

Prayas (Energy Group)'s comments in the matter of Draft CERC (Deviation Settlement Mechanism and Related Matters) Regulations, 2024.

The Central Electricity Regulatory Commission (CERC) issued draft DSM regulations on 30th April, 2024 along with an Explanatory Memorandum and invited public comments on the same.

Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2022 (DSM Regulations, 2022) were notified on 14th March, 2022 which came into force with effect from 5th December 2022. After the DSM Regulations, 2022 were brought into force from 05.12.2022, the Commission regularly monitored the implementation of the DSM Regulations 2022 and observed that while the number of frequency excursions decreased, frequency fluctuations outside the operative band (49.9-50.1 Hz) increased.

As a result, CERC issued various directions to contain frequency within the operating band. It also re-linked deviation charges back to frequency in certain cases. Furthermore, Commission formed a high-level committee of experts tasked with conducting a thorough analysis of the performance of grid-connected buyers and sellers to ensure smooth and secure grid operation.

Based on the recommendation of the committee, the Commission has come out with a draft regulation. The regulation has re-linked the deviation charges to frequency for all entities, except RE. Our comments on the proposed regulation are detailed below:

1. Further analysis (including appropriate weightages) needed for definition of normal rate

The Commission has proposed that the normal charges are to be determined as per following formula:

“The Normal Rate (NR) for a particular time block shall be equal to the sum of:

(a) 1/3 [Weighted average ACP (in paise/kWh) of the Integrated-Day Ahead Market segments of all the Power Exchanges];

(b) 1/3 [Weighted average ACP (in paise/kWh) of the Real-Time Market segments of all the Power Exchanges]; and

(c) 1/3 [Ancillary Service Charge (in paise/kWh) computed based on the total quantum of Ancillary Services deployed and the net charges payable to the Ancillary Service Providers for all the Regions].”

As far as we know, there is no public reporting of Ancillary service charges for each time block, since 8th Feb 2023. Even during the period of 5th Dec, 2022 to 7th Feb, 2023, the AS charges are given combined for all regions (no regional charges are given, which are usually given under DAM and RTM). Presently, the only public reporting of AS charges is at the granularity of monthly basis for each generator. As a result of this, the actual AS charges for each time block are not available in public domain to assess the impact of 1/3rd weightage to AS charges for each time block on Normal rate.

Also, the commission has itself noted that the AS market has not evolved much in part due to some asymmetries in DSM pricing. Hence, linking DSM rate to AS (to the extent of 1/3rd weightage) is something that needs further analysis before going ahead with it. Further the DAM and RTM

segments have price caps which do not fully reflect the real value/price of the power in the short term. Finally, one could also think of having higher weightages for those elements (RTM/AS) which are closer to real time operation.

2. Deviation for Solar and Wind generators

2.1 Aggregation at pooling station

The commission has allowed aggregation of schedules of solar and wind generators at pooling station. This would result in reducing the overall deviation of such generators giving an aggregate schedule. However, there is no clarity if all generators connected to a particular pooling station have to mandatorily go in for aggregation.

In this regard, we want to emphasize the provisions given in recently notified DSM regulations by TNERC. The relevant provisions for QCA and aggregation are as follows:

“6. Principles of appointment of QCA

6.1. The Generators connected to each Pooling Sub-Station shall appoint a person/entity as a (i) Single QCA for whole State or (ii) QCA for the particular PSS to which the generators are connected or (iii) Opt SLDC for adopting their forecast as stipulated in Regulation 5.1.

Provided that the QCA appointed by the majority of the Generators for a particular Pooling Sub-Station shall be a Deemed QCA for all generators of that Pooling SubStation.

Provided further that the same QCA can be appointed for any number of Pooling substation, whereas multiple QCAs for single Pooling sub-station will not be permitted.”

We suggest that the Commission provide clarification on this aspect, otherwise this may lead to confusion among entities. Additionally, we would like to note that the procedure for aggregation at pooling station, as mandated by IEGC 2023 (Regulation 45(11)(b)), has not been finalized yet.

