IWPA Observations/Suggestions on CERC Draft DSM Regulations 2024

1. It is noted that CERC has issued the draft DSM Regulations under section 79 of the Electricity Act 2003. However, it is pertinent to note that any regulation or amendment made under section 79 will have direct impact on the relevant State Regulations also. As SERCs under section 86(1)(h) are conferred with power to specify any regulation pertaining to Grid. However, the same must be consistent with the Regulations specified by CERC under section 79(1) (h). Consequently, the impact of the proposed amendment in the DSM Regulations will not be limited to ISTS projects but will also extend to Intra State projects. Therefore, it becomes imperative that any amendment proposed by CERC keep in view all aspects pertaining to both ISTS and Intra State generation projects. The relevant extract of the sections of the Electricity Act 2003 are reproduced below for ready reference:

   Section 79 (1)(h)

   "79 Functions of Central Commission. (1) the Central Commission shall discharge the following functions, namely:-

   ……..

   (h) to specify Grid Code having regard to Grid Standards;

   ……..."

   Section 86(1)(h)

   "86 Functions of State Commission. (1) The State Commission shall discharge the following functions, namely:-

   ……..

   (h) specify Sate Grid Code consistent with the Grid Code specified under clause (h) of sub-section (1) of section 79;

   ……..."

2. Further, it is pertinent to point out here that vide an amendment dated 07-08-2015, tolerance band of +/-15% for wind and solar was introduced by CERC. It has been more than 6 years since the introduction of the above tolerance band. However, there is no evidence of any in-house or sponsored study in Indian context to ascertain the efficacy of the existing DSM mechanism being practiced. The impact of the tolerance band on various stakeholders during last six years needs to be evaluated. There is also no evidence of as to how the LDCs are using the schedules. Each

state has its own interpretation and implementation. The root cause of why the variability is not captured properly notwithstanding very heavy investments into the IT infrastructure and software domains is to be analyzed and addressed. Therefore, we request CERC to conduct a comprehensive and impartial study in this regard as the same will certainly help in overall development of Renewable Energy (RE) in the country and will prove crucial in achieving the ambitious target of 450 GW by 2030.

3. The Hon'ble Commission in the proposed draft has not only tightened the deviation bands but has also increased the penalties for deviation. We would request this Hon'ble Commission to reconsider their proposal as the increased deviation band will burden the RE generators as a large number of time-blocks will fall under the penalty bands. It is a known fact that, in case of WPPs, a miniscule error in analyzing/calculating wind speed will result in significant variation in terms of power generated.

4. This Hon'ble Commission is well versed about the fact that Forecasting Service providers/QCA are doing forecasting and scheduling on behalf of Wind generators by accessing real time generation data through SCADA. It has been seen that even with access to the real time data none of the existing forecasting agency is competent enough to maintain the deviations within the tolerance band of (+/- 15%).

5. It must be noted that the entire mechanism of producing forecasts and corresponding schedules, is largely based on global circulation models which produce state of the atmosphere forecasts with a granularity of 6 hours temporally and roughly on a 30 km x 30 km spatial grid. These forecasts come with their share of large inaccuracies and uncertainties due to antiquated meteorological measurements (both spatially and temporally) taken in very few locations in the country at locations that are hardly adequate. The weather forecast models are 'work in progress' and have a long way to go. Practically no attention is being paid to the quality of input data to the models. A very important point to note here is that these very approximate predictions are produced once in six hours based on WRF models. It is pertinent to point out that the model outputs will be largely dependent on the quantity and quality of the input data both of which are currently deficient in India. The data assimilation process will make far too many assumptions that may be far from reality to get reasonable results for hundreds of thousands of points from around the globe. Even our own Indian NCMRWF uses the reanalysis data to run the WRF and results are similar.

6. Further, when this gridded data is further stretched to areas of interest, there will be further errors introduced in the wind related information. Next transformation will be to convert the six-hour granularity data into blocks of 15-minute data series. Although much research has been done in this area, there are no known analytical solutions available. Even as we write this, this year's Nobel Prize was given to weather modelers who have made a small headway into this. But somehow wind generators are expected to get the numbers right from the Qualified Aggregating Agencies who have no financial responsibility towards the forecasts they make and submit to the concerned LDCs. It should be appreciated that the only entity suffering huge financial burden in this complex ecosystem that has been created is the generator.

