case of payment on the basis of scheduled energy for RE projects with relaxed deviation limits and limited penalty for deviation, there is ample incentive to over schedule. While one would expect such a behaviour from an economic point of view, the same should be examined in detail to ascertain the scale of such behaviour. Such analysis should be part of the statement of reasons for the proposed regulations.
15. **Charges for Deviation for Seller in Case of Over-Injection (Regulation 8.1):** The proposed deviation charges for General Seller (except RoR & MSW) i.e. 10% of NROC should be applicable for greater than 2% of deviation. It is suggested that up to 2% deviation should be related to normal charge rate and deviation beyond 2% should be zero. This will be in line with the graduated approach in the prevailing regulation wherein over-injection does not get additional compensation when frequency deviation is significantly higher than or beyond 50 Hz. Since a generator will not have precise control over the output, so NROC will be given to the generator up to 2% of deviation for over-injection, and zero beyond that limit. Otherwise this may provide incentive to deviate beyond 2% to claim NROC, in case the limit is applied in a non-telescopic manner.
16. **Charges for Deviation for Injection of Infirm Power (Regulation 8.3 (a)):** The draft Regulation should limit the duration of injection of infirm power. It is advised to add a proviso such that the duration of infirm power should be limited to two weeks in the case of RE and up to two months for thermal and hydro generating stations.