एनटीपीसी ग्रीन एनर्जी लिमिटेड
(एनटीपीसी लिमिटेड की सहायक कम्पनी)
NTPC GREEN ENERGY LIMITED
(A Subsidiary of NTPC Limited)

Ref. No.:CC:CD/NGEL/DSM/01 **Date: 17.10.2025**

The Secretary
Central Electricity Regulatory Commission
7th Floors, Tower B, World Trade Centre,
Nauroji Nagar, New Delhi- 110029

Subject: NGEL submission on Central Electricity Regulatory Commission Suo Moto order in Petition no. 9/SM/2025 regarding determination of value of "X" for computation of deviation (in %) for wind and solar (WS) seller from 01.04.2026 onwards under the provision of CERC DSM Regulations 2024.

Respected Sir,

Hon'ble Commission has issued Suo Moto order in Petition no. 9/SM/2025 regarding determination of value of "X" for computation of deviation (in %) for wind and solar (WS) seller from 01.04.2026 onwards under the provision of CERC DSM Regulations 2024.

In this regard, please find enclosed submission of NTPC Green Energy limited on Suo Moto order regarding determination of value of 'X' factor under provision of CERC DSM Regulations.

Thanking you,

Yours sincerely,

(Sunit Kumar)
Additional General Manager

Submissions on Central Electricity Regulatory Commission Suo Moto order in Petition no. 9/SM/2025 regarding determination of value of "X" for computation of deviation (in %) for wind and solar (WS) seller from 01.04.2026 onwards under the provision of CERC DSM Regulations 2024

1. **Clause (4) of Regulation 8** of the DSM Regulations, 2024, the revenue-neutral tolerance band for Solar/ Wind-Solar Hybrid Generating Stations will reduce from +/- 10% to +/- 5% and for Wind Generating Stations it will reduce from +/- 15% to +/- 10% from 01.04.2026 onwards.

   Clause (2)(b) of Regulation 6 stipulates that the deviation in a time block for WS Sellers (Dws) (in %) shall be computed for the period from 01.04.2026 onwards, as per the following formula:

   Dws% *= 100 x [(Actual Injection in MWh) – (Scheduled generation in MWh)] / [(**X% of Available Capacity**) + (**100-X**) % of **Scheduled Generation**)*

With Effect From (w.e.f.)	Value of "X"
01.04.2026 to 31.03.2027	100%
01.04.2027 to 31.03.2028	80%
01.04.2028 to 31.03.2029	60%
01.04.2029 to 31.03.2030	40%
01.04.2030 to 31.03.2031	20%
01.04.2031 onwards	0%

Further CERC has proposed the following points for amendment in DSM Regulations 2024:

(a) All existing Wind and Solar (WS) Projects shall be treated at par with General Sellers from 01.04.2031 onwards.

(b) **All new Wind and Solar (WS) projects, with tendering or bid submission dates on or after 01.04.2026, shall be treated at par with General Sellers.**

(c) Further, to address the growing concerns regarding grid stability, **no payment shall be made to the existing Wind and Solar (WS) Sellers for any over-injection during periods when the system frequency is at or above 50.05 Hz**. This measure is necessitated as renewable capacity is being rapidly commissioned into the grid, and challenges in real-time grid operations are becoming more prominent. In this context, there is an urgent need to curb over-injection by the existing WS generators in the interest of grid security, particularly in view of the anticipated large-scale penetration of renewable energy in the near future.

Submission:

Following points may please be considered:

1. RE projects with major capacities are bid out via a competitive bidding mechanism under Section 63 of Electricity Act'2003. The tightening in tolerance band and reduction in "X" factor and subsequently linking with frequency linked DSM shall cause huge financial implication on generator.

The estimated revenue loss (April-Aug 2025) with tightening of band and further reduction of "X" factor is tabulated below:

Project	Scenario	Estimated Revenue Loss (₹ Cr)	% Revenue Loss (Estimated)
Anantpur (250 MW)	Band ±10% (Current)	2.21	2.74%
	Band ±5%, X=100%	4.38	5.58%
	Band ±5%, X=80%	5.20	6.69%
	Band ±5%, X=60%	6.25	8.14%
	Band ±5%, X=40%	7.58	10.06%
	Band ±5%, X=20%	9.35	12.70%
	Band ±5%, X=0%	11.07	15.39%
Shajapur-I (105 MW)	Band ±10% (Current)	1.22	7.43%
	Band ±5%, X=100%	1.98	12.62%
	Band ±5%, X=80%	2.15	13.84%
	Band ±5%, X=60%	2.35	15.32%
	Band ±5%, X=40%	2.58	17.10%
	Band ±5%, X=20%	2.86	19.30%
	Band ±5%, X=0%	3.23	22.35%
Fatehgarh (296 MW)	Band ±10% (Current)	2.15	2.60%
	Band ±5%, X=100%	3.56	4.36%
	Band ±5%, X=80%	3.87	4.77%
	Band ±5%, X=60%	4.24	5.25%
	Band ±5%, X=40%	4.69	5.84%
	Band ±5%, X=20%	5.29	6.63%
	Band ±5%, X=0%	5.89	7.44%
Devikoot (240 MW)	Band ±10% (Current)	1.26	2.10%
	Band ±5%, X=100%	2.62	4.57%
	Band ±5%, X=80%	2.86	5.01%
	Band ±5%, X=60%	3.14	5.52%
	Band ±5%, X=40%	3.48	6.16%
	Band ±5%, X=20%	3.92	7.00%
	Band ±5%, X=0%	4.44	8.00%

- The tightening of deviation band and phased reduction in X factor result in 2–4x higher revenue losses, severely undermining the financial viability of ongoing projects.

- As in the last few years, there has been no significant technological advancement or breakthrough observed in the space of forecasting and scheduling at the global level, which could increase the accuracy of forecasting drastically.

- Some of the major forecasting models available in the market are listed below:
  1. NWP Model
  2. Random Forest Model
  3. ARMA Model
  4. ARIMA Model

  However, none of the above-mentioned forecasting model is able to predict the weather forecast accurately and there are many challenges for accurate prediction in radiation forecasting.

- The existing forecasting models have high spatial and temporal variability, particularly in predicting cloud movements and wind speed at project locations. Clouds cause the largest deviations in intra-day forecasts.

- Many unmeasurable parameters which are variable in nature affects the weather and cloud movements remains undetected in the modelling used for weather forecasting. As the RE projects are critically dependent on climatic conditions, most of the times it is mainly the local weather which impacts forecasting instead of global or regional weather.

  Further, prominent forecasting agencies including Solargis, IMD and ISRO as well as the other weather forecasters are not able to predict the sudden movements of clouds.
- Specifically, in the case of wind projects, it is very unlikely that the forecasting will match reality. Wind projects need to bear a high DSM penalty due to a major deviation in actual generation from the forecasted one.

- As compared to thermal projects where generation can be controlled through coal, RE power generation depends upon weather conditions and any cloud cover or sudden rain/wind and any adverse weather condition will impact the generation of WS seller.

- We have also carried out accuracy of forecast for available Forecasting agency for these three stations in same period and % of time blocks beyond band of +/- 5%, +/-10 % and +/- 15% are tabulated below:

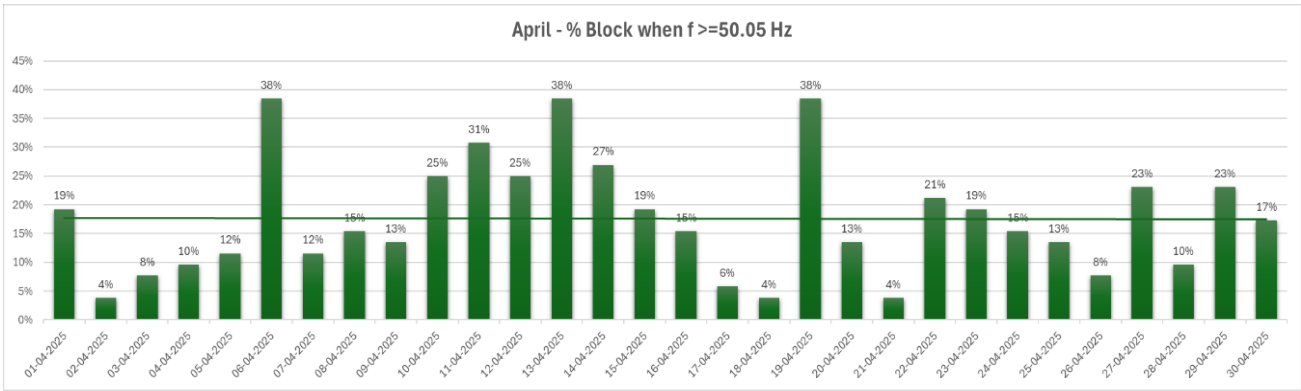
Project	% block Deviation (beyond +/-5 %)	% block Deviation (beyond +/-10 %)	% block Deviation (Beyond +/-15 %)
Fatehgarh	39.68	19.59	10.52
Anantpur	44.49	18.92	9.24
Shajapur-I	51.16	31.52	20.77

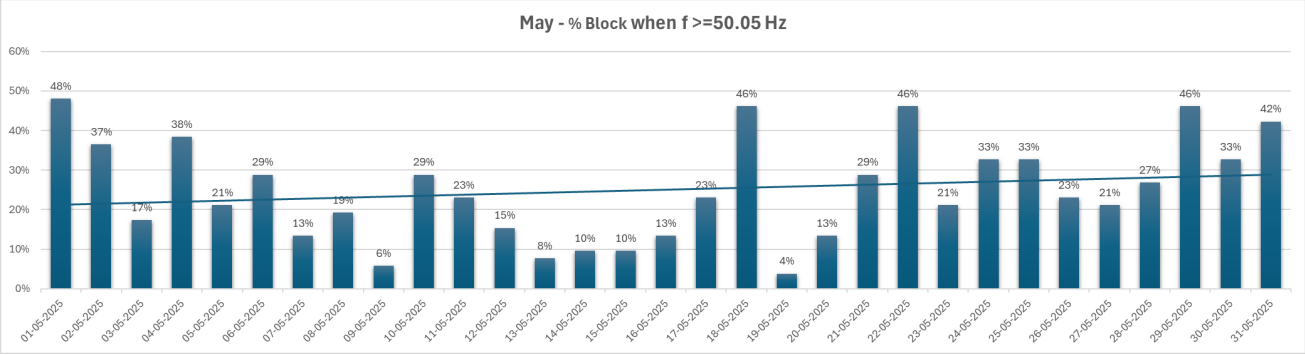
2. After IEGC 2023, various RE projects connected at same pooling point has appointed QCA for aggregate scheduling. In the case, if at a pooling point, both older RE projects and new RE projects whose bid submission is after 01.04.2026 are connected, then it is not clear how the deviations shall be treated for the injections made at the pooling point.

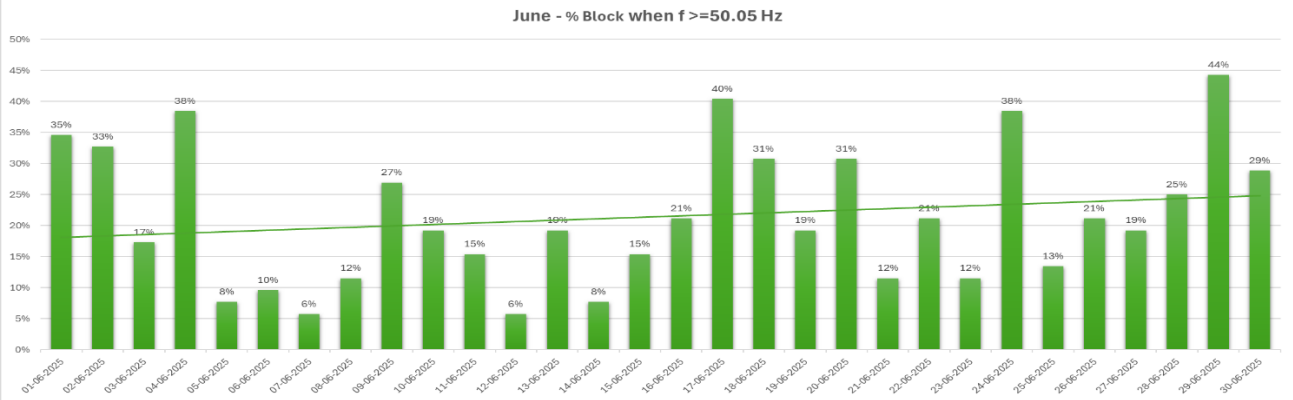
In view of the above a methodology for the same may please be stipulated to avoid future disputes among the generators of the same QCA having different DSM charges/band applicability.

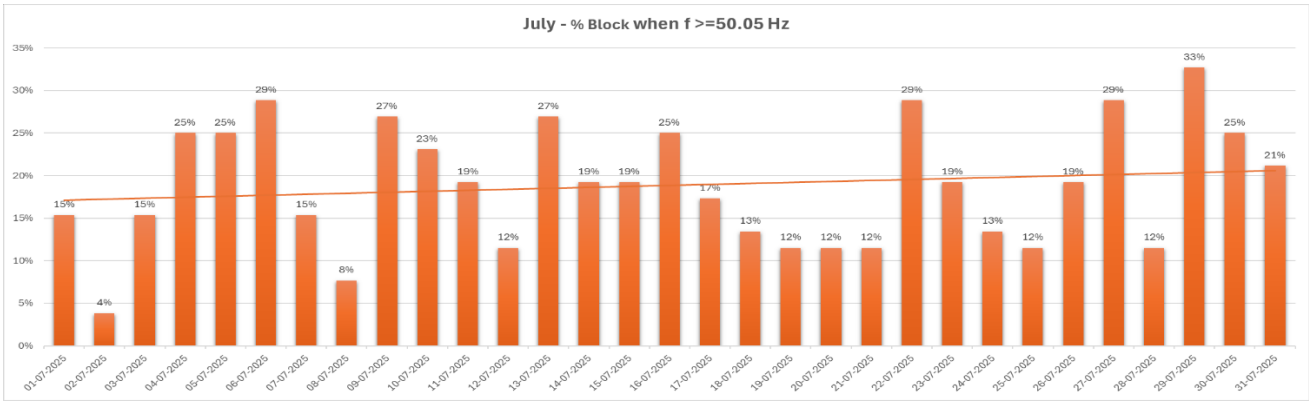
3. For the data of Grid frequency for April-July 2025, it is observed that there are various instances when frequency is above 50.05 Hz during solar hours (6:45-18:45 Hrs) and during peak solar hours (11:00-15:00 Hrs). By non-payment to the existing WS seller for over injection at or above system frequency of 50.05 will cause huge financial implication.

   - The month wise % frequency above 50.05 Hz during solar hours (6:45-18:45 Hrs) for April-July 2025 is as represented below:









- Renewable energy sources are totally weather dependent having no control to change the generation as in case of conventional generation. Accordingly, deviation in RE sources are not linked to frequency. Further, for any loss of generation in renewable sources is a permanent loss, with no recourse to recovery of losses in future or saving in fuel. Additionally, most of the projects in RE space is coming under TBCB guidelines, with pre discovered tariff based on the assumption of certain generation level (CUF) across the life of the project. Any curtailment of the generation (which is not recoverable in future) would adversely impact the financial viability of the project. Hence, it is requested that for DSM of RE generation there should not be any linkage to frequency.

4. DSM Regulations-2024 has provided that general seller means a seller in case of a generating station based on resources other than wind or solar or hybrid of wind-solar resources. Furter, general sellers have been categorized in for three categories such as:

   i) Generating stations other than Run of River generating station and a generating station based on municipal solid waste.
   ii) RoR generating station.
   iii) Generating station based on municipal solid waste.

   There are different DSM charges framework for different category of general sellers considering their specific technical reasons which are beyond reasonable control of such general sellers.

   Wind or solar based generating stations are completely dependent on varying natural conditions like solar Irradiance, cloud cover or wind pattern which is beyond their reasonable control. Unlike conventional generating stations that can regulate their output in response to system requirements or instructions from the load dispatch centre, renewable energy generators have very limited flexibility to control generation..

   Given these unique characteristics, a differentiated treatment for wind and solar generators within the DSM framework is essential to ensure fairness, encourage renewable integration, and maintain investor confidence in the sector. Therefore, the proposal of treatment of existing and new Wind and Solar (WS) at par with General Sellers as per the given timelines may be reviewed.

Further, globally. RE Regulations are also quite relaxed w.r.t deviations bands for RE Generators/Sellers. In fact, in some of the European countries like France, Slovakia, Hungary, Monaco etc. are exempted from paying imbalance charges (Deviation Charges).

In view of the above, it is proposed that:

1. Deviation band tightening and trajectory for reduction in X factor should be deferred until forecasting accuracy improves demonstrably across all regions.

2. As already mentioned above that in case, if at a pooling point, both older RE projects and new RE projects whose bid submission is after 01.04.2026 are connected, then it is not clear how the deviations shall be treated for the injections made at the pooling point.

   In view of the above a methodology for the same may please be stipulated to avoid future disputes among the generators of the same QCA having different DSM charges/band applicability.

3. As represented above, there are various blocks during solar hours when frequency remain >= 50.05 Hz. Further it is found that most of India experienced a decline in solar irradiation of 3% to 10 %. In such scenarios, if there is non-payment for over injection beyond frequency 50.05 may cause huge financial implication therefore, it is requested not to imposed for existing WS projects otherwise such projects may become financially unviable as such type of Regulatory changes will not cover under change in law provisions of the PPA.

4. In the recent BESS tenders, the price has downward trends, therefore, solar projects may develop BESS behind the meter for capacity upto 5-10% of the design capacity. It will help the grid stability and also developer will be able to manage upto some extant to recover its revenue loss. But for the complete recovery of BESS capital cost, it is proposed that solar developer may bear 50 % of BESS cost and balance may be compensated through ancillary services Pool account.

5. In conclusion, while we fully support the Commission's objective of grid discipline, the simultaneous tightening of deviation bands and X factor reduction, without adequate transition safeguards, will cause heavy and unsustainable revenue loss to RE generators. This could discourage further investments in the sector, contrary to the national renewable energy goals.

It is therefore requested that the matter may kindly be reconsidered while finalizing the order, so that a balanced approach is adopted between grid security and commercial sustainability of renewable projects.

2) Schedule revision for WS generators may be made effective from 4th Block

1) With the implementation of the IEGC 2023 w.e.f. 01.10.2023, the Forecasting and revision in schedules for WS generator has become more strenuous since as per Grid Code, the revised schedule becomes effective from 07th and 08th time-block instead of 4th block as was under IEGC 2010.

2) The increase in schedule revision time has made intraday revisions of schedule difficult and non-accurate since it requires accurate weather prediction at least 02 hours before. This in turn is resulting in increase in DSM impact for RE generators as the actual generation for RE generators mainly depend upon Solar Irradiance or Wind speed which changes frequently due to local weather conditions (such as cloud cover, sandstorms, rain, etc.) and such variations are difficult to predict 2 hours before. Scheduling of RE power needs to be on real time basis as possible.

3) It is submitted that the schedule revision for WS generators may please be made effective from 4^{th} Block instead of 7^{th} /8^{th} block to promote consistent growth of new capacity addition and it will be helpful for Grid Stability also.

3) Company-wide Aggregate scheduling for all the generators falling under a single RLDC

IEGC 2023 provides aggregate scheduling through QCA/lead Generator for various RE projects connected at same pooling point. The aggregate scheduling is likely to reduce the forecasting error (in %) (Deviation b/w SG vs AG) as the forecasting is done on aggregate basis for various generators spread in a large area.

It is requested to allow company-wide Aggregate scheduling for all the generators falling under a single Regional Load Despatch Centre.