7. Some of the QCAs have nearly 8 to 10 years of experience in forecasting and scheduling. For all the tall claims made by various service providers, even with ± 15% band, ability to keep the schedules with in this band is less than 90% taken on an annual basis. Initially it was conveniently blamed on not getting data in time. With considerable investments in hardware and software, the QCA's are getting SCADA data in near real time for many years. Contrary to the claims made by experienced forecast service providers, the schedules have large errors during high winds. This is, even after providing near real time SCADA information and automated AvC provided in advance (scheduled O & M etc.). As a matter of fact, the collective penalties (DSM charges) run into crores. Typically for an asset size of 4 GW, annual out go will be in the range of 30 to 40 crores. If the band is reduced it could run up to 50 to 60 crores. Calculations have shown that if the +/- 15% is changed to +/- 10%, the DSM charges show an increase by nearly 35 to 40%. This will put additional pecuniary burden on the wind generator and may result projects into NPA.

8. In view of above, we would like to propose that the tolerance band to remain same at +/- 15% with zero DSM Charge uniformly across the country. In the meantime, a study needs to be conducted based on at least 5 years of actual data of agencies engaged in wind forecasting in India to have a rational tolerance band with zero DSM Charge. The tolerance band could be revised post facto based on the results of the study conducted as mentioned above. This will not only give relief from redundant financial burden on the generator but also encourage power developers to generate power through wind sources.

9. Further this proposal is deterrent for RE generators and would hamper the investment in the country and prove to be impediment in achieving the ambitious target of 450 GW by 2030 set by Hon'ble Prime Minister. It is essential to reckon the reasonable DSM charges levied upon renewable energy generators for deviation. At this juncture, it is imperative that RE should be

promoted in letter and spirit and not merely making statements about support to RE. Keeping in view the present financial condition of RE generators and ambitious RE targets, we request Hon'ble Commission to continue the existing clause.

10. Besides, this will also affect the Intra State projects in future. At present all energy payments are made at actual generation irrespective of the actual is more or less than scheduled generation with tolerance band of +/- 15% with zero DSM Charge. The inconsistency will result into further losses for generators.

11. It is known fact that the profit margins of projects setup under the competitive bidding is very thin and any amendment/changes having pecuniary effect on projects could make projects unviable. This will not only affect financials of the existing and pipelines projects but deter the growth of Renewable Energy development in the country.

12. We would request this Hon'ble Commission to note that with continuously falling tariffs and large delays in payment schedules from DISCOMs it is a clear case of creating more and more NPAs by introducing such regulations which have a complete disconnect with the ground realities.

13. This Hon'ble Commission in its Explanatory Memorandum has provided that IEGC 2023 was made effective from 01.10.2023 and as IEGC 2023 has provided for aggregation at the pooling station for inter-state wind and solar generating stations, CERC has proposed modification of the tolerance band for wind and solar generating stations.

    We in this regard would like to bring to the notice of this Hon'ble Commission that the aggregation of power in the form of virtual pool would be beneficial for the Grid. A large, interconnected power system is beneficial because it enables aggregation of imbalances from a large geographical area and thereby ensures the grid safety. The errors are not uniformly distributed in time within a region, therefore forecasting errors for a region are smaller than for a single site. Aggregation lowers the uncertainty of power generation by reducing forecast errors. GIZ's Report on Forecasting, Concept of Renewable Energy Management Centres and Grid Balancing stated that "*typical accuracies for German wind power forecasts show 10-15% normalised root mean square error of installed wind capacity for a single wind project, drop to 5-7% for day-ahead forecasts for a (regional) control area, and reduce to 4-6% for day-ahead wind forecasts for complete Germany. More importantly, with aggregation, the impact of forecast errors*

on individual plants is not as severe because the aggregate forecast of all plants drives the generation scheduling".

We humbly request the Commission to allow aggregation of schedule at regional level so as to maintain grid security in a better way and protecting the interest of the power developer investing in renewable energy sources.

14. Further we would request this Hon'ble Commission to see that the definition of forecast error also needs to be evaluated. It is the "Normalized Root Mean Square error" that German utilities and generators follow and not the block wise errors that are being used in our case. This point has been conveniently underplayed right from the beginning. RMS error is calculated for a series of forecasts and that is expected to be within a 5 to 6% in aggregation. As a matter of fact, our error definition itself is not as understood internationally. Also, nowhere in the world have they set up such a complex system for penalizing the generators who have little control over weather measurements, modelling and its applications. It must be appreciated that only very recently Met department has indirectly acknowledged that there is considerable work to be done in this direction. It is obvious that these aspects have been completely ignored.

15. Monthly Grid monitoring report by LDCs to be ensured before tightening the band. The generators are paying heavy penalties even knowing that their generations are heavily dependent upon weather conditions and accurate projection of their electricity generation and revenue cannot be ascertained. It should not be a situation where due to inefficiency of LDCs the RE generators end up with paying for the cost of forecasting and DSM charges due to forecasting errors. Therefore, we propose that System Operators (LDCs) are requested to publish monthly grid monitoring reports on their websites consisting of benefits of forecasting and scheduling of renewable energy generation on grid security and stability. This will not only encourage DSM charge payers i.e. renewable energy generators but also help to understand how to scale up renewable energy generation into the grid while maintaining grid security and stability.