Also, the aggregation will result in much smaller deviation at pooling station than that in case of individual generators. This has also been stated by the Committee formed for conducting a thorough analysis of DSM and analyzing the causes of inadequate Primary and Secondary response with respect to implementation of DSM Regulations, the relevant extract from their report is as follows:

*“For intermittent sources like wind and solar the deviation charges should not be linked with frequency. The EC noted that Central Commission has notified the IEGC 2023 and made it effective since 01.10.2023. **As the IEGC 2023 has provided for aggregation at the pooling station for inter-state wind and solar generating stations, the EC recommends the need of modifying the tolerance band for wind and solar generating stations. In view of the intermittent nature of wind and solar resources, the EC recommends to increase the deviation band further for wind and solar generating stations. Accordingly, the EC recommends modified construct for wind and solar based generating station with an option of aggregation as proposed in Table 7 of the previous section.**” (emphasis added)*

While the tolerance band have been reduced from 10% to 5% (for solar and hybrid) and 15% to 10% (for wind), the proposal is not supplemented by any analysis of data for RE generators in the EM/Committee report. As a result, the impact of such reduction cannot be assessed as of now. Considering this, we suggest that the Commission should review the deviation bands after 15 months of effectiveness of the regulation (after considering data for at least 12 months). Furthermore, a separate analysis for hybrid generators can be conducted.

2.2 Error formula

The existing and the proposed regulations define Deviation for Renewables as follows

$$\text{Deviation-WS seller (in \%)} = 100 \times \frac{[(\text{Actual Injection in MWh}) - (\text{Scheduled generation in MWh})]}{[(\text{Available Capacity})]}$$

It is well known that for various reasons, the denominator in the above formula has been kept at Available Capacity rather than the more logical and consistent parameter of Scheduled Generation. While this was a necessary starting point to begin the DSM framework for renewables, we urge the Commission to quickly move towards a new formula with Scheduled Generation as the denominator.

To begin with, we could have both Scheduled Generation and AvC as denominator for determining deviation error (%) for a trial period of 1-2 years but continuing to levy penalty only as per the existing AvC formula. The deviation settlement bill is created for both error formulae and shared with the entities. POSOCO should be tasked to analyse the data and report the same to CERC, highlighting issues, challenges and benefits of each approach within a period of 15 months of effectiveness of these regulations.

Based on the data gathered from this practice and feedback from stakeholders on challenges or issues in its implementation or operational aspects, Commission can decide on how to shift to Scheduled generation for determining error.

In this regard, we would like to mention that TNERC has already adopted scheduled generation in definition of absolute error for solar and wind in its [Tamil Nadu Electricity Regulatory Commission \(Forecasting, Scheduling and Deviation Settlement and related matters for Wind and Solar Generation\) Regulations, 2024](#). The regulation defines error as:

$$\text{Absolute Error (\%)} = (100 \times [\text{Actual Generation} - \text{Scheduled Generation}]) / \text{Scheduled Generation}$$

where, scheduled generation $\neq 0$

Further, the TNERC regulation states that “If the scheduled generation is zero and if there is actual generation in a particular 15 minutes block by the wind/solar generator(s), the deviation settlement charges will be collected from those generator(s) at 125% of the capped price for such energy injected.”

Here in case of CERC DSM regulations, if scheduled generation is zero, the charges considered shall be that considered for VL_{WS}(3) for the respective seller. It means 50% of contract rate will be received in case of over injection and 150% of contract rate will be paid by seller in case of under injection.

3. Data format across RPCs

There is a lot of variation in data reporting related to deviation settlement mechanism by various Regional Power Committees. As a result of this, it is very difficult to assess the deviation at national level.

Regional Power Committee	Excel file	Units mentioned
WRPC	Entity wise	Yes
SRPC	Entity wise	No
NRPC	One file containing information of all Entities (separate sheet for each parameter)	No

ERPC	One file containing information of all Entities (separate sheet for each entity)	Yes
NERPC	One file containing information of all Entities (separate sheet for each entity)	Yes

Apart from this, the data reporting for DSM charges also varies. WRPC, NERPC and ERPC provide separate column for amount payable and receivable. SRPC provide granular data of Over injection charges, Under injection Charges and Drawl Charges. NRPC just provides information on deviation charges. A detail of the data reported by each RPC is tabled below:

WRPC	SRPC	NERPC	ERPC	NRPC*
Date	record_id	Time	Date	DC_Stations
Time	date	Block Number	Time	Solar_availability
Block	time	Frequency Code	Block	Drl_Sch_States
Freq(Hz)	available_capacity	Frequency (Hz)	Freq (Hz)	Act_Inj_Gen_Station s
Constituents	sch_total	Actual (MWH)	Actual (MWH)	Act_Drl_States
Actual (MWH)	act_total	Correction Factor(MWH)	Schedule (MWH)	Frequency
Schedule (MWH)	rate	Scheduled (MWH)	Deviation (MWH)	GS_Stations
SRAS (MWH)	ppa_rate	Total Deviation (MWH)	Deviation (%)	Deviation_Charge s
Deviation(MWH)	dev	Under Injection(MWH)	DSM Payable (Rs.)	Normal_Rate
Deviation (%)	dev_perc	Over Injection(MWH)	DSM Receivable (Rs.)	Contract_Rate
DSM Payable (Rs.)	nc_energy	10% of Scheduled(MWH)	Normal DSM Rate Applicable (p/MWH)	Reference_Rate
DSM Receivable (Rs.)	beyond_nc_energ y	Cap Deviation_1(MW H)	Reference DSM Rate Applicable (p/MWH)	SRAS
Normal Rate (p/Kwh)	Overinjection_cha rges	15% of Scheduled	Wt.Avg. DSM Rate (Hybrid Gen) Applicable (p/MWH)	SRAS_5_Min
RE Gen PPA Rate (p/Mwh)	Underinjection_C harges	Cap Deviation_2(MW H)	Variable DSM Rate (ISGS)	Rras

			Applicable (p/MWH)	
Wt.Avg. ACP DAM Rate (p/Kwh)	Drawl_Charges	Reference Charge Rate(Rs./MWH)	Contract Rate (RE Gen) Applicable (p/MWH)	Sced
HPDAM Ref. Rate (p/Kwh)	total_import	Normal Rate(Rs./MWH)		Onbardc
HPDAM Normal Rate (p/Kwh)	total_export	Amount Recievable(Rs.)		
WS Seller Capacity (Mwh)	dev_rtda_import	Amount Payable(Rs.)		

Note: 1.) For NRPC, the data referred here is parameters captured in different sheets. For rest RPCs, the data reported is for injecting entity.

2.) No changes are made to any parameter.

While most of the terms are self-explanatory, some terms like “nc_energy”, “GS_Stations”, etc. are not very clear and no explanation for such terms is provided by RPCs on the website pages where these data can be found. This makes it very difficult to get full sense of the data reported by RPCs and analyse the data.

This makes for a strong case for having standardized data formats across RPCs. We request the Commission to come out with a standard format for data reporting of DSM by all RPCs with pre-defined timelines. Along with this, all RPCs shall be directed to provide a document which explains the data reported by them in public domain, along with a list of entities (with basic information like installed capacity, connected ISTS load/ GNA, etc.) which are covered under the CERC DSM regulations.

4. Separate energy accounting of co-located ESS

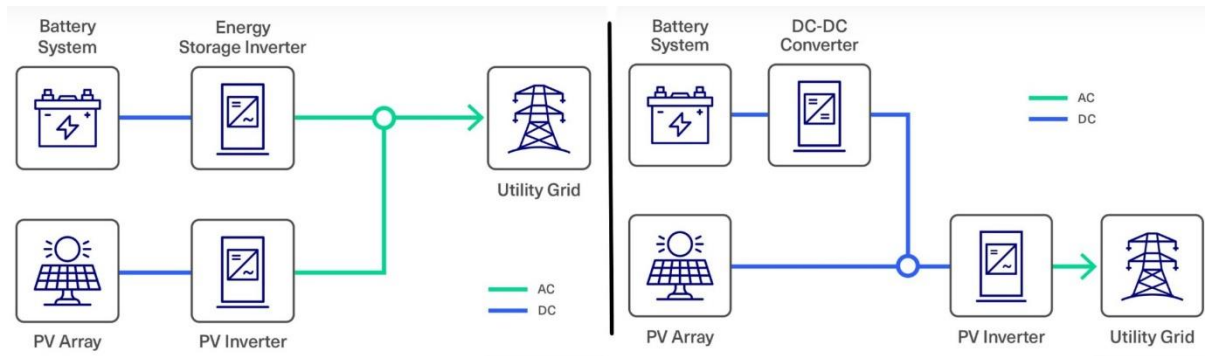
Regulation 8 (6) states that

*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;

For the case where the ESS is connected to the Solar generator on the DC side and shares a common inverter (configuration shown on the right side of the Figure 1 below), we are unclear how separate schedules would be given for WS and ESS components. We would like to Commission to clarify this aspect.

Figure 1: Electrical connection for co-located projects (a) AC Coupling, (b) DC Coupling



Source: Co-locating BESS with Renewable Energy Asset¹

¹ <https://www.linkedin.com/pulse/co-locating-bess-renewable-energy-asset-ali-akbar-ajmerwala/>