    It is pertinent to mention here that there is no evidence that the schedules provided under the respective State Regulations are used by LDCs to actively balance the grid. It has become just a compliance issue. Grid management lacks the required transparency. As the DSM charges are handed to the generators typically three to six months later, it is obvious that the whole scheme has been turned into a revenue tool by the concerned LDCs.

<u>We hereby provide a tabular comparison between the existing & proposed DSM Regulations which shows the heavy penalization & tightening of bands proposed in the draft:</u>

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	Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2022 w.e.f. 08.02.23		CERC Draft DSM Regulations 2024	
CASES	**Absolute Error 15-min block**	**Deviation Charges (existing)**	**Absolute Error 15-min block**	**Deviation Charges (Proposed)**
WIND UNDER INJECTION Payable by GENERATOR	<=15%	zero	<=10%	zero
	>15 to =20%	Payable @ 10% of contract rate.	>10 to =15%	Payable @ 10% of contract rate
	>20%	Payable @ 50% of contract rate	>15 to =25%	Payable @ 50% of contract rate
			>25%	Payable @ 100% of contract rate
WIND OVER INJECTION Receivable by GENERATOR	Up to 15 %	Zero Receivable @ contract rate,	Up to 10%	Zero Receivable @ contract rate,
			>10 to =15%	Zero Receivable @ 90% of the contract rate
	>15% to20%	Zero Receivable @ 90% of the contract rate	>15 to =25%	Zero Receivable @ 50% of the contract rate
	>20%	Receivable @ zero	>25%	Zero Receivable @ zero

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;

'Note: In case of aggregation of Wind/Solar generating station at a pooling station through QCA:

(a) the contract rate for the purpose of deviation shall be equal to the weighted average of the contract rates of all individual WS seller(s) opting for aggregation at the pooling station;

(b) Available Capacity shall be equal to the cumulative capacity rating of wind turbines or solar inverters that are capable of generating power in a given time block;

(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)."

The existing DSM regulations for wind and wind-solar is already causing significant impact on the revenues of the generators as any over or under injection beyond 20% results in severe financial consequences. The proposed draft seeks to further reduce the deviation limit from 15% to 10% and proposes to increase the penalty when the deviation exceeds 25%. It is very difficult to make accurate prediction of wind speed in India, and it is even more difficult to maintain the wind generation deviation within the 10% bandwidth to avoid financial impact, particularly because the variation in wind speed and the resultant variation in power generation is not linear. For example, a 10% variation in wind speed may result in a 25% variation in power generation depending upon the power curve of the WEGs, for different wind speeds. Hence, we are unable to keep the accuracy even within the existing deviation limit of 15% to avoid penalty.

We therefore submit that the existing deviation limits and the existing deviation charges may please be continued for wind and Wind-solar hybrid.

Further in respect of charges for over injection/under drawal and over drawl and under injection for RE Rich states and Super RE Rich states, (Clause 8(7)) it is submitted as follows:

We submit that for Super RE Rich states the deviation limit be fixed as 500 MW (which is 10% of the 5000 MW capacity) and that there shall be no DSM charges for deviation up to 500 MW. More so, it is not fair to collect any DSM charges linked to gird frequency as RE rich states are already grappling with the problem of having to manage the variability in generation on their own. In fact, states that originally promoted RE today are in a disadvantageous position compared to non-RE rich states who source power through SECI as they are entitled to draw the scheduled power irrespective of the actual generation and that they don't pay any deviation

charges despite availing RE power. Whereas the states who have promoted RE for intra state face all the difficulties of managing the variability and intermiitency and also the DSM charges.

Hence it is submitted that the RE rich states and Super RE rich states be given a deviation limit of 250 MW and 500 MW respectively without any penalty , more so linking to the grid frequency. This alone will promote RE growth and bring in fairness.

Clause No 8(12) reads as follows:

Notwithstanding anything contained in Clauses (1) to (5) of this Regulation, in case of forced outage of a seller, the charges for deviation shall be @ the reference charge rate for a maximum duration of eight-time blocks or until the revision of its schedule, whichever is earlier.

Deviation due to forced outage is to be considered as Force Majuere and seller cannot be penalised and hence the DSM charges should not be applicable for the duration of forced outage.

We request the Honble commission to consider our submissions before finalizing the Regulations. We also request to give us an opportunity to present our submission in person